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N.J.A.C. 7:9D

WELL CONSTRUCTION AND MAINTENANCE; SEALING OF ABANDONED WELLS

Statutory Authority: N.J.S.A. 13:1D-1 et seq., 58:4A-4.1 et seq., 58:12A-1 et seq., and 58:10A-1 et seq.

Date last amended: March 20, 2023

For regulatory history and effective dates, see the New Jersey Administrative Code

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7:9D-1.1 Purpose and scope

- (a) The purpose of this chapter is to establish standards and requirements for all aspects of well construction and decommissioning, such that groundwater is protected, and provide a set of licensing standards to ensure that all who engage in well drilling and pump installing activities have the education, training, and experience necessary to conduct well drilling and pump installation activities in a manner that does not compromise the quality of the State's water resources or adversely impacts public health.
- (b) Unless otherwise provided by rule or statute, this subchapter shall constitute the rules governing the requirements and standards for the permitting, construction, and decommissioning of wells, the standards and requirements for the licensing of all well drillers of the proper class and pump installers in accordance with N.J.S.A. 58:4A-4.1 et seq., and the activities, duties, procedures, and practices of the State Well Drillers and Pump Installers Examining and Advisory Board.

7:9D-1.2 Construction

This chapter shall be liberally construed to permit the Department and the Board to discharge their statutory functions under N.J.S.A. 58:4A-4.1 et seq., the Act.

7:9D-1.3 Applicability

- (a) This chapter applies to any person, well drilling companies, partnerships, corporations, or other entities engaged in pump installation, well, or well pump repair, well drilling, well construction, maintenance, and decommissioning of wells and to any person licensed under this chapter, or seeking a license as a well driller or pump installer of the proper class.
- (b) Nothing in this chapter shall be construed as applying to the drilling of blast holes in quarries or mines or to persons licensed pursuant to, and acting in accordance with The State Plumbing License Law of 1968, P.L. 1968, c.382 (N.J.S.A. 45:14C-1 et seq.); or to excavations and certain activities that do not endanger or threaten subsurface or percolating waters or endanger life.

7:9D-1.4 Severability

If any section, subsection, provision, clause or portion of this chapter is adjudged unconstitutional or invalid by a court of competent jurisdiction, the remainder of these rules shall not be affected thereby.

7:9D-1.5 Definitions

As used in this chapter, the following words and terms shall have the following meanings unless the context clearly indicates otherwise:

"Abandoned well" means any well as defined in this section which is not in use, is not properly maintained, or no longer serves its intended use as demonstrated by the permit issued for its construction, or any well which endangers or threatens the subsurface and percolating waters by the intrusion of salt water or from any other cause, or endangers life.

"Act" means N.J.S.A. 58:4A-4.1 through 29, as amended and supplemented.

"Administrative authority" means the agency certified pursuant to the County Environmental Health Act, N.J.S.A. 26:3A2-21 et seq., or the local board of health having jurisdiction. When water systems serve county, State, or Federal facilities, the administrative authority shall mean the Department.

"Annular space" means the space between the well casing/well screen and the wall of the borehole or in the case of a multiple cased well, all space(s) between casing(s) and all space between the outer casing and the wall of the borehole.

"Appurtenance" means the instrument or equipment that is used to treat water or aid in the functioning of the well system including, but not limited to, water conditioning and treatment equipment, pipes, tanks, pumps, control devices, valves, filtration, circulatory systems, and flow centers.

"Aquifer" means a water-bearing layer of natural earth materials that will yield water in a usable quantity to a well or spring.

"Aquifer storage and recovery well" or "ASR well" means a well that is used to store water in an aquifer during periods of low water demand and then recover the water for use during periods of high demand.

"Board" means the State Well Drillers and Pump Installers Examining and Advisory Board established pursuant to the Subsurface and Percolating Waters Act, N.J.S.A. 58:4A-4.1 et seq.

"Borehole" means the hole made by driving, jetting, coring, drilling, augering or other means into the ground for the purpose of constructing a well pursuant to this chapter.

"Boring" or "soil boring" means any hole, any temporarily cased hole, or any other such installation using direct-push methods that is decommissioned pursuant to this chapter within 72 hours of completion.

"Building sewer line" means the pipe extending from the outer wall of a building to a septic tank or approved place of disposal including a public sewer, and the lines to all parts of the subsurface sewage disposal system, except those classified as distribution lines.

"Casing" means a pipe or tubing installed into a borehole during or after drilling to support the sides of the holes and prevent caving or the entrance of water, gas or other fluid into the hole.

"Cesspool" means a covered pit with open-jointed lining into which untreated sewage is discharged, the liquid portion of which is disposed of by leaching into the surrounding soil, the solids or sludge being retained within the pit.

"Closed loop geothermal well" means a well or a borehole drilled to a specific depth either singly or in a series into which a continuous closed loop of pipe is inserted for the purpose of non-contact thermal energy transfer from a fluid in the loop to or from the earth.

"Commissioner" means the Commissioner of the Department of Environmental Protection or his or her designee.

"Confining layer" means a layer of natural earth materials having very low hydraulic conductivity that inhibits the movement of water into and out of a water bearing zone. A confining unit may consist of one or more confining layers.

"Consolidated formation" means a geologic formation where the sands, gravels, clays or other similar materials have been lithified. These rock formations will commonly remain stable around an open borehole without caving.

"Continuing education point" or "CEP" means the unit of training a licensed well driller or licensed pump installer has received through a seminar, workshop, training course, college course, or other means to satisfy continuing education requirements as approved by the Department.

"Coring" means drilling with a hollow bit and core barrel in order to obtain a representative sample of the geologic formation.

"Days" means calendar days, unless otherwise specified.

"Decommissioning" means the permanent closure or sealing of any well in accordance with the procedures set forth in this chapter.

"Department" means the Department of Environmental Protection.

"Dewatering well driller" means a person possessing a New Jersey dewatering well driller's license pursuant to N.J.A.C. 7:9D-1.7 and 1.8.

"Dewatering well" or "dewatering wellpoint" means a well or wellpoint installed for the removal of groundwater with the intent of temporarily lowering the water table or aquifer level during construction operations.

"Direct push" means the use of static force, hydraulic down pressure, and percussion to advance a sampling tool into the subsurface for collecting soil, soil gas, and groundwater samples or for injecting remediation materials.

"Disposal field" means a disposal bed or a group of one or more disposal trenches. The perimeter of the disposal field corresponds to the perimeter of the disposal bed, or a line circumscribing the outermost edges of the outermost disposal trenches and including the area between the disposal trenches.

"Distribution box" means a watertight structure, which receives sanitary sewage effluent from a septic tank and distributes such sewage effluent in equal portions to two or more pipelines leading to the disposal field.

"Domestic well" means a Category 1 well as described in N.J.A.C. 7:9D-2.1(a)1, that is used primarily to supply drinking and sanitary water supply for an individual dwelling unit.

"Driven" means the action of driving or pounding of the well casing vertically into the ground or the pounding of drive rods. This excludes methods where the casing is rotating as it is being installed.

"Dry well" means a covered pit with open-jointed lining through which drainage from roofs, basement floors or area-ways may seep or leach into the surrounding soil.

"Elevator borehole well driller" means a person possessing a New Jersey elevator borehole well driller's license pursuant to N.J.A.C. 7:9D-1.7 and 1.8.

"Environmental resource and geotechnical well driller" means a person possessing a New Jersey environmental resource and geotechnical well driller's license pursuant to N.J.A.C. 7:9D-1.7 and 1.8.

"Examination and CEP manager" means the Department or an entity who has contracted with the Department to undertake the following tasks: administration of the licensing exams required pursuant to this chapter; development of study materials for licensing exams, maintenance of a database that contains exam and licensing history; and a maintenance of continuing education points for all licensees.

"Flowing well" means a well from which the water flows upwards and out of the well without pumping due to natural or artificially supplied underground pressure from air or other gas.

"Geologic log" means a description of the materials and drilling conditions encountered during the drilling of a well or boring.

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"Geophysical log" means the graphic or electronic record of certain physical properties of material. Logs may include, but are not limited to, measurement of spontaneous potential, resistivity, electromagnetic response, natural gamma radiation, temperature, caliper, water flow, velocity (sonic) and induced nuclear methods such as gamma and neutron logs.

"GPM" means gallons per minute.

"Groundwater" means water below the land surface in a zone of saturation.

"Grout" means any material approved by the Department for use in sealing the annular space of a well during construction, or for sealing a well during decommissioning.

"Hand dug well" means a manually excavated well of permanent nature installed for water supply.

"Immediate on-site supervision" means that a New Jersey licensed well driller of the proper class is present on-site during each entire well drilling operation to oversee the work and performance of any person engaging in or assisting with the operation of the well drilling machine or the construction of any well. On site supervision does not include mobilization and de-mobilization of the well drilling equipment.

"Injection well" means a well through which liquid or gas is injected, under pressure or gravity flow, into the ground for the purpose of disposing wastes, maintaining formation pressure, recharging the aquifer, or environmental remediation.

"Jetting" means the use of a high-pressure stream of air or water to mobilize earth material in advance of penetrating, driving or lowering of well casing into an aquifer.

"Journeyman (Class B) well driller" means a well driller possessing a New Jersey journeyman (Class B) well driller's license pursuant to N.J.A.C. 7:9D-1.7 and 1.8.

"Journeyman well driller" means a well driller possessing a New Jersey journeyman well driller's license pursuant to N.J.A.C. 7:9D-1.7 and 1.8.

"License of the proper class" or "license" means a document issued to a person pursuant to N.J.S.A. 58:4A-11 authorizing the individual to engage and perform work in the trade, business, or calling of well drilling, or pump installing.

"Licensee" means a driller or pump installer validly licensed pursuant to the Act and this chapter.

"Liner" means a well casing that is inserted into an existing cased borehole for the purpose of repairing a well or protecting the groundwater from contamination.

"Maintenance casing" means an inner casing which can be removed to repair or replace the screen, which is attached to it.

"Master well driller" means a well driller possessing a New Jersey master well driller's license pursuant to N.J.A.C. 7:9D-1.7 and 1.8.

"Monitoring well" means a well used to observe the elevation of the water table or potentiometric surface, or to measure the water quality of a water-bearing zone.

"Monitoring well driller" means a well driller possessing a New Jersey monitoring well driller's license pursuant to N.J.A.C. 7:9D-1.7 and 1.8.

"Multiple cased well" means any well that contains more than one casing or liner including, but not limited to, temporary, surface, maintenance, starter, or driven casings.

"Non-public well" means a well that provides potable water to a non-public water system as defined at N.J.A.C. 7:10-1.3.

"Observation well" means a well that is used to conduct aquifer pump tests for the purpose of applying for a water allocation permit or water use registration pursuant to N.J.A.C. 7:19.

"Open loop geothermal well" means a well designed and installed specifically for use of the earth as a source for heat extraction/rejection.

"Oversized borehole" means a borehole, which is at least four inches greater than the inside diameter of the casing, which is to be inserted.

"Person" means any individual, responsible corporate official, corporation, company, partnership, firm, association, owner or operator of a water supply facility, political subdivision of the State, and any state, interstate, or Federal agency.

"Pitless well adapter" means a manufactured device designed for attachment to one or more openings through a well casing, and constructed so as to prevent the entry of contamination into the well, to conduct water from the well, to protect the water from freezing or extremes of temperature, and to provide access to water system components within the well.

"Pitless well unit" means a preassembled device which extends the upper end of a well casing to above grade, provided with a pitless well cap, and constructed so as to prevent the entry of contamination into the well, to conduct water from the well, to protect the water from freezing or extremes of temperature, and to provide access to the well and to the water system components within the well.

"Pitless well cap" means a gasketed, watertight, sanitary device that covers and encloses the upper termination of a pitless well unit or the well casing, and is provided with watertight connections for electrical power lines and well vent.

"Potable water" means water used, or intended to be used, for drinking and culinary purposes, which is free from impurities in amounts sufficient to cause disease or harmful physiological effects, with the bacteriological and chemical quality conforming to applicable standards.

"Pump" means a mechanical device used to remove or emplace gases, water or fluids from or into a well.

"Pump installer" means a person possessing a New Jersey license as a pump installer pursuant to N.J.A.C. 7:9D-1.7 and 1.8.

"Pump installing" means the installation, removal, alteration, or repair of well pumping equipment and appurtenances thereto in connection with any well including connecting lines between a well and storage tank or appurtenance thereto.

"Sanitary well seal" means a manufactured device or approved arrangement which is used to cap a well or to establish or maintain a watertight junction between the well casing and the piping or equipment installed therein.

"Seepage pit" means a covered pit with open-jointed lining material through which septic tank effluent may seep or leach into the surrounding soil.

"Septic tank" means a watertight receptacle which receives the discharge of sanitary sewage from a building sewer or part thereof, and is designed and constructed so as to permit settling of settleable solids from the liquid, partial digestion of the organic matter, and discharge of the liquid portion into a disposal field or seepage pit.

"Service line" means a pipe for the transmission or conveyance of potable water under pressure either from an individual well or from a distribution main to a single realty improvement.

"Site-wide permit" means a permit to drill 10 or more wells for the same use in a single municipality that are on a single lot, easement right-of-way, or multiple contiguous lots of common ownership, where:

1. The boreholes and any annular space remaining after the installation of equipment necessary for the intended use of the wells are sealed during construction; or
2. The wells are installed to function in a series as part of a system restricted to a single lot and block or an easement right-of-way within a single municipality, or a contiguous property of common ownership consisting of multiple lots or blocks within a single municipality.

"Sodium-based bentonite" means bentonite that has a high swell potential, such as Wyoming bentonite.

"Soil borer" means a person possessing a New Jersey soil borer's license pursuant to N.J.A.C. 7:9D-1.7 and 1.8.

"Standing column well" means a well installed as part of an open loop geothermal well system where water is pumped from the well, passed through a heat pump, and returned to the same well.

"Sub-account" means a special dedicated non-lapsing account established pursuant to N.J.S.A. 58:4A-14.1(b) that may be used by a licensed well driller or licensed pump installer to cover permit or license renewal fees.

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- "Suction line" means a pipe, which conveys water at less than atmospheric pressure from a well to a pump.
- "Test well" means any well which is drilled, bored, cored, or otherwise constructed for temporary use in obtaining data for engineering or for geophysical or geological exploration or evaluating aquifer potential or quality for a specific use.
- "Unconsolidated formation" means a geologic formation where the sands, gravels, clays or other similar materials are loosely arranged. These formations will commonly not remain stable around an open borehole.
- "Undersized borehole" means a borehole, which is no larger than the inside diameter of the well casing and is constructed, for emplacement of a well.
- "Vertical closed loop geothermal well driller" means a well driller possessing a New Jersey vertical closed loop geothermal well driller's license pursuant to N.J.A.C. 7:9D-1.7 and 1.8.
- "Water bearing unit" means a geologic unit, which is a formation of similar characteristics that can be distinctly mapped from over and underlying units, that is capable of producing water and is separated from other geologic units by a confining layer.
- "Well" means a hole or excavation larger than four inches in diameter or a hole or excavation deeper than 10 feet in depth that is drilled, bored, cored, driven, jetted, dug, or otherwise constructed for the purpose of removal or emplacement of, or investigation of, or exploration for, fluids, water, oil, gas, minerals, soil, or rock, or for the installation of an elevator shaft.
- "Well development" means the removal of sands and drilling materials from the water bearing zones of any well to produce water that is free of visible sand and/or silt and increase its productivity.
- "Well driller" means a person possessing a New Jersey license as a well driller of the proper class, including, but not limited to, test borers and such other classifications as the Department establishes by regulation, who engages in well drilling or pump installing.
- "Well drilling" means any operation or activity involving the drilling, constructing, installing, repairing, replacing, modifying, stimulating or sealing of any well.
- "Well permit" means a written approval issued by the Department to a licensed well driller and a property owner which authorizes a licensed well driller of the proper class to construct a well or wells.
- "Well pit" means a below ground chamber or vault for the purpose of enclosing and providing access to a wellhead which terminates below grade.
- "Well record" means the form to be completed by the well driller, depicting the construction details of any well provided by the Department at the time of well permit issuance.

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"Well stimulation" means the stimulation of a well to increase its productivity. Stimulation techniques include, but are not limited to, blasting, hydro-fracturing, chemical treatment, surging, and dry-icing.

"Well system" means a system, including all appurtenances thereto, that cannot function in the absence of the well and circulates, removes, or injects fluid or water through a well for any purpose.

7:9D-1.6 General provisions

- (a) No person shall drill, construct, install, repair, replace, modify, stimulate or decommission any well or engage in such business without possessing a valid New Jersey well driller's license of the proper class unless that activity is performed under the direct and immediate on-site supervision of a New Jersey licensed well driller of the proper class issued by the Department.
- (b) No person shall drill, construct, install, or replace a well without first having obtained a well permit pursuant to this chapter, except in the case of an emergency under N.J.A.C. 7:9D-1.12.
- (c) No person shall install, repair, remove, alter, or replace a well pump or well pumping equipment or engage in such business without being a New Jersey licensed pump installer or New Jersey well driller of the proper class or being in the presence of and under the onsite supervision of a New Jersey licensed pump installer or a New Jersey licensed well driller of the proper class. The name of the person or well drilling company engaged in pump installation activities shall be prominently displayed on the equipment, including but not limited to, vehicles and large equipment, used by the pump installer or well driller.
- (d) No person shall conduct any operation involving the drilling, coring, boring, driving, jetting, digging, or other construction or repair of any well pursuant to N.J.A.C. 7:9D-1.11 without being a New Jersey well driller of the proper class or being in the presence of and under the onsite supervision of a licensed well driller of the proper class. The name of the well drilling company shall be displayed on the equipment used by such driller.
 - 1. There shall be one licensed well driller of the proper class on site for each well drilling rig on site.
- (e) No well driller shall perform any well drilling operation without maintaining the area surrounding the operation in a sanitary condition and providing proper containment of all materials and surface drainage away from the well. Discharges to surface waters, including

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storm drains, are regulated pursuant to N.J.A.C. 7:14A-1. Disposal of contaminated water is regulated pursuant to N.J.A.C. 7:26G.

- (f) No person shall engage in well drilling or pump installing activities without having onsite, at all times, a license issued pursuant to this chapter and shall present it to any State, county, or local official upon request.
- (g) Licensees shall notify the Department in writing pursuant to N.J.A.C. 7:9D-1.17 of every change in mailing address or telephone number within 14 calendar days of the change. The notification shall be submitted to the Department at the address set forth in N.J.A.C. 7:9D-1.17.

7:9D-1.7 General provisions for well driller licenses and pump installer licenses

(a) Well driller licenses are classified as follows:

- 1. A master well driller is authorized to:
 - i. Drill, construct, install, repair, replace, modify, stimulate, disinfect, or disconnect a well of any category;
 - ii. Install, maintain, winterize, or replace well pumping equipment and appurtenances, storage tanks, and appurtenances and connecting lines between a well and storage tank;
 - iii. Perform yield and drawdown testing of wells;
 - iv. Supervise three or more journeyman well drillers;
 - v. Certify public non-community and non-public well water systems where the mains are less than four inches in diameter;
 - vi. Certify that a well has been drilled, constructed, installed, repaired, replaced, modified, or stimulated in conformance with all applicable State and well drilling and pump installation standards;
 - vii. Qualify as a candidate to be appointed to the Board;
 - viii. Perform field observations to verify qualifications of applicants for all licenses covered by this chapter; and
 - ix. Seal and decommission any well in compliance with N.J.A.C.7:9D-3,
- 2. A journeyman well driller is authorized to:
 - i. Drill, construct, install, repair, replace, modify, stimulate, disinfect, or disconnect a well of any category except public community supply wells;

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- ii. Install, maintain, winterize, or replace well pumping equipment and appurtenances, storage tanks, and appurtenances and connecting lines between a well and storage tank;
 - iii. Perform yield and drawdown testing of wells;
 - iv. Seal and decommission any well except public community water supply wells in compliance with N.J.A.C. 7:9D-3; and
 - v. Qualify as a candidate for appointment to the Board.
3. A journeyman (Class B) well driller is authorized to:
 - i. Drill, construct, install, repair, replace, modify, stimulate, disinfect, or disconnect a well of any category except public community supply wells and Category 3 wells;
 - ii. Install, maintain, winterize, or replace well pumping equipment and appurtenances, storage tanks, and appurtenances and connecting lines between a well and storage tank;
 - iii. Perform yield and drawdown testing of wells;
 - iv. Decommission any well, except public community water supply wells or Category 3 wells, in compliance with N.J.A.C. 7:9D-3; and
 - v. Qualify as a candidate for appointment to the Board.
4. A dewatering well driller is authorized to:
 - i. Drill, construct, install, replace, modify, stimulate or disconnect any dewatering well or dewatering wellpoint which does not penetrate a confined aquifer;
 - ii. Decommission only Category 6 wells that have not penetrated any confining layers; and
 - iii. Qualify as a candidate for appointment to the Board.
5. An environmental resource and geotechnical well driller is authorized to:
 - i. Drill, construct, install, repair, replace, modify, stimulate, disinfect, or disconnect any Category 3 and 4 well that does not require permanent well pumping equipment;
 - ii. Decommission Category 3 and 4 wells in compliance with N.J.A.C. 7:9D-3; and
 - iii. Qualify as a candidate for appointment to the Board.

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6. A vertical closed loop geothermal well driller is authorized to:
 - i. Drill, construct, install, repair, replace, or modify any Category 5 well that does not require permanent well pumping equipment;
 - ii. Decommission Category 5 wells in compliance with N.J.A.C. 7:9D-3; and
 - iii. Qualify as a candidate for appointment to the Board.
 7. An elevator borehole well driller is authorized to:
 - i. Drill, construct, install, repair, replace, modify, or disconnect any Category 7 well;
 - ii. Decommission any Category 7 well in compliance with N.J.A.C. 7:9D-3; and
 - iii. Qualify as a candidate for appointment to the Board.
 8. Prior to July 1, 2020, a soil borer is authorized to:
 - i. Drill and install any Category 4 well;
 - ii. Decommission any Category 4 wells in compliance with N.J.A.C. 7:9D-3; and
 - iii. Qualify as a candidate for appointment to the Board.
 9. Prior to July 1, 2020, a monitoring well driller is authorized to:
 - i. Drill, construct, install, repair, replace, modify, stimulate, disinfect, or disconnect any Category 3 and Category 4 well that does not require permanent well pumping equipment;
 - ii. Seal and decommission any Category 3 and Category 4 well in compliance with N.J.A.C. 7:9D-3; and
 - iii. Qualify as a candidate for appointment to the Board.
- (b) A pump installer is authorized to:
1. Install, maintain, disinfect, winterize, or replace well pumping equipment and appurtenances, storage tanks, and appurtenances and connecting lines between a well and storage tank;
 2. Perform yield and drawdown testing of wells; and
 3. Qualify as a candidate for appointment to the Board.
- (c) A licensed well driller of the proper class or a pump installer shall at all times during any operation have in her or his possession the valid license of the proper class.

7:9D-1.8 License application and licensing examination procedures

- (a) An applicant for a well driller or pump installer license shall:

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1. Submit a complete application on the form prescribed by the Department pursuant to (d) below;
2. Demonstrate that he or she has satisfied all terms and conditions of any final revocation or suspension of a previously issued license or resolved any outstanding final order or penalty pursuant to the Act;
3. Demonstrate that he or she has met the experience requirements by conducting activities in compliance with this chapter within the State of New Jersey, except as provided at (a)4 below, and has obtained a passing grade on the certification exams administered by an examination and CEP manager selected by the Department and required for the proper license class pursuant to Table 1 below. The New Jersey Regulations exam for the applicable license class shall have been taken no more than two years prior to submitting an application.

Table 1

Application for NJ Well Driller License Class		Required Proficiency as Demonstrated by Certification Exams	Required Experience
Master well driller	Licensed as a Journeyman well driller on or after January 2, 2018	General Drilling; Augering, and Monitoring; Two of the following: Cable Tool, Air Rotary, Mud Rotary, or Reverse Rotary; Water Systems General Exam; Water Systems < 100 gpm; Water Systems > 100 gpm; NJ Regulations for Masters.	Five years experience, including two years as a Journeyman well driller; experience must include construction or decommissioning of five wells from Category 1, 2, or 3 within the preceding five years from the date of application.
	Licensed as a Journeyman well driller before January 2, 2018	One of the following: Cable Tool, Air Rotary, Mud Rotary, or Reverse Rotary; Water Systems > 100 gpm; NJ Regulations for Masters.	Five years experience, including two years as a Journeyman well driller; experience must include construction or decommissioning of five wells from Category 1, 2, or 3 within the preceding five years from the date of application.
Journeyman well driller		General Drilling; Augering and Monitoring; One of the following: Cable Tool, Air Rotary, Mud Rotary, or Reverse Rotary; Water Systems General Exam; One of the following: Water Systems < 100 gpm, or Water Systems > 100 gpm; NJ Regulations for Journeyman.	Three years experience under the supervision of an ERG, Journeyman (Class B), Journeyman, Master, or VCLG well driller; experience must include construction or decommissioning of five wells from Category 1, 2, or 3 within the preceding five years from the date of application.

<p>Journeyman (Class B) well driller</p>	<p>General Drilling; One of the following: Cable Tool, Air Rotary, Mud Rotary, or Reverse Rotary; Water Systems General Exam; One of the following: Water Systems < 100 gpm, or Water Systems > 100 gpm; NJ Regulations for Journeyman (Class B).</p>	<p>Three years experience under the supervision of an ERG, Journeyman (Class B), Journeyman, Master or VCLG well driller; experience must include construction or decommissioning of five wells from Category 1, 2, or 3 within the preceding five years from the date of application.</p>
<p>Environmental Resource and Geotechnical (ERG) well driller</p>	<p>General Drilling; Augering and Monitoring; NJ Regulations for ERG drilling.</p>	<p>Two years experience under the supervision of an ERG, Journeyman (Class B), Journeyman, Master or VCLG well driller; experience must include construction or decommissioning of five wells within the preceding five years from the date of application.</p>
<p>Dewatering well driller</p>	<p>General Drilling; Jetting and Driving wells; NJ Regulations for Dewatering.</p>	<p>Two years experience under the supervision of a Dewatering, Journeyman (Class B), Journeyman, Master or ERG well driller; experience must include construction or decommissioning of five wells within the preceding five years from the date of application.</p>

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Vertical Closed Loop Geothermal (VCLG) well driller	General Drilling; Certified Vertical Closed Loop Drilling; One of the following: Cable Tool, Air Rotary, Mud Rotary, or Reverse Rotary; NJ Regulations for VCLG drilling.	Two years experience under the supervision of a VCLG, Journeyman (Class B), Journeyman, Master or ERG well driller; experience must include construction or decommissioning of five wells within the preceding five years from the date of application.
Elevator Borehole well driller	General Drilling; NJ Regulations for Elevator boreholes.	Two years experience drilling elevator boreholes; Effective January 2, 2020, the applicant must demonstrate that the experience has been obtained under the supervision of a Master, Journeyman, Journeyman (Class B), or Elevator Borehole well driller.
Pump Installer	Water Systems General Exam; One of the following: Water Systems <100 gpm, or Water Systems >100 gpm; NJ Regulations for Pump Installer.	Two years experience under the supervision of Pump Installer, Journeyman, Journeyman (Class B), or Master well driller.

4. Demonstrate that an applicant that does not possess the required experience in the State of New Jersey, shall pass the certifications set forth in (a)3 above and demonstrate the equivalent years of experience in any other state.
- (b) In the event that a certification exam required pursuant to (a) above is no longer offered or is changed, the Board may approve an alternate certification exam. A list of these approved alternate certification exams will be published on the Department's website pursuant to N.J.A.C. 7:9D-1.17.
- (c) As of March 1, 2018:
1. The Department will no longer issue or renew monitoring well driller or soil borer licenses.

- i. Any person licensed as a monitoring well driller pursuant this chapter as of March 1, 2018, may, in lieu of applying for a new license pursuant to (a) above, apply for renewal as an environmental resource and geotechnical well driller upon expiration of the monitoring well driller license;
 - ii. Any person licensed as a soil borer pursuant to this chapter as of March 1, 2018, may, in lieu of applying for a new license pursuant to (a) above, successfully complete a Department-approved training course, to renew their license as an environmental resource and geotechnical well driller. Any licensee who fails to complete this training course shall no longer be licensed pursuant to this chapter; and
 - iii. A licensee in good standing may submit in writing to the Department a request for a waiver from the training requirements in (c)1ii above on the basis of active duty in the military or reserves, illness, disability, or other good cause.
 2. Any person licensed as a journeyman (Class B) well driller may choose to qualify to be licensed as a journeyman well driller upon successful completion of a Department-approved training course.
 3. Experience obtained under the supervision of a monitoring well driller or soil borer is considered equivalent to experience obtained under the supervision of an environmental resource and geotechnical well driller to meet the experience requirements of (a) above.
- (d) Applications for a license under this section shall be submitted on a form prescribed by the Department signed by the applicant. The application requires an applicant to provide the following information including, but not limited to:
1. Name, e-mail and mailing address, age, and daytime or work telephone number;
 2. The last four digits of the applicant's Social Security number;
 3. Education;
 4. Description of work experience, including documentation verifying experience requirements in Table 1 at (a) above, such as W-2 forms, well records, well decommissioning reports, tax records, invoices or a copy of an out-of-State license, and/or company registration;

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5. Two professional references that verify work experience described in (d)4 above. For all in-State applicants, except master well drillers, one reference must be a well driller; and
 6. A signed and notarized certification verifying the accuracy of the document.
- (e) The Department shall review each application for a well driller or pump installer license for completeness of all the information required in (d) above and notify the applicant in writing of any deficiencies.
1. The Department will present the names and qualifications of eligible license applicants to the Board at the next scheduled Board meeting, provided that the application is complete and received by the Department no later than 10 working days before that meeting.
 2. The Board shall review the list of candidates and their qualifications and recommend to the Commissioner through a Board resolution that a license be issued or denied pursuant to the procedures established at N.J.A.C. 7:9D-1.10.
- (f) The Department shall notify all applicants of the Board's recommendation in writing.
- (g) The Department shall, upon recommendation of the Board and payment of the required fee, issue new licenses to persons to engage in well drilling or pump installing.

7:9D-1.9 Licensing examination application fees, licensing fees, and renewal requirements for all well driller licenses of the proper class, pump installer licenses, and establishment of special dedicated non-lapsing account

- (a) All classes of well driller licenses and pump installer licenses shall be renewed once every three years on a schedule that applies to all licensees. An application for renewal shall be made by submitting: documentation of continuing education requirements in accordance with (e) and (f) below and the renewal fee prior to June 30.
- (b) The initial and renewal fees for all licenses issued pursuant to this chapter and for late renewals are as follows:
- | | |
|-------------------------------------|----------|
| 1. All well driller license classes | \$300.00 |
| 2. Pump installer's license | \$150.00 |
| 3. Late renewal fee | \$50.00 |
| 4. Late CEP administration fee | \$500.00 |

- (c) A licensee who fails to satisfy the CEP requirements specified at (e) or (f) below, as applicable, by April 1, or fails to renew his or her license prior to June 30, may have his or her license renewed by completing the following requirements. The licensee shall not continue to engage in well drilling and pump installing activities past the June 30 expiration of his or her current license until the license renewal requirements specified below are completed.
1. Licensees who fail to pay the appropriate renewal fee prior to June 30 must:
 - i. Pay the renewal fee required at (b)1 or 2 above, as appropriate;
 - ii. Pay the late payment fee required at (b)3 above;
 - iii. Submit both payments specified at (c)1i and ii above to the Department within six months of the expiration of the license; and
 - iv. Satisfy all other requirements of this section.
 2. Licensees who fail to obtain the required CEPs prior to April 1 must:
 - i. Provide evidence to the Department's satisfaction that all CEPs were obtained;
 - ii. Pay the late CEP administration fee required at (b)4 above; and
 - iii. Pay the renewal fee prior to June 30 or comply with the requirements at (c)1 above.
 3. Any CEPs earned after the April 1 deadline for the purposes of a license renewal subject to (c)2 above, shall not be credited to any other license cycle.
- (d) A licensee who fails to renew his or her license within six months following the expiration date of the license shall submit an application for a new license pursuant to N.J.A.C. 7:9D-1.8(a) and meet the continuing education requirements for the expired license set forth at (e)2 or (f)2 below.
- (e) Prior to April 1, 2020, all licensees shall obtain CEPs in order to be eligible for license renewal as follows:
1. Prior to July 1, 2020, all applicants for renewal licenses shall demonstrate that they have completed at least seven CEPs, within the prior three-year period;
 2. CEPs shall be obtained a minimum of 90 days prior to license term expiration;
 3. Licensees who have been licensed for less than three years shall not be required to demonstrate that they have completed the required number of CEPs prior to their first license renewal.
- (f) Beginning April 1, 2020, all licensees shall obtain CEPs in order to be eligible for license renewal as follows:

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1. On or after April 1, 2023, and every three years thereafter, all applicants for renewal licenses shall demonstrate that they have completed at least 21 CEPs, within the prior three-year period;
2. CEPs shall be obtained a minimum of 90 days prior to license term expiration;
3. Licensees who have been licensed for less than three years shall not be required to demonstrate that they have completed the required number of CEPs prior to their first license renewal; and
4. A licensee in good standing may submit in writing to the Department, pursuant to N.J.A.C. 7:9D-1.17, a request, including supporting documentation, for a waiver from continuing education requirements pursuant to this subsection on the basis of active duty in the military or reserves, illness, disability, or other good cause.

(g) The Department shall review and approve the seminars, workshops, training courses, college courses, or other means designated to fulfill the continuing education point requirements set forth at (f) above as follows:

1. All requests for approval of a course shall be submitted to the Department at least 90 days prior to the start date of the course. The Department, in its discretion, may on a case-by-case basis, decide to review a course that is submitted outside of this timeframe or that is submitted after the completion of the course, provided that a recommendation has been made by the Board pursuant to N.J.A.C. 7:9D-1.10(j) and all other information set forth at (g)4 below is submitted.
2. Course approvals shall be reevaluated at the end of the three-year licensing cycle for which they were approved.
3. The Department shall not approve continuing education points for courses where:
 - i. The principal focus of the course is direct sales of products;
 - ii. The course provider does not provide a certification that all information required to be submitted to the examination and CEP manager that administers the continuing education program including, but not limited to, documentation related to the course and certification of attendance, will be submitted in the required format no later than the end of the continuing education period;
 - iii. The course instructor is not qualified in the subject area; or

- iv. The course content is not related to the well drilling or pump installing industry.
 4. Requests for course review shall be made in writing to the Department at the address set forth at N.J.A.C. 7:9D-1.17 and shall include the following information:
 - i. A detailed description of the course content;
 - ii. An agenda for the course, including duration of each course topic;
 - iii. All proposed course duration, dates, and locations;
 - iv. Name(s) and qualifications of instructors, including any required certifications for the subject area, education, experience, and licenses held;
 - v. Procedures for verification of the identity of the attendees;
 - vi. A sample of the course completion certification forms to be used to document attendance;
 - vii. A statement that the course provider will submit to the examination and CEP manager that administers the continuing education program, documentation related to the course and attendees in the format required, no later than the end of the continuing education period or 45 days following the completion of the course, whichever comes first;
 - viii. Proposed number of CEPs to be assigned for the course; and
 - ix. Any changes that have been made to the course since the prior approval date, for those courses requesting renewal under this section.
 5. After receiving a Board recommendation pursuant to N.J.A.C. 7:9D-1.10(f), the Department shall notify the applicant in writing of its decision to approve or deny CEPs for the course.
 6. A list of approved courses shall be made publically available on the Department's website, which is found at N.J.A.C. 7:9D-1.17.
- (h) A special dedicated non-lapsing account is established by the Division of Budget and Finance within the Department into which any licensed individual may deposit funds to cover well permit and license renewal fees. Sub-accounts shall be established for each individual licensee or company, if specifically requested. Upon authorization of the licensee, the Department shall withdraw well permit application fees or license renewal application fees from the appropriate subaccount.

7:9D-1.10 State Well Drillers and Pump Installers Examining and Advisory Board

- (a) The nine members of the State Well Drillers and Pump Installers Examining and Advisory Board are appointed by the Commissioner or his or her designee.
- (b) The Board shall be composed of the following:
 - 1. Three master well drillers whose collective experience represents each geologic area of the State and each drilling method allowed under this chapter;
 - 2. One member who is a well driller in any classification established by the Department;
 - 3. One member not employed by the State and who has no pecuniary involvement in well drilling or pump installing;
 - 4. Three representatives of the Department; and
 - 5. One licensed pump installer.
- (c) All Board members shall be appointed for a term of three years with three members appointed or reappointed each year.
 - 1. A Board member may be removed by the Commissioner upon a determination that the Board member exhibited misconduct, incompetence, neglect of duty or for other good cause shown.
- (d) Board members, except for those who are Department employees, shall receive reimbursement for travel expenses in accordance with departmental policies and procedures which the Department determines are necessary and incident to the position.
- (e) At least once each year, the Commissioner shall call for meetings of the Board, having a quorum of five or more members of which at least three shall be licensees.
- (f) The duties of the Board shall include, but not be limited to, the following:
 - 1. Review applications for new licenses and make recommendations as follows:
 - i. Ascertain whether the applicants have met the qualifications and experience requirements set forth at N.J.A.C. 7:9D-1.8(a);
 - ii. Review exam results to determine if applicants have passed the required licensing exams set forth at N.J.A.C. 7:9D-1.8(a);
 - iii. Ascertain eligibility of the applicant consistent with N.J.A.C. 7:9D-1.8(a)2;
 - iv. Make a recommendation to the Department for the issuance or denial of an application for a license pursuant to this chapter; and
 - v. Review the compliance record of an applicant;

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2. Make a recommendation to the Department concerning the renewal of a license by reviewing the applicant's compliance with the continuing education requirements at N.J.A.C. 7:9D-1.9(f);
3. Make a recommendation to the Commissioner for suspension or revocation of a license in accordance with (i) below;
4. Review and recommend courses that fulfill the continuing education point requirements set forth at N.J.A.C. 7:9D-1.9(f), in accordance with (j) below;
5. Review certification examinations required for licensure pursuant to N.J.A.C. 7:9D-1.8;
6. Review and modify the content of the New Jersey modules of the examinations required for licensure pursuant to N.J.A.C. 7:9D-1.8;
7. Recommend to the Department amendments to this chapter; and
8. Make a recommendation to the Department regarding alternative materials, technologies, or installation methods in accordance with N.J.A.C. 7:9D-2.8(c).

(g) The Board shall make recommendations on licensure or denial as follows:

1. An applicant may be recommended for licensure where:
 - i. The eligibility requirements related to work experience have been satisfied pursuant to N.J.A.C. 7:9D-1.8;
 - ii. A passing grade has been obtained on all required certifications; and
 - iii. A completed application has been submitted to the Department; and
2. An applicant may not be recommended for licensure where:
 - i. A final administrative order or judicial order has been issued pursuant to this chapter or the applicant has not complied with a final unstayed order issued by the Department;
 - ii. Supporting documentation for an application for a license uses experience from a well that was constructed in violation of this chapter;
 - iii. Another license issued to the applicant under this chapter has been revoked and/or the terms of the revocation have not been resolved;
 - iv. Another license issued to the applicant under this chapter has been suspended and the applicant has not resolved the issues related to the suspension; or
 - v. Payment or an arrangement to pay a final administrative penalty or a court-imposed penalty has not been made.

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- (h) A recommendation shall be adopted at the next scheduled meeting following completion of the written examination and submission of a complete application for a license required pursuant to N.J.A.C. 7:9D-1.8.
- (i) For suspension or revocation of a license, the Board shall make recommendations to the Commissioner as follows:
 - 1. Any complaint or charges made against a licensee indicating that the licensee may be or may have engaged in violation(s) of the Act or any rule adopted pursuant thereto, as stated at N.J.A.C. 7:9D-4.6(a), shall be submitted to the Board in writing pursuant to N.J.A.C. 7:9D-1.17 and sworn to by the complainant.
 - 2. At the next scheduled Board meeting following filing of the sworn complaint or charges that are received at least 30 days prior to the next scheduled meeting, the Board shall determine if the complaint or charges shall be heard or shall be dismissed as unfounded or trivial. If the Board determines to hear the charges, the Board shall schedule a hearing within three months of the date on which the sworn complaint or charges were presented to the Board, unless the Board determines that good cause exists for delay.
 - i. The Board shall serve notice of the charges or complaint on the licensee by certified mail, return receipt requested, or personal service at the address on file with the Department, a minimum of 45 days prior to the date of the scheduled hearing. This notice shall include:
 - (1) The date, time, and place of the hearing;
 - (2) A copy of the sworn complaint or charges and any documentation regarding the complaint or charges;
 - (3) A statement of the licensee's right to appear personally or by counsel, to question witnesses regarding the complaint or charges and to produce evidence in the licensee's defense;
 - (4) The licensee's obligation, at least 30 calendar days prior to the hearing, to advise the Board if the licensee or counsel intends to appear at the hearing; and
 - (5) The licensee's obligation, at least 30 calendar days prior to the hearing, to provide to the Board any evidence, materials, statements,

documents, list of witnesses, and any other information the licensee believes will assist the Board in making its recommendation.

- ii. The Board may require by subpoena or in writing, the attendance of witnesses at the hearing and the production at the hearing of any books, papers, and/or documents as it may require;
 - iii. The Board shall hold the hearing to review the complaint and charges, and to hear testimony and receive evidence of the licensee, the Department, and any witnesses. At the hearing, the licensee shall have the right to appear personally and/or by counsel and to question witnesses and/or produce evidence in the licensee's defense.
 - iv. The Board shall review all evidence and testimony presented during the hearing and shall conduct deliberations in accordance with the Senator Byron M. Baer Open Public Meetings Act, N.J.S.A. 10:4-6 et seq.
 - v. Subsequent to the conclusion of the hearing, the Board shall vote to dismiss the charges or to recommend that the Commissioner suspend a license for a period of less than one year or revoke it indefinitely. A recommendation may include conditions related to the recommended suspension or revocation.
 - vi. Subsequent to the conclusion of the hearing, if the Board recommends revocation or suspension, the Board shall submit the recommendation in writing to the Commissioner accompanied by all documentation reviewed during and resulting from the hearing and a detailed basis for the recommendation.
 - vii. The licensee and the Department shall be notified of the Board's recommendation.
3. After one year from the date of revocation and once all conditions of the revocation are satisfied, a person whose license has been revoked may apply for a new license pursuant to N.J.A.C. 7:9D-1.8(a).
 4. A person whose license has been suspended may be reinstated, after the period of suspension has ended and all conditions of the suspension have been satisfied, upon review and approval of the Board.

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- (j) The Board shall review and recommend the seminars, workshops, training courses, college courses, or other means designated to fulfill the continuing education point requirements set forth at N.J.A.C. 7:9D-1.9(f), as follows:
1. The Board shall review a completed application made to the Department for the approval of a continuing education course pursuant to N.J.A.C. 7:9D-1.9(f) to ensure that it meets with the intent of the Act and covers subject matter related to the industry that is presented by a qualified instructor.
 2. Course recommendations shall be reevaluated at the end of the three-year licensing cycle for which they were recommended;
 3. The Board shall not recommend continuing education points for courses where:
 - i. The principal focus of the course is direct sales of products;
 - ii. The course provider does not provide a certification that all information required to be submitted to the examination and CEP manager, including, but not limited to, documentation related to the course and certification of attendance, will be submitted in the required format no later than the end of the continuing education period;
 - iii. The course instructor is not qualified in the subject area; and
 - iv. The course content is not related to the well drilling or pump installing industry.

7:9D-1.11 Well permits

- (a) Except where the emergency procedures set forth in N.J.A.C.7:9D-1.12 apply, the owner or authorized agent of the land on which the well drilling activity is conducted and the New Jersey licensed well driller of the proper class shall sign and obtain a valid New Jersey well permit from the Department prior to drilling, constructing, installing, physically altering, or redesignating the use of any well.
- (b) The use of a well shall not be redesignated pursuant to (a) above unless the well driller is able to verify that the well to be redesignated satisfies all applicable construction standards established for the new use of the well.
- (c) A site-wide permit may be obtained for 10 or more wells for the same use, where the borehole and any annular space remaining after the installation of equipment necessary for the intended use of the well are sealed during construction or where the wells are installed to

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function in a series as part of a system, such as dewatering wells and wellpoints, temperature probes, electrodes, injection wells used for bioremediation or chemical remediation, wick drain, soil boring, soil vapor extraction, air sparge, closed-loop geothermal, cathodic protection, vibrating wire piezometer, pneumatic piezometer, and borros anchor.

- (d) Well permits are non-transferable and valid for a period of one year from the date of issuance, except for well permits issued for domestic use, which are valid for a period of two years.
 - 1. If the well is not constructed within the appropriate period, a new well permit shall be obtained from the Department prior to the start of any well drilling activity.
- (e) Except for general permits-by-rule established pursuant to (g) below, the well driller shall keep an electronic or paper copy of the State well permits and shall make the permits available onsite at all times for inspection by any State, county, or local official. The well driller shall provide the property owner with a copy of the permit in advance of drilling activity, which shall be made available for inspection upon request of any State, county, or local official.
- (f) A State well permit shall be required prior to the construction of all wells as described in N.J.A.C. 7:9D-2, except for those wells described in (g) and (h) below. An applicant for a permit to drill, construct, install, physically alter, or redesignate the use shall submit an application as follows:
 - 1. For each well requiring a permit, a well permit application shall be submitted via the Department's electronic permitting system, which requires the owner's name and address, name of facility, well driller's name and address, the proposed diameter, the proposed depth, the proposed pumping capacity, the type of well, the proposed location of well in relation to any building structure and the potential sources of contamination identified in N.J.A.C. 7:9D-2.7(a) through (c), the date of application, and the electronic certification of the well driller who has submitted the application form. For applications that cannot be accurately submitted via the Department's electronic permitting system or where applicants have no access to a computer, the Department requires the submission of an application on a paper form prescribed by the Department. In addition to the information listed in this paragraph, a completed paper application requires the signature of the property owner, the signature of the

- well driller, and the New Jersey registration number of the well driller submitting the paper application.
2. For applications for public community water supply wells, including supply and test wells for future potable use, the following additional information shall be required:
 - i. The permit application number of the Permit to Construct the public community water supply wells required pursuant to N.J.A.C. 7:10-11; and
 - ii. All well permits submitted for public community water supply or test wells for future potable use shall include a copy of the schematic drawing of the proposed or existing well construction.
 3. The proposed well location (horizontal data point), as well as the method used to obtain the proposed well location, shall be reported in all well applications according to (f)2i through iv below. Explanatory information and program contacts are provided on the Department's website at www.nj.gov/dep/watersupply or by contacting the Department pursuant to N.J.A.C. 7:9D-1.17.
 - i. All well location coordinates shall be mapped within 100 feet of the actual proposed location. The mapping method used shall have horizontal accuracy of at least 30 meters.
 - ii. Horizontal data points shall be submitted in New Jersey State Plane coordinates using the North American Datum of 1983 (NAD 1983), and shall conform to N.J.A.C. 7:1D Appendix A, New Jersey Department of Environmental Protection Geographic Information System Mapping and Digital Data Standards, incorporated herein by reference, as amended and supplemented. This can also be found electronically at: http://www.nj.gov/dep/rules/rules/njac7_1d.pdf.
 - iii. Well locational information shall be reported using one of the following methods:
 - (1) Global Positioning System (GPS). GPS data shall be obtained in accordance with Department standards set forth at N.J.A.C. 7:1D Appendix A. More information on GPS is available on the Department's Bureau of Geographic Information Systems' website at <http://www.nj.gov/dep/gis>. The GPS coordinates shall be collected by the well drillers as close as possible to the proposed well location;

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(2) NJ-GeoWeb. Access to NJ-GeoWeb and a tutorial is available through the Department's Bureau of Geographic Information Systems' (BGIS) website at <http://www.nj.gov/dep/gis>; or

(3) Survey. All surveyed coordinate locations for a proposed well shall be established by a New Jersey licensed land surveyor.

(g) As provided by N.J.S.A. 58:4A-14a(2), the following activities are considered general permits-by-rule and may be conducted by a well driller without an individual permit issued by the Department:

1. The repair of any well to include redevelopment or in kind well screen replacements;
2. The installation of pitless well adapters;
 - i. Pitless well adapters may also be installed by licensed pump installers without an individual permit.
3. Soil borings and any Category 4 wells that are 50 feet or less in total depth and 8.5 inches or less in borehole diameter;
4. Cathodic protection wells which are 50 feet or less in total depth and six inches or less in borehole diameter; and
5. Dewatering wells or dewatering wellpoints that are 25 feet or less in total depth and six inches or less in borehole diameter; and
6. Elevator jackholes or boreholes requiring casing as per N.J.A.C. 7:9D-2.5(c) that are installed in a manner that is protective of groundwater in accordance with the New Jersey Department of Community Affairs, Division of Codes and Standards, Uniform Construction Code, N.J.A.C. 5:23 and the American Society of Mechanical Engineers, Safety Code for Elevators and Escalators at A17.1, which are incorporated herein by reference, as amended and supplemented.

(h) Any activity performed pursuant to (g) above shall be performed and completed by a well driller and any resulting well shall be constructed and decommissioned in accordance with N.J.A.C.7:9D-2 and 3, except that no well record or well decommissioning report shall be required.

(i) Where appropriate, the Department shall, as a condition of a well permit, require that a well driller comply with one or more of the following conditions:

1. Limit or modify the depth, screened interval or open hole interval, design, well location and/or specify special or alternative construction methods used;

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2. Provide advanced notice of drilling in order to allow for the inspection of the well site by authorized representatives and/or provide for the taking of geophysical logs, geologic or water samples as necessary; and/or
 3. Any requirement deemed necessary by the Department to protect public health and/or the subsurface and percolating waters of the State.
- (j) The owner of the property on which a well is drilled shall be responsible for ensuring that all information provided to the well driller for the well permit application is true, accurate, and complete. The well driller shall be responsible for providing accurate information regarding the property, the property owner information, the well location, and proposed construction information on the well permit application in accordance with (f) above. In cases where the property owner has designated an authorized agent in writing, the agent shall assume the owner's responsibility for the information on the permit application.
- (k) The well permit application shall be returned without review to the well driller if the Department determines that:
1. The application is incomplete, contains inaccurate information, lacks sufficient information, or is illegible; or
 2. The application is not accompanied by the required fee.
- (l) Any request for deviation from standards pursuant to N.J.A.C. 7:9D-2.8 shall be submitted to the Department.

7:9D-1.12 Provisions for issuance of emergency well drilling permits

- (a) The Department may issue an emergency well permit to minimize actual or avert potential harm to human health, the environment, or property.
- (b) A well driller requesting an emergency well permit under this section shall contact the Department on the day of the emergency or, when the emergency occurs after business hours, on a weekend, or on a holiday, the next working day thereafter. The well driller must submit a completed well permit application via the Department's electronic permitting portal prior to the start of any well drilling activity, except as follows:
1. For well permits that cannot be submitted electronically, the well driller shall submit the application via facsimile pursuant to N.J.A.C. 7:9D-1.17 prior to the start of drilling. Within five business days of the emergency well permit number issuance,

- the well driller shall submit to the Department a completed well permit application, including the original signatures of the owner and well driller and fees. The Department may not issue emergency well permits to applicants who repeatedly fail to submit the completed well permit application within five days.
2. The well driller shall not apply for an emergency permit for a Category 1 or Category 2 well located in an area identified via the Department's well permitting portal as a known contaminated area or areas of known or suspected salt water intrusion or when the proposed location is within 500 feet of any salt water or brackish water body, without prior consultation with the Department. The driller shall contact the Department in writing to request consultation regarding construction prior to submitting an emergency well permit application.
- (c) The Department, upon issuance of an emergency permit, shall assign to the well driller an emergency well drilling permit number and specify the date of approval. The well driller shall make an electronic or paper copy of the approved permit available for any onsite inspection by any authorized local, county, State, or Federal official.
- (d) All emergency wells must meet construction standards, including those for a known or suspected contaminated area or where there is known or suspected salt water intrusion. The Department shall deny a permit for wells not constructed in accordance with this chapter. In this instance, the well driller shall maintain a copy of the completed permit application onsite for inspection by any authorized local, county, State, or Federal officials.

7:9D-1.13 Provisions for issuance of expedited well drilling permits

- (a) The Department may issue an expedited well permit for those well permit applications initially received via telefax machines or other electronic media. The expedited permit processing service can be utilized only in conjunction with the special dedicated non-lapsing account established under N.J.A.C. 7:9D-1.9(f) or any other Department approved payment method.
- (b) A licensed well driller requesting an expedited well permit under this section shall properly complete the appropriate well permit application form and send a copy to the Department via telefax machine or other electronic media.
- (c) Upon receipt of a properly completed permit application via electronic media, the Department shall verify that sufficient funds exist in the driller's sub-account to cover the

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appropriate well permit fee and the additional fee for the expedited service as per N.J.A.C.

7:9D-1.16(b). Upon this finding, the Department shall transmit an approved copy of the well permit to the licensed driller via telefax machine or other electronic media.

- (d) The well driller shall submit the completed well permit application form (hard copy) to the Department within five business days of the expedited well permit number issuance. The well driller shall assure that the assigned well permit number is properly noted on the application form.
- (e) An expedited well permit approval may be issued for a public community supply well only in those cases where the Department has issued its approval to construct the well in accordance with the New Jersey Safe Drinking Water Act rules, N.J.A.C. 7:10.

7:9D-1.14 Provisions for denial, revocation, or cancellation of well permits

- (a) The Department shall deny the issuance of a well permit upon a determination of the following:
 - 1. The well driller has failed to pay the required initial or renewal licensing fee, pursuant to these rules or the Subsurface and Percolating Waters Act. Such action taken by the Department to deny such well permit applications shall not restrict or prohibit the property owner from securing the services of another New Jersey licensed well driller to obtain a permit to drill well; or
 - 2. The site where the well is to be drilled is designated by the Department as an area where wells may not be constructed, including but not limited to contaminated aquifers, areas of salt water intrusion, and other areas where environmental remediation may be adversely affected by the construction and/or operation of wells.
- (b) The Department may revoke a well permit upon a determination of the following:
 - 1. The permit application contained false or inaccurate information; or
 - 2. The owner, well driller, or both failed to comply with any requirement of the Act or this subchapter or has not complied with one or more conditions of the State well permit issued for the particular well.
- (c) Within 90 days after the date of expiration of a well permit, the well driller shall cancel all approved State well permits which have expired and for which well construction was never initiated. All cancellations shall be submitted using the Department's electronic permitting system. If the original well permit was issued on paper, the well driller may submit a paper

cancellation form available on the Department's website pursuant to N.J.A.C. 7:9D-1.17, which includes well permit number(s), name of owner, signature of drilling contractor, registration number, and date.

7:9D-1.15 Well record and well decommissioning reporting requirements

(a) All well records shall be maintained as follows:

1. Within 90 days of completion of the drilling, constructing, installing, repairing, replacing, redesignating, or modifying any well requiring a permit to drill, the licensed well driller who performed the work or provided the onsite supervision shall submit a completed well record via the Department's electronic permitting system. For well records that cannot be accurately submitted via the Department's electronic permitting system or where applicants have no access to a computer, the Department may allow submission of a well record on a paper form prescribed by the Department. In addition to the information listed in (a)3 below, a completed paper well record requires the signature of the well driller submitting the paper well record.
 - i. A well is completed when all drilling and the physical construction of the well has been completed by the well driller.
2. Where a well is equipped with a pump having a capacity of 70 gpm or more and the equipment is installed after the well record has been submitted, the well record shall be amended by the well driller or pump installer and resubmitted to the Department through the electronic permitting system within 90 days of installation of the pumping equipment. If the pump is installed by a pump installer or a well driller from a drilling company other than the one listed on the original well permit, the following information shall be submitted via e-mail pursuant to N.J.A.C. 7:9D-1.17: pump type, capacity, depth setting, horsepower, date of pump installation, well permit number, and name and license number of the person who installed the pump;
3. Well records shall be accurate, complete, and include, at a minimum, the following: the geologic log as defined in this chapter, the location of the well, the date of well construction and date well completed, the size and depth of the well, the diameter of the borehole and well casing installed, and the length of well casing, the length of any well screen or open hole interval, a description of all equipment, type and amount of grout, and materials used to construct the well, the static water level and yield of the

well, information on any permanent well pumping equipment installed by the well driller or pump installer, name and registration number of the well driller who constructed the well, and other such information pertaining to the construction of the well; and

4. The as-built location of the well shall be reported in all well records as follows:
 - i. All well location coordinates shall be mapped within 10 feet of the actual location. The mapping method used shall have horizontal accuracy of at least five meters.
 - ii. Horizontal data points shall be submitted in New Jersey State Plane coordinates using the North American Datum of 1983 (NAD 1983), and shall conform to N.J.A.C. 7:1D Appendix A, "New Jersey Department of Environmental Protection Geographic Information System Mapping and Digital Data Standards," which is incorporated herein by reference, as amended and supplemented, and can also be electronically found at: http://www.nj.gov/dep/rules/rules/njac7_1d.pdf.
 - iii. Well locational information shall be reported using one of the following methods:
 - (1) Global Positioning System (GPS). GPS data shall be obtained using receivers that are either mapping grade or resource grade in accordance with Department standards set forth at N.J.A.C. 7:1D Appendix A. More information on GPS is available on the Department's Bureau of Geographic Information Systems' web site at <http://www.nj.gov/dep/gis/>. The GPS coordinates shall be collected by the well drillers as close as possible to the as-built well location; or
 - (2) Survey. All surveyed coordinate locations for an as-built well shall be established by a New Jersey licensed land surveyor.
- (b) Where a site-wide permit is issued, one well record form shall be submitted for all wells that are the subject of that permit. The information submitted shall include the total number of wells installed, a site plan depicting the location of each well, the site specific local identification name or number, total depth, diameter, and any additional information requested by the Department.
- (c) All well decommissioning reports shall be submitted as follows:

1. Within 90 days of completion of the decommissioning of a well, the well driller who decommissioned the well or who provided the onsite supervision of the well decommissioning shall submit a completed well decommissioning report and any relevant attachments, via the Department's electronic permitting system. For well decommissioning reports that cannot be accurately submitted via the Department's electronic permitting system or where applicants have no access to a computer, the Department may allow submission of a well decommissioning report on a paper form prescribed by the Department. In addition to the information listed in (c)2 below, a completed paper well decommissioning report requires the signature of the well driller submitting the paper well decommissioning report.
2. A well decommissioning report shall include:
 - i. The date(s) the well was decommissioned;
 - ii. The permit number (if available) of the well decommissioned;
 - iii. The authorization number for the decommissioning plan approval in accordance with N.J.A.C. 7:9D-3.1, including the date and name of the Department reviewer, if applicable;
 - iv. The property owner's name and address;
 - v. The facility and location information where the well was located, including county, township, lot, and block;
 - vi. Local well identification number (ID), where applicable;
 - vii. Well use;
 - viii. The total well depth, well diameter, well casing materials, and well screen materials;
 - ix. The method and a description of the type and amount of materials used to decommission the well;
 - x. The drilling company name and address;
 - xi. The name and either the license or registration number of the driller who decommissioned the well; and
 - xii. The location of the well shall be reported in all well decommissioning reports in accordance with (a)4 above.
3. Where a site-wide permit is issued, and only a portion of the wells drilled under that permit are decommissioned, one well decommissioning report representing the

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deepest well that was decommissioned shall be submitted and a table listing the site specific local identification name or number and depths of all the decommissioned wells must be attached.

7:9D-1.16 Fees for permit to drill well

(a) A non-refundable permit fee is required for any well constructed pursuant to this chapter.

Payment shall be made by electronic check or credit card. In the case of a paper permit application, payment shall be made by check or money order made payable to "Treasurer, State of New Jersey" and submitted with the appropriate permit application to the Department pursuant to N.J.A.C. 7:9D-1.17.

(b) Well permit fees are assessed as follows:

1. Each permit application for any well other than those described in (b)2 below shall be accompanied by a fee of \$130.00;
2. Each permit application for a well equipped with a pump capable of producing 70 gallons per minute or more shall be accompanied by a fee of \$250.00;
3. Each site-wide permit application submitted pursuant to N.J.A.C. 7:9D-1.11(c) shall be accompanied by a fee of \$1,300.

7:9D-1.17 Program information

(a) Unless otherwise specified, forms, well search procedures, licensing information, approved alternate materials and technologies pursuant to N.J.A.C. 7:9D-2.8, and other information related to this chapter can be requested from the Division of Water Supply and Geoscience at the address in (b) below, by telephone at (609) 984-6831, by fax at (609) 633-1231, by e-mail at wellpermitting@dep.nj.gov, or obtained through the Division's website at www.nj.gov/dep/watersupply. Further information about the Department can be accessed at www.nj.gov/dep.

(b) Fees, forms, requests for approval, and correspondence related to this chapter shall be submitted to the Well Permitting Program, Division of Water Supply and Geoscience, New Jersey Department of Environmental Protection, Mail Code 401-04Q, PO Box 420, Trenton, NJ 08625-0420, or by e-mail at wellpermitting@dep.nj.gov.

(c) Correspondence or other information directed to the State Well Drillers and Pump Installers Examining and Advisory Board shall be submitted in care of the New Jersey State Well

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Drillers and Pump Installers Examining and Advisory Board at the address specified in (b) above.

- (d) Requests for approval, forms, or other materials sent or delivered to the Department at an address other than those listed in (a) through (c) above shall not be deemed to have been received for the purposes of calculating review deadlines or other time periods under this chapter.
- (e) Changes in mailing address or telephone number pursuant to N.J.A.C. 7:9D-1.6(g) shall be submitted to the Well Permitting Program, Division of Water Supply and Geoscience, New Jersey Department of Environmental Protection, Mail Code 401-04Q, PO Box 420, Trenton, NJ 08625-0420, or by e-mail at wellpermitting@dep.nj.gov.

SUBCHAPTER 2. REQUIREMENTS AND PROCEDURES FOR THE CONSTRUCTION, INSTALLATION, OPERATION, AND MAINTENANCE OF WELLS

7:9D-2.1 Well categories

- (a) The following well categories are for the purposes of establishing general and specific well construction standards:
 - 1. Category 1 Potable Water Supply Wells: includes all public water supply wells (community and non-community), as defined in N.J.A.C. 7:10; non-public wells, domestic wells, and potable aquifer storage and recovery wells;
 - 2. Category 2 Non-Potable Water Wells: includes all wells that are used for water withdrawal, injection, or recharge including, but not limited to, fire protection, irrigation, test, industrial, livestock, non-potable aquifer storage, and recovery wells, cooling, open loop, and standing column geothermal, injection, and recharge wells;
 - 3. Category 3 Cased Environmental Resource and Geotechnical Wells: includes all cased non-water supply wells that are used for environmental engineering and remediation, or geotechnical investigation including, but not limited to, monitoring, air sparging, soil vapor extraction, recovery, observation wells, cathodic protection, methane gas extraction, borros anchors, inclinometers, extensometers, electrodes (including heated element wells), and injection wells used for bioremediation or chemical remediation;
 - 4. Category 4 Uncased Environmental Resource and Geotechnical Borings: includes all uncased non-water supply wells that are used for environmental engineering and

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remediation, or geotechnical investigation including, but not limited to, soil borings, probe holes, wick drains, uncased holes, and borings installed through the use of direct-push technologies.

5. Category 5 Closed-loop Geothermal Wells;
6. Category 6 Dewatering Wells: includes dewatering wells or dewatering wellpoints;
7. Category 7 Elevator Boreholes: includes boreholes or jackholes drilled for the installation of elevator shafts; and
8. Category 8 Oil and Gas Exploration Wells.

7:9D-2.2 General construction and maintenance requirements for all wells

(a) The following general construction requirements shall apply to the construction of all categories of wells pursuant to the Act:

1. A New Jersey licensed well driller shall be on-site and directly supervise each well drilling operation, and there shall be one licensed well driller of the proper class on site for each well drilling rig on site;
2. All water used in the construction, alteration, repair or decommissioning of any well shall be of potable quality;
3. All well drilling rigs, tools, pipe and other drilling equipment shall be maintained in a clean and operational state to prevent contamination to the well or work site;
4. The Department may prohibit for use in the construction or maintenance of any well any material or equipment that may pose a hazard to public health or the environment;
5. Any hazardous waste, including but not limited to, contaminated casing, cuttings, sediment, displaced water, or free product, generated during the drilling procedure shall be handled in accordance with N.J.A.C. 7:26G;
6. No existing well shall be built over by any realty improvement that would inhibit access to the well for any repair, replacement or decommissioning;
7. When permanent casing is to be driven into an undersized borehole, the borehole diameter shall be less than the inside diameter of the casing;
8. A drive shoe shall be placed on casing that is to be driven, and granular or powdered sodium-based bentonite shall be hydrated and pooled around the outside perimeter of the casing to create a protective barrier while drilling;

9. When casing is to be installed into an oversized borehole, the borehole diameter shall be at least four inches greater than the inside diameter of the well casing to be installed, except for the following:
 - i. Category 3 environmental resource and geotechnical wells, which must be constructed in accordance with N.J.A.C. 7:9D-2.4(d); and
 - ii. Category 5 closed loop geothermal wells, which must be constructed in accordance with N.J.A.C. 7:9D-2.5;
10. Where applicable, all annular space between well casings, and the annular space between any casing and borehole, shall be sealed immediately following the setting of the well casing, but no later than 24 hours after the well casing has been set in place. In unconsolidated formations, a head of drilling fluid shall be maintained in the borehole and the well driller shall ensure that the entire annular space is to be sealed is clear of obstruction(s);
11. A temporary outer casing of the same inner diameter as the oversized borehole may be installed to prevent cave-in provided the temporary casing is removed, if possible, during the sealing of the annular space;
12. A well shall not be screened or gravel packed in more than one water bearing unit as determined by the Department or across a confining unit unless explicitly authorized in a permit issued pursuant to this chapter in accordance with N.J.A.C. 7:9D-2.8;
13. Until construction of the well is completed, adequate protection shall be provided for the top of the borehole and/or the top of the well casing to prevent surface contamination from entering the well and to prevent a safety hazard during the drilling operation and when the well driller is not at the drilling site;
14. When the drilling of a borehole for any well is suspended, the borehole shall be considered abandoned and subject to the decommissioning requirements in N.J.A.C.7:9D-3.
 - i. Boreholes or partially constructed wells that are deemed to be inadequate for the intended use by the driller shall be immediately decommissioned in accordance with the requirements of N.J.A.C. 7:9D-3.
 - ii. Removal of the drilling rig from the borehole or incomplete well shall be allowable to conduct geophysical and hydraulic testing, to change or repair

drilling equipment, to enable the driller to accommodate changes in material or drilling methods, or to allow for the curing of grout.

15. Once the well has been installed, the well casing shall be securely capped until the well is placed in service or until the well is properly decommissioned. The cap shall be threaded onto the casing, or be a friction type device which locks onto the outside of the casing, or a blank sanitary well seal, or any other equivalent type of cap as may be approved by the Department;
16. All flowing wells shall be equipped with a water-tight cap which is threaded, slip-on or welded, and a control valve or necessary appurtenances to protect the integrity of the well construction and/or wellhead.
 - i. There shall be no overflow of water from the well which may become a public nuisance or violate any other New Jersey State law or regulation;
17. Unsuitable or non-productive wells that cannot be used for their intended purpose shall be decommissioned in accordance with N.J.A.C. 7:9D-3. These include, but are not limited to, wells which are abandoned during construction, are contaminated, exhibit a loss of supply or are damaged;
18. If the Department determines that any well system, or any appurtenance thereto, is not being properly maintained, or has deteriorated to such an extent that contamination might enter the well or enter the groundwater or constitute a physical hazard, the Department may order the property owner to hire a well driller to perform work on the well system or appurtenances thereto as is deemed necessary to prevent contamination of the groundwater or mitigate the physical hazard;
19. When permanent well pumping equipment is required for any well, all installation or replacement work shall be performed by a pump installer or master, journeyman, or journeyman (Class B) well driller. All such work shall conform with the standards set forth at N.J.A.C. 5:23-3.16 and 13:31-3;
20. Any portion of a borehole that is drilled into a confining layer or through a confining layer where the deeper aquifer will not be used, or any portion of a borehole that will extend 20 feet or more below the bottom of the completed well, shall be considered abandoned and that portion of the borehole shall be decommissioned prior to the completion of the well in accordance with N.J.A.C. 7:9D-3; and

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21. The State well permit number shall be prominently displayed and permanently affixed to each Category 1, 2, and 3 well, in addition to the site-specific well identification number set forth on the approved well permit application (for example, MW-1).

(b) The following additional construction requirements shall apply to the construction of any well pursuant to the Act that is installed in an area of known or suspected contamination or where there is known or suspected salt water intrusion:

1. Wells that will traverse through a known or suspected contaminated area into a lower water bearing unit shall be double-cased. The outer-most well casing shall be constructed into the first significant confining layer which separates the water supply from any such contamination. This casing shall extend at least 20 feet into the confining layer or to the base of the confining layer;
2. All wells with casing that extends through known or suspected salt water into fresh water shall be double-cased; and
3. The annular space between the casing and borehole shall be sealed in accordance with N.J.A.C. 7:9D-2.9 and 2.10. The annular space between all subsequent well casings installed shall also be permanently sealed to protect all underlying aquifers.

7:9D-2.3 Specific requirements for the construction and maintenance of Category 1 and Category 2 wells

(a) In addition to the well permitting requirements in N.J.A.C.7:9D-1 and the well construction standards in N.J.A.C. 7:9D-2.2, the following requirements shall also apply to all Category 1 wells:

1. All parts of the well system shall be tested, installed, designed, located, and constructed in accordance with all applicable sections of N.J.A.C. 7:10-11 or 12;
2. All wells shall be disinfected pursuant to the applicable requirements of N.J.A.C. 7:10-11 or 12 following installation, redevelopment, maintenance, well repair, and/or pump repair;
3. For potable water supply wells installed in unconsolidated formations:
 - i. All well casing shall be no less than four inches in inner diameter and no less than 50 feet in depth;
 - ii. The diameter of any well screen shall not be less than two inches; and

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- iii. All wells shall have a minimum length of 50 feet of grout seal extending from the top of the gravel pack or top of the well screen to grade.
 4. For potable water supply wells installed in consolidated formations, the well casing shall not be less than six inches in inner diameter; and
 5. All well systems that may require water treatment pursuant to (a)1 above shall conform with all applicable requirements set forth in N.J.A.C. 7:10-11 or 12.
- (b) In addition to the well permitting requirements in N.J.A.C. 7:9D-1 and the well construction standards in N.J.A.C. 7:9D-2.2, the following requirements shall also apply to all Category 1 and 2 wells:
1. No new or replacement Category 1 or Category 2 well shall be located or enclosed in a basement or cellar of a building;
 2. All well casings shall extend a minimum of 12 inches above grade and shall be equipped with pitless adapters or pitless well units. The pitless adapter or pitless well unit requirement does not apply to wells equipped with a turbine pump or to irrigation wells.
 - i. Exceptions to this 12-inch requirement are: those well casings located in a well pit or pump house where adequate protection from surface drainage or contamination is provided and those located in driveways as flush mount installations provided with a water tight lid; and
 - ii. All wells shall be equipped with a down-facing casing vent, screened to prevent the entry of insects and located at least 12 inches above the grade, except for:
 - (1) Wells located within the 100-year flood elevation, which shall be: installed with a watertight cap, where feasible; or equipped with a down-facing vent, screened to prevent the entry of insects and located at least 12 inches above the 100-year flood elevation; and
 - (2) Flowing wells, which shall be capped in accordance with N.J.A.C. 7:9D-2.2(a)16;
 3. Any repairs made to existing wells or pump systems, where the well head terminates below ground, shall include extending the well casing above grade and installing a pitless adapter. Extending the well casing above grade shall be accomplished by either welding additional casing on the existing casing, or the use of a gasketed,

water-tight casing adapter which complies with the standards for pitless adapters set forth at (b)6ii below;

4. The annular space between the casing and the oversized borehole shall be sealed in accordance with the requirements set forth in N.J.A.C. 7:9D-2.9 and 2.10;
5. All annular space between any well casings shall be sealed, excluding the annular space between a maintenance casing and any permanent casing; and
6. All permanent well pumping equipment, well pump controls, pitless well adapters and pitless well units for Category 1 and 2 wells shall be installed as follows:
 - i. A pitless well installation shall consist of either a pitless well unit or pitless well adapter, and a pitless well cap or a sanitary well seal;
 - ii. Pitless well units, pitless well adapters and pitless well caps shall be manufactured and installed in accordance with the Water Systems Council Performance Standards and Recommended Installation Procedures for Sanitary Water Well Pitless Adapters, Pitless Units, and Well Caps (PAS-97(04)), incorporated herein by reference, as amended and supplemented. The standard may be obtained from the Water Systems Council, National Programs Office, 1101 30th Street, N.W., Suite 500, Washington, DC 20007, Phone: (202) 625-4387, www.watersystemscouncil.org;
 - iii. The lateral discharge line from the well shall be covered with a minimum of three feet of earth and well pumps and appurtenant equipment shall be designed and installed to ensure adequate protection of the water supply and protection against freezing of the water;
 - iv. The hole used to install the lateral discharge line into the well casing shall be made in such a manner as to provide a watertight connection;
 - v. The exterior connection between the adapter and the well casing shall be a watertight seal either welded, threaded, or of a clamp-on gasket type. A clamp-on gasketed adapter shall be installed only on a well casing with a smooth, clean surface;
 - vi. At the point of attachment to the well casing, a pitless well unit shall be field-welded, threaded, or of the slip-on type with "O-ring" gasket, and shall be of watertight construction;

- vii. If the connection is by means of a field-weld, the pitless well unit shall be of a type specifically designed for a welded connection;
- viii. If the connection is of the slip-on type with "O-ring" gasket, the surface of the well casing shall be smooth and clean;
- ix. The field connection between the pitless well unit and the lateral discharge line shall be either threaded, flanged, welded, or a mechanical joint, and shall be constructed and installed so as to be watertight;
- x. Each well pump system shall have a foot-valve or a check valve;
- xi. In a screened well, the well pump setting and suction inlet shall be located so that the pumping level of the water cannot be drawn below the top of the screen;
- xii. Any well with a yield of less than five gpm shall be equipped with a low water level cut-off device;
- xiii. Any well with a pump capacity greater than the yield of the well shall be equipped with a low water level cut-off device;
- xiv. Whenever possible, pumping equipment shall be designed and located so as to avoid the need for a pump pit. A pump pit, if used, shall be of watertight construction and shall have a drainage system or sump pump installed to prevent flooding;
- xv. The pumping equipment shall be located so as to allow convenient access for the removal and repair of the pump and related appurtenances;
- xvi. Each pump shall be mounted so as to minimize vibration and noise and to minimize damage to the pump;
- xvii. A pressure sensing device, for example, a switch, transducer, or relay, and a thermal overload switch shall be included on all pump installations in accordance with manufacturer's specifications;
- xviii. A pressure relief device, such as a valve, is required on all pumping systems; and
- xix. Pump controls and accessories shall be housed outside of the well casing and either in a secured and protected building or otherwise secured and protected in accordance with manufacturer's specifications.

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(c) Category 1 and 2 wells installed in unconsolidated formations shall be constructed as follows:

1. When used, all well screens shall be properly sized to produce water free of sand and silt at the well head to the extent that the sand and silt will not interfere with the intended use and operation of the well system. For domestic wells, the well screen shall be properly sized to produce water free of sand and silt of five ppm or less.

(d) Category 1 and 2 wells installed in consolidated formations shall be constructed as follows:

1. All well casing shall be steel and shall conform to the minimum specifications and requirements set forth in Table 2 of (e)4 below;
2. In accordance with one of the following:
 - i. Each well shall have a minimum of 50 feet of casing and be constructed with a minimum of 20 feet of casing set into unweathered rock. All wells shall have a minimum length of 50 feet of grout seal extending from the bottom of the casing; or
 - ii. Each well shall be constructed by drilling an oversized borehole at least four inches larger than the casing diameter to a minimum depth of at least 80 feet, provided rock is not encountered. Prior to inserting the casing, the borehole shall be filled with bentonite grout and then the casing shall be driven until refusal as a result of encountering competent rock. The remaining annular space shall be grouted under pressure using a tremie pipe; and
3. If geologic conditions, for example, broken rock, mud seams, etc., are encountered when drilling below the base of the permanent casing, which prevent the driller from constructing the well in accordance with this subchapter, a deviation from the construction standards shall be requested in accordance with N.J.A.C. 7:9D-2.8, before proceeding any further with the well installation.

(e) All materials used for the maintenance, replacement, repair, or modification of any Category 1 or 2 well shall meet the following requirements:

1. All well casing shall be approved for its intended use by the National Sanitation Foundation (NSF) and either the American Water Works Association (AWWA) or the American Society for Testing and Materials (ASTM);
2. Outer casings and liners shall be of the same weight and thickness as the permanent casings;

3. Plastic well casing shall conform to the following requirements:
 - i. Plastic well casing shall be limited to use in unconsolidated formations;
 - ii. Plastic well casing or screen shall not be driven;
 - iii. Plastic well casing shall meet the requirements specified in the American Society for Testing and Materials (ASTM) Standard F480-12, "Standard Specification for Thermoplastic Well Casing Pipe and Couplings Made in Standard Dimension Ratios (SDR), SCH 40 and SCH 80," incorporated herein by reference, as amended and supplemented, which is available at www.astm.org;
 - iv. Plastic well casing shall also meet the requirements of the NSF International Standard Number 14; "Plastics Piping System Components and Related Materials," incorporated herein by reference, as amended and supplemented, which is available at www.nsf.org;
 - v. Each length of plastic casing shall be marked in accordance with the ASTM marking specifications noted in ASTM standard F480 (see (c)3iii above); and
 - vi. Plastic well casing may be joined by solvent welding or mechanically joined by threads or other means depending on the type of material and its fabrication. Solvent cement used for solvent welding shall meet the specifications for the type of plastic well casing being used. Solvent cement shall be applied in accordance with the instructions of the solvent and casing manufacturer;
4. Standard steel casing shall be manufactured and installed to conform to ASTM designation A-53/A53M, which is available at www.astm.org, or American Petroleum Institute (API) standard Specifications API 5CT and API 5D-1999, or API 5CT and API 5D, incorporated herein by reference, as amended and supplemented. The latter are available from API at www.api.org. All steel casing shall be manufactured to conform to the American National Standards Institute (ANSI) dimensions and shall conform to the minimum specifications and requirements listed in Table 2 below:

TABLE 2

Minimum Steel Casing Pipe Weights and Dimensions

Nominal Size (inches)	Weight (lb. per foot)*		Threads reamed/ recessed & drifted couplings	Thickness (inches)	Diameter	
	Plain end	Threads & couplings			Outside	Inside
4	10.79	10.89	11.00	.237	4.500	4.026
5	14.62	14.81	15.00	.258	5.563	5.047
6	18.97	19.18	19.45	.280	6.625	6.065
8	24.70	25.55		.277	8.625	8.071
10	40.48	41.85		.365	10.750	10.020
12	43.77	45.45		.330	12.750	12.090
14	54.57	57.00		.375	14.000	13.250
16	62.58	65.30		.375	16.000	15.250
18	70.59	73.00		.375	18.000	17.250
20	78.60	81.00		.375	20.000	19.250

*Nominal weight based on length of 20 feet including coupling.

5. Stainless steel casing shall be manufactured and installed to conform to ASTM standard A778-01, A312/A312M-11 and A409/A409M-09, which is incorporated herein by reference, as amended and supplemented, which is available at www.astm.org.
 6. Well screens other than those commercially manufactured shall be constructed by creating slots or openings in approved casing materials as specified at (e) above.
- (f) All gravel or filter packs installed in Category 1 or 2 wells shall conform to the following requirements:
1. All gravel or filter pack placed between the borehole and the well screen shall be clean, washed with potable water, and disinfected prior to emplacement, or provisions made for performing disinfection in place. Gravel pack shall be disinfected in accordance with American Water Works Association (AWWA) standard for disinfection of wells ANSI/AWWA-C654, which is incorporated herein by reference,

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- as amended and supplemented, and available at www.awwa.org and may include the introduction of granular chlorine or chlorine tablets during the gravel pack operation;
2. The grain size and gradation of the filter material shall be selected to stabilize the aquifer material during well development;
 3. The gravel pack shall not extend into any confining layer above the screen:
 - i. For well screens less than or equal to 20 feet in length, the filter pack shall not extend more than 10 feet above the top of the well screen;
 - ii. For well screens greater than 20 feet in length, the filter pack shall not extend above the top of the well screen by more than 50 percent of the length of the well screen;
 - (1) For single cased wells, the filter pack shall not extend more than 50 feet above the top of any well screen; and
 - (2) For multiple cased wells constructed with ungrouted maintenance casings, the filter pack shall not extend more than 75 feet above the top of the well screen.
 4. Gravel refill pipes may be installed if they terminate above the ground surface, are sealed in place, are provided with water tight caps and the well casings are eight inches or greater in diameter; and
 5. The filter-pack or gravel shall be placed around each screen in a manner that will enhance well production and assist in preventing sand and silt infiltration through the well screen following well development. Filter materials may be introduced into a well provided that:
 - i. For gravity placement, the filter material shall be poured into the annular space around the screen at a measured and uniform rate; and
 - ii. For tremie pipe placement, the filter material shall be placed through a tremie pipe that has been lowered to the bottom of the well.
- (g) In addition to the general well permitting requirements in N.J.A.C. 7:9D-1 and the construction requirements in N.J.A.C. 7:9D-2.2 and 2.3, the following specific requirements shall apply to all open loop geothermal wells constructed for heating and cooling:
1. Unless otherwise approved by the Department, all return water shall be through a return well to the originating water bearing unit. No flowing wells may be used as

- part of an open loop geothermal system unless the flowing water is captured and returned to the originating water bearing unit;
2. All water returned to the originating aquifer shall, except for a difference in temperature and oxygen content, have the same physical and chemical characteristics as were present prior to withdrawal. No corrosion inhibitors, water softeners or other additives shall be added to water that will be returned to the originating aquifer;
 3. The annular space between the casing and the oversized borehole shall be sealed in accordance with the requirements in N.J.A.C. 7:9D-2.9 and 2.10; and
 4. Wells that also provide a potable water supply shall be constructed according to the requirements specified for Category 1 wells.

7:9D-2.4 Requirements for the construction and maintenance of all Category 3 and 4 wells

- (a) In addition to the well permitting requirements at N.J.A.C. 7:9D-1 and the general construction specifications at N.J.A.C. 7:9D-2.2, the following specific requirements shall apply to all Category 3 and 4 wells:
1. Copies of the site-specific well construction requirements shall be maintained at the drilling site by the well driller;
 2. All annular space between the casing and the oversized borehole shall be sealed in accordance with the requirements in N.J.A.C. 7:9D-2.9 and 2.10;
 3. For all monitoring wells, no more than 25 feet total of well screen shall be installed. For all monitoring wells constructed without a screen, there shall be no more than 25 feet total of open borehole;
 4. No more than five feet of filter pack shall be placed above the top of the well screen;
 5. Protective steel casing shall be installed to a minimum depth of two feet below grade, equipped with a steel locking cap and securely set in concrete. This requirement shall only apply to all above grade well installations and does not apply to wells that require connection to a manifold system, for example, soil vapor extraction wells, or groundwater treatment wells;
 6. All flush-mounted wells shall be constructed with manholes, locking caps, and seals to prevent leakage of surface water into the well. This requirement does not apply to

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wells that require connection to a manifold system, for example, soil vapor extraction wells, or groundwater treatment wells; and

7. Below-grade well installations shall be in accordance with the Department's Field Sampling Procedures Manual, August 2005, as amended and supplemented.

(b) Category 3 and 4 wells in consolidated formations shall be constructed in accordance with the following:

1. Wells drilled to screen across the overburden bedrock interface shall be constructed using a maximum of 10 feet of well screen. In all other cases, the borehole drilled to case off the overburden shall extend a minimum of 10 feet into competent bedrock; and
2. If a well screen and riser pipe are to be installed, applicable well specifications for wells shall be adhered to pursuant to N.J.A.C. 7:9D-2.2.

(c) Category 3 and 4 wells in unconsolidated aquifers where a confining layer(s) exist shall be constructed in accordance with the following:

1. Any screened interval or filter pack shall not extend across the interface of a confining layer and an aquifer.

(d) Category 3 and 4 wells in unconsolidated aquifers using direct push technologies are permitted to be installed to a maximum depth of 30 feet and grouted in accordance with N.J.A.C. 7:9D-2.9 and 2.10.

(e) Category 3 and 4 geotechnical borings involving the use of direct-push technologies shall be installed such that the borehole can be decommissioned in accordance with N.J.A.C. 7:9D-3.

(f) In addition to the general well drilling and well permitting requirements in N.J.A.C. 7:9D-1 and 2.2, the following requirements shall apply to the construction of all cathodic protection wells:

1. The borehole diameter shall be at least four inches larger than the diameter of the anode, cathode, or casing to be used;
2. The top of a cathodic protection well casing shall be fitted with watertight caps, covers, "U" bends, or equivalent devices or housings to prevent entry of surface water and pollutants. All such covers shall allow venting of gases from the well; and
3. The annular space between the casing and the oversized borehole shall be sealed in accordance with the requirements in N.J.A.C. 7:9D-2.9 and 2.10.

7:9D-2.5 Requirements for the installation of Category 5, 6, and 7 wells

(a) In addition to the well permitting requirements in N.J.A.C. 7:9D-1 and the well construction requirements in N.J.A.C. 7:9D-2.2, the following requirements apply to all Category 5 vertical closed loop geothermal wells:

1. The vertical closed loop geothermal well shall be constructed using a borehole with sufficient diameter to allow for proper grouting;
2. The tremie or grout pipe shall be installed to the total drilled depth upon completion of the borehole. The entire annular space between the closed loop and the uncased borehole shall be tremie pressure grouted in accordance with N.J.A.C. 7:9D-2.9 and 2.10 using the following materials:
 - i. Sodium-based bentonite, cement-based geothermal grout in accordance with Table 4 at Appendix A, bentonite-based geothermal grout mixed in accordance with Table 5 at Appendix A and incorporated herein by reference or equal for wells constructed into unconsolidated formations; and
 - ii. Cement-based geothermal grout or bentonite-based geothermal grout containing a minimum silica sand content of 200 pounds per 50 pounds of bentonite for wells constructed into consolidated formations;
3. The circulating fluids utilized in the closed loop system shall be potable water or an appropriate mixture of potable water with one of the following antifreeze solutions:
 - i. Calcium Chloride;
 - ii. Ethanol;
 - iii. Potassium Acetate;
 - iv. Potassium Carbonate;
 - v. Propylene Glycol; or
 - vi. Sodium Chloride;
4. Pipe material for the underground buried portion of the heat exchanger shall be polyethylene pipe as specified below:
 - i. 160 psi Polyethylene - All material shall maintain a 1600 psi hydrostatic design basis at 73.4 degrees F per ASTM D-2837-11, and shall be listed in PPI TR4 as a PE3408 piping formulation. The material shall be a high density, polyethylene extrusion compound having a cell classification of PE345434C or PE355434C with a UV stabilizer of C, D or E as specified in ASTM D-

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3350-10A with the following exception: this material shall exhibit zero failures (FO) when tested for 192 or more hours under ASTM D-1693-08, condition C, as required in ASTM D-3350-10A, incorporated herein by reference, as amended and supplemented;

ii. PEXa crosslinked high density polyethylene piping manufactured in accordance with ASTM F-876 to a Standard Dimension Ratio (SDR) of 9 and rated at 160 psi at 73.4 degrees Fahrenheit per ASTM D-2837, incorporated herein by reference, as amended and supplemented.

5. Buried pipe systems shall be joined so that the resultant assembly is leak-proof using one of the following methods:

- i. The heat fusion process in accordance with the pipe manufacturer's specifications;
- ii. Those joined using the International Ground Source Heat Pump Association (IGSHPA) approved mechanical stab fittings; or
- iii. Polymer electro-fusion fittings and cold-expansion compression-sleeve fittings for the joining of PEXa piping in accordance with IGSHPA and the manufacturer's specifications.

(b) In addition to the well permitting requirements in N.J.A.C. 7:9D-1 and the well construction standards in N.J.A.C. 7:9D-2.2, the following requirements shall apply to all Category 6 dewatering wells or dewatering wellpoints:

1. Any dewatering well or dewatering wellpoint installed pursuant to N.J.A.C. 7:9D-1.11(g) or that requires an individual or site-wide well permit shall be installed by a New Jersey licensed well driller of the proper class;
2. A dewatering well which penetrates a confined aquifer shall be installed by a New Jersey licensed master, journeyman or journeyman (Class B) well driller and constructed in accordance with the requirements in N.J.A.C. 7:9D-2.2;
3. The owner of the project requiring a dewatering system is responsible for obtaining all other necessary permits and for the hiring of a licensed dewatering well driller or a New Jersey licensed well driller of the proper class to install and properly decommission all dewatering wells or dewatering wellpoints;
4. A permit is required prior to the installation of any dewatering well or dewatering wellpoint in accordance with N.J.A.C. 7:9D-1;

5. The location and construction specifications for dewatering wells shall be as follows:
 - i. A dewatering well shall be located to facilitate temporary dewatering operations and shall be constructed and maintained to prevent surface flow or any other source of pollution from entering the well;
 - ii. Temporary erosion control measures shall be employed to reduce erosion caused by groundwater diversion including, but not limited to, berms, dikes, drains, soil stabilization matting, diversion channels, baled hay or straw, silt fences or sedimentation basins. All soil erosion control shall be in accordance with Standards for Soil Erosion and Sediment Control in New Jersey (see N.J.A.C. 2:90-1.3);
 - iii. The owner of the project where dewatering is taking place shall be responsible for the repair or replacement of any potable water well system which becomes contaminated, damaged, has reduced capacity, reduced water quality or is otherwise rendered unusable as a potable water well system as a result of the dewatering operation. All work shall be in accordance with this subchapter and N.J.A.C. 7:10-12, or N.J.A.C. 7:10-11; and
6. The requirements for the installation of dewatering well casings and screens are as follows:
 - i. The wall thickness of the dewatering well casing shall be selected to withstand the forces exerted on the well casing during both installation and removal;
 - ii. The dewatering well casing shall extend not less than 12 inches above the working grade of the well, except where the operation is under a vacuum and closed piping is maintained to prevent surface contamination from entering the well;
 - iii. The top of the dewatering well casing shall be capped with either a sanitary well seal, a metal plate welded into place or a threaded cap from date of installation until it is taken out of service and properly decommissioned. The device shall be constructed so as to prevent pollution or physical injury;
 - iv. The material used between the borehole and the dewatering well casing shall be clean and free of harmful material. Above grade, the material shall be placed around the well casing in a mound to divert surface waters away from the well casing;

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- v. When a gravel pack is not used, any annular space between the well casing and the wall of the borehole shall be sealed from the top of the screen or base of the casing pursuant to N.J.A.C. 7:9D-2.9 and 2.10;
 - vi. Dewatering well screens shall be sufficiently strong and durable to ensure that they may be removed intact from the dewatering well; and
 - vii. The screening of a dewatering well in more than one aquifer is prohibited.
- (c) In addition to the general well drilling and well permitting requirements in N.J.A.C. 7:9D-1 and 2.2, the construction of all Category 7 wells and boreholes shall be in accordance with the New Jersey Department of Community Affairs, Division of Codes and Standards, Uniform Construction Code at N.J.A.C. 5:23 and the American Society of Mechanical Engineers, Safety Code for Elevators and Escalators at A17.1, and shall meet the following requirements:
1. Wells constructed or boreholes drilled for the installation of elevator shafts or hydraulic cylinders shall be cased, sealed and maintained in a manner to prevent the vertical movement of water as a source of contamination to any aquifer;
 2. Casing shall either be driven into an undersized borehole or installed using the oversized borehole method. If the oversized borehole method is used, the borehole shall be at least four inches larger than the casing to be installed;
 3. The annular space between the casing and the oversized borehole shall be sealed in accordance with the requirements set forth in N.J.A.C. 7:9D-2.9 and 2.10; and
 4. To prevent any contaminants from entering the groundwater at the bottom of the casing, the bottom of the casing shall be:
 - i. Permanently capped prior to installation; or
 - ii. A neat cement plug at least two feet thick shall be installed at the bottom of the casing in accordance with 7:9D-2.9 after it is installed.

7:9D-2.6 Specific requirements for the installation of Category 8 wells

In addition to the general well drilling and well permitting requirements in N.J.A.C. 7:9D-1 and any applicable construction requirements in N.J.A.C. 7:9D-2.2, all oil and gas exploration wells shall conform to the installation and reporting requirements pursuant to N.J.S.A. 13:1M-1 et seq.

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7:9D-2.7 Minimum distance requirements

- (a) All new Category 1 and Category 2 wells shall be located at least five feet horizontally from a building or any portion thereof, except for a pump house.
- (b) All Category 1 wells and components shall be located no less than the minimum distances prescribed as follows (all distances are in feet):

Component	Building sewer	Septic tank	Distribution box	Disposal field	Seepage pit*	Dry well	Cess-pool	Fuel Storage tank
Well	25	50	50	100	150	50	150	25
Suction line	25	50	50	100	100	50	150	-
Water service	5	10	10	10	10	-	25	-

*Note: The Department may reduce the 150-foot minimum distance between a new well and seepage pit system as a condition of well permit approval where the well casing is sealed into a confining layer separating the aquifer from the stratum of soil used for sewage disposal or where the well is constructed with additional casing.

1. Where gravel, limestone, or fractured, creviced or fissured rock formations are encountered and may pose a threat to the water supply, the local administrative authority may require a greater distance of a well from a subsurface sewage disposal system;
 2. A well shall not be drilled within 20 feet of a wood frame building.
- (c) All Category 2 wells shall be located no less than 25 feet from a fuel storage tank.
 - (d) Additional minimum distance requirements for any well may be required by the Department as necessary to protect groundwater supplies in areas of known contamination.
 - (e) The Department may modify the minimum distances in this section for individual well installations where it has determined that additional controls are necessary to protect water supplies.

7:9D-2.8 Deviation from construction standards and approval of alternative materials and methods

(a) Where unusual conditions occur or known or suspected health hazards exist at a well site and compliance with this subchapter shall not result in a satisfactory well or protection of the groundwater resource or water supply, the well driller may request a deviation from the standards of this chapter. All deviations from standards shall be requested pursuant to N.J.A.C. 7:9D-1.11, shall be in writing, and shall include as appropriate:

1. The purpose of the well construction;
2. The location of the well to include a site plan;
3. The name, address, and telephone number of the owner;
4. The name, address, and telephone number of the driller;
5. The unusual conditions or known or suspected health hazards existing at the well site that prevent the installation of a well in accordance with this subchapter;
6. The reasons that compliance to the rules for minimum standards will not result in a satisfactory well;
7. The proposed method of construction that the well driller believes shall be adequate for each well;
8. A diagram showing the pertinent features of the proposed well design and construction; and
9. Where a deviation from the construction standards of this chapter is required for compliance with the Technical Requirements for Site Remediation, N.J.A.C. 7:26E, the authorized Licensed Site Remediation Professional shall submit a statement explaining the basis for the deviation and the proposed deviation requested pursuant to (a)5 and 6 above.

(b) The Department's well permitting program shall:

1. Provide the driller with written approval pursuant to this chapter of the deviation based on site-specific conditions, which may include special requirements; or
2. Provide a written denial of the deviation citing specific reasons for the denial.

(c) The Department, after consultation with the Board, may grant written approval for the use of alternative materials, technologies, or installation methods not currently listed in this chapter if an applicant demonstrates that the proposed material, technology, or installation method:

1. Is not expressly prohibited by this chapter;

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2. Meets or exceeds the standards specified in this subchapter;
 3. Is protective of the environment and public health and safety;
 4. Is suitable for the physical and chemical conditions of the site, and meets or exceeds the durability of other materials approved in accordance with this subchapter;
 5. Is certified to the appropriate standards, based on the well use as set forth in N.J.A.C. 7:9D-2, by the NSF International (NSF), the American Petroleum Institute (API), the American Society for Testing and Materials (ASTM), and/or meets or exceeds the guidelines and recommendations of National Ground Water Association (NGWA), International Ground Source Heat Pump Association (IGSHPA), or the American Water Works Association (AWWA); and
 6. Is tested to demonstrate compliance with (c)1 through 4 above and complies with any applicable industry guidelines or standards as established by organizations, such as those listed in (c)5 above. If no guidelines or standards exist, the Department shall specify the test procedure.
- (d) The Department may require tests required pursuant to (c) above to be repeated if, at any time there is reason to believe that the material does not conform or no longer conforms to the criteria on which its approval was based; and
- (e) A person may request approval from the Department for the use of alternative materials, technologies, or installation methods not currently listed in this chapter, pursuant to (c) above, by submitting a written request to the Department pursuant to N.J.A.C. 7:9D-1.17 that includes all necessary information and supporting documentation that demonstrates that all of the applicable criteria listed in (c) above are met.
- (f) The Department may retract or modify the written approval of any material, technology, or installation method issued pursuant to this section based on new information that demonstrates that the material, technology, or installation method does not comply with the criteria in (c) above.
- (g) Alternative materials approved or revoked shall be posted on the Department's webpage pursuant to N.J.A.C. 7:9D-1.17.

7:9D-2.9 Required materials for sealing the annular space of any well

- (a) Except with the written approval from the Department pursuant to N.J.A.C. 7:9D-2.8, only the following materials shall be acceptable for the sealing of the annular space between the casing and the oversized borehole or between casing(s) of multiple cased wells:
1. Portland Neat Cement in accordance with N.J.A.C. 7:9D Appendix A, Table 1, which is incorporated herein by reference;
 2. Portland Cement and Sodium-based Bentonite in accordance with N.J.A.C. 7:9D Appendix A, Table 2, which is incorporated herein by reference;
 3. Sodium-based Bentonite in accordance with N.J.A.C. 7:9D Appendix A, Table 3, which is incorporated herein by reference;
 4. Cement-based geothermal grout in accordance with N.J.A.C. 7:9D Appendix A, Table 4, which is incorporated herein by reference;
 5. Bentonite-based geothermal grout or equal in accordance with N.J.A.C. 7:9D Appendix A, Table 5, which is incorporated herein by reference; or
 6. Sodium-based Bentonite chips and shaped pellets, may be used in accordance with N.J.A.C. 7:9D-2.10(a)5 provided they shall not be used in an environment where it will come in contact with groundwater of a pH of less than 5.0 or a total dissolved solids content in excess of 1,000 ppm.
- (b) All materials specified in (a)1 through 5 above shall be accurately measured prior to mixing. All grout materials shall have a maximum permeability of 1×10^{-7} centimeters per second when prepared in accordance with manufacturer's specifications. The permeability value shall be obtained using ASTM method D5084 or equivalent, incorporated herein by reference, as amended and supplemented, as approved by the Department.
- (c) Bentonite products and additives shall be mixed in accordance with manufacturer's specifications.
- (d) Bentonite-based thermally enhanced geothermal grout materials containing a minimum silica sand content of 200 pounds per 50 pounds of bentonite, may be used in consolidated formations, provided the permeability meets the value specified at (b) above. All other Bentonite-based grout materials shall not be used for sealing any annular space in consolidated formations, or in those instances where it will come in contact with groundwater of a pH of less than 5.0 or a total dissolved solids content in excess of 1,000 ppm.

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- (e) Where the grout material extends through zones of salt water, a cement-based grout approved for use in salt water environments shall be used. See N.J.A.C. 7:9D Appendix A for mixes approved for use in salt water environments.

7:9D-2.10 Required procedures for sealing the annular space of any well

- (a) The annular space within any well shall be sealed in accordance with one of the following methods:
 - 1. For the pressure method, the grout shall be pumped through a tremie pipe installed into the annular space of the well in one continuous operation from the bottom to the top of the annular space unless the depth, resulting pressures, or subsurface conditions necessitate that the grout be installed in lifts;
 - i. The tremie pipe shall be slowly raised as the grout is being placed, keeping the discharge end of the pipe submerged in the grout at all times until the sealing of the annular space is completed;
 - ii. When pressure sealing the annular space directly above a filter or gravel pack, the grout shall be discharged from the tremie pipe so as not to disturb the top of the gravel pack;
 - 2. For the inner string method, the grout shall be pumped through a tremie pipe and float shoe installed inside the casing of the well in one continuous operation so as to completely fill the annular space;
 - 3. The displacement method shall be used only for wells in consolidated formations. A sufficient quantity of grout shall be pumped under pressure through a tremie pipe into the oversized borehole to ensure that the annular space will be completely filled with grout after the emplacement of a plugged casing into the borehole;
 - 4. For the casing method (Halliburton Method), the grout shall be forced from the inside of the casing into the annular space utilizing a plug or a series of plugs. Grouting shall take place from the bottom up with the casing held in suspension; or
 - 5. Sodium-based bentonite chips and shaped pellets may be installed in unconsolidated formations via gravity pouring to a maximum depth of 50 feet as follows:
 - i. All bentonite chips and shaped pellets shall be installed in accordance with manufacturer's specifications. To prevent bridging, all fine material shall be

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removed through screening or equivalent method, as specified by the manufacturer; and

- ii. The grout material shall be placed from bottom to top until all annular space that is to be sealed is completely filled.

(b) For wells in unconsolidated formations, when the casing is driven into an undersized hole in accordance with N.J.A.C. 7:9D-2.2(a)8, the provision for sealing the annular space shall not be required.

(c) The following procedures shall be followed when sealing the annular space of any well:

1. All water used for the mixing of grout shall be of potable quality;
2. All pumpable grout slurry mixtures shall be weighed with a mud balance or otherwise verified by the well driller of the proper class so as to conform with the requirements in N.J.A.C. 7:9D-2.9;
3. The grout mixture shall be brought up to ground level to displace all water and materials in the annular space. Regrouting of a well is acceptable and shall be performed as follows:
 - i. Any settlement of the grout less than 50 feet from the ground surface shall be regouted and completed by the pressure method or by using sodium-based bentonite chips and shaped pellets in accordance with (a)5 above;
 - ii. The driller shall return to the well no sooner than 24 hours nor later than 72 hours and fill all settling;
 - iii. Any settlement of 50 feet or greater shall be regouted using the pressure method; and
 - iv. The finished level of the grout seal shall be at the level of the pitless well adapter or other connection; and
4. The grout being discharged from all annular space shall be weighed with a mud balance or otherwise verified by the well driller so as to comply with the requirements in N.J.A.C. 7:9D-2.9.

7:9D-2.11 Well development and well redevelopment

(a) A well permit is not required for performing any well development or well redevelopment.

(b) All well development or redevelopment work shall be performed by a well driller licensed in accordance with this chapter.

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(c) All well development or well redevelopment shall be performed with care so as not to damage the well structure or cause adverse subsurface conditions that may destroy the natural barriers which prevent the movement of poor quality water or contaminants.

(d) Acceptable well development/redevelopment methods include:

1. Overpumping;
2. Mechanical surging;
3. Air or gas surging, including pulsing, bursting, or inert gas injection;
4. Jetting;
5. Chemical treatment:
 - i. Detergents, chlorine, acids, or other chemicals may be used for the purpose of increasing or restoring well yield;
 - ii. All acids and other chemicals used for treatment shall be specifically designed for use in water well rehabilitation, shall be used and neutralized in accordance with the manufacturer's specifications, and shall be contained properly in accordance with N.J.A.C. 7:26G; and
 - iii. The well shall be thoroughly pumped after the completion of development/redevelopment operations to remove such chemical agents or residues;
6. Explosives:
 - i. The use of explosives shall be limited to wells constructed in consolidated formations;
 - ii. Explosives shall be used by a person licensed pursuant to N.J.A.C. 12:190 by the New Jersey Department of Labor, Office of Safety Compliance Explosive Regulations and only after approval is obtained from the Department;
 - iii. The well shall be thoroughly pumped after the completion of development/redevelopment operations to remove such explosive agents or residues;
 - iv. The well to be treated must be a minimum of 150 feet from the nearest wells and;
 - v. The well site owner or the licensed well driller who will conduct the well development/redevelopment, shall notify the owner(s) of any property

adjacent to the well site of the development/redevelopment procedure no less than 24 hours prior to the procedure; and

7. Hydrofracturing:

- i. The use of hydrofracturing technologies shall be limited to wells constructed in consolidated formations;
- ii. The well to be treated shall be a minimum of 150 feet from the nearest wells;
- iii. A packer shall be set no less than 50 feet below the bottom of the well casing; and
- iv. The well site owner or by the licensed well driller who shall conduct the well development/redevelopment shall notify the owner(s) of any property adjacent to the well site of the development/redevelopment procedure no less than 24 hours prior to the procedure.

(e) All water used during any selected method or process shall be of potable quality.

(f) All wells which have been subjected to development or redevelopment shall be free of sand or silt upon completion of development/redevelopment operations.

(g) Any method not specified above requires prior approval pursuant to N.J.A.C. 7:9D-2.8.

SUBCHAPTER 3. REQUIREMENTS AND PROCEDURES FOR THE DECOMMISSIONING OF WELLS AND BOREHOLES

7:9D-3.1 General requirements for the decommissioning of all wells and boreholes

(a) The owner of any well shall be responsible for having a well or borehole decommissioned in accordance with this chapter if the well is abandoned, destroyed, lost, and/or endangers or threatens the subsurface or percolating waters with the intrusion of saltwater or from any other cause, or if it endangers life.

(b) Notwithstanding (a) above, the well driller is also and primarily responsible for decommissioning a borehole or well that is abandoned during construction or is not completed or is not constructed in accordance with the provisions of this chapter in effect at the time of construction.

(c) The Department may order the decommissioning of any well or borehole, or any appurtenances thereto, which:

1. Is abandoned as defined in this chapter;
2. Has been constructed in violation of the Act or this chapter;

3. Has not been maintained in a condition that ensures protection from contamination for the subsurface and percolating waters of the State;
 4. Is damaged or destroyed;
 5. Has been replaced by another well;
 6. Is contaminated or otherwise unfit for the intended purpose;
 7. Has salt water intrusion;
 8. Is non-productive;
 9. Any other circumstance that endangers life, health, or the environment; or
 10. Other good cause.
- (d) Any person who fails to comply with an order to decommission a borehole or well pursuant to (c) above shall be subject to penalties pursuant to N.J.A.C. 7:9D-4.
- (e) The Department may require or allow a well or borehole to be decommissioned by a method other than as set forth in this subchapter, for good cause, where unusual circumstances are encountered which would prevent compliance with the standard decommissioning requirements.
- (f) All wells and boreholes shall be decommissioned by, or in the presence of and under the onsite supervision of, a well driller of the proper class. The well driller shall keep an electronic or paper copy of the well record or approved decommissioning plan onsite at all times for inspection by any authorized local, county, or State official.
- (g) For all wells, other than hand dug or domestic wells that have a diameter of two inches or less, the well driller shall obtain all applicable well records prior to decommissioning the well in order to verify the depth, diameter, and construction of the well. If a well record is not available from the property owner or local regulating agency, a well driller shall follow the well search directions available on the Department's website pursuant to N.J.A.C. 7:9D-1.17.
- (h) Upon request, the well driller shall provide additional information to the Department about a well or borehole prior to the well being decommissioned. Such information may include, but is not limited to, data gathered via geophysical logging, downhole televising, or groundwater sampling.
- (i) Any hazardous waste, including, but not limited to, contaminated casing, cuttings, sediment, displaced water, or free product generated during the decommissioning, shall be handled in accordance with N.J.A.C. 7:26G.

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(j) The following types of wells shall not be decommissioned until the well driller proposing to decommission the well has first obtained written approval of a decommissioning plan from the Department pursuant to (k) below:

1. Wells, other than hand dug or domestic wells that have a diameter of two inches or less, for which no well record can be obtained;
2. Wells that are contaminated with hazardous waste and/or radiological materials;
3. Wells that are affected by saltwater intrusion;
4. Wells installed in unconsolidated formations that are screened in more than one aquifer;
5. Wells which cannot be cleared of all obstructions throughout the entire length and diameter of the well;
6. Multiple cased wells;
7. Wells drilled for the installation of elevator shafts; or
8. Wells for which the well record does not match the measured depth, diameter, and construction of the well.

(k) A decommissioning plan proposal shall be submitted by a well driller on the form prescribed by the Department pursuant to N.J.A.C. 7:9D-1.17 prior to the decommissioning of a well in accordance with (j) above. The Department shall issue a written approval or denial of the decommissioning plan proposal. Approved decommissioning plans will be issued an approval number and shall be valid for a period of two years. If the well is not decommissioned within two years of approval, a new decommissioning plan shall be submitted to the Department. All decommissioning plans shall include the following information:

1. Well owner and location of well, including county, municipality, lot, block, New Jersey State Plane coordinates, and street address;
2. Well construction, including, but not limited to, depth and diameter of the well and number of casings. If a well search fails to locate a well record for a domestic well, the well driller may only report known construction details;
3. Proposed grout materials and method of decommissioning;
4. Actual or potentially hazardous conditions within the well or surrounding site, such as obstructions, impacts on nearby wells, or contamination;
5. Well driller name, license number, and company name; and

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6. A copy of the approved plan shall be kept available onsite at all times and made available for inspection upon request of any State, county, or local official.
- (l) All other wells shall be decommissioned as follows:
1. The well shall be cleared of pump, pipe, debris, and all other obstructions;
 2. If the well has been overdrilled to remove the entire casing, screen, and gravel pack, the resulting borehole shall be constructed to, and maintained at, the original depth of the well until this borehole is properly decommissioned in accordance with this subchapter;
 3. Adequate protection shall be provided for the top of the borehole and/or the top of the well casing to prevent surface contamination from entering the well during the decommissioning operation and when the driller is not at the decommissioning site;
 4. If it is known that an unsealed annular space exists between the outermost casing and the borehole, or between casings, the casing shall be perforated, ripped, or removed to insure that this space is sealed; and
 5. All water used in the decommissioning process shall be of potable quality.
- (m) The grout materials specified in N.J.A.C. 7:9D Appendix A and the grouting methods and selection criteria in N.J.A.C. 7:9D-2.9 shall be used to decommission wells.
1. Only those materials or additives specifically designed for well decommissioning by the manufacturer and approved by the Department as specified in N.J.A.C. 7:9D Appendix A, shall be used to decommission wells. The material shall have a maximum permeability of 1×10^{-7} centimeters per second when prepared in accordance with manufacturer's specifications;
 2. Bentonite-based thermally enhanced geothermal grout materials containing a minimum silica sand content of 200 pounds per 50 pounds of bentonite may be used in consolidated formations, provided the permeability meets the value specified in (m)1 above. All other bentonite-based grout materials listed in Table 3 and Table 5 of N.J.A.C. 7:9D Appendix A shall not be used as a decommissioning material in consolidated formations, or in those instances where it will come in contact with groundwater of a pH of less than 5.0 or a Total Dissolved Solids content in excess of 1,000 ppm.

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3. Where the grout material extends through zones of saltwater, a cement-based grout approved for use in saltwater environments shall be used. See N.J.A.C. 7:9D Appendix A for mixes approved for use in saltwater environments.

(n) Decommissioning materials shall be installed using one of the following methods:

1. Pumped into the well under pressure through a tremie pipe that discharges at the bottom of the well. If an annular space is being sealed, the material shall discharge at the bottom of the annular space. During sealing, the tremie pipe may be raised from the bottom of the space being filled in a manner which insures that the discharge end of the tremie pipe is constantly submerged within the column of undiluted decommissioning material in the well. The decommissioning material shall be pumped into the well until all water has been displaced from the well and until the decommissioning material overflowing the well has a density within the acceptable density range for that material; or
2. Sodium-based bentonite chips and bentonite pellets may be gravity poured in accordance with the manufacturer's specifications as follows:
 - i. To seal the annular space between casings or the annular space between the casing and the borehole to a maximum depth of 50 feet or inside the inner casing or borehole to a maximum depth of 100 feet;
 - ii. After all fine material has been removed through screening or equivalent methods to prevent bridging; and
 - iii. From bottom to top until all space that is to be sealed is completely filled.

(o) The well driller who decommissions the well shall return to the well no sooner than 24 hours, nor later than 72 hours, and fill any settlement of the decommissioning material in the well as follows:

1. By the pressure method, or by using sodium-based bentonite chips and shaped pellets in accordance with (n)2 above, for settlement less than 50 feet from ground surface; or
2. By the pressure method, for any settlement of 50 feet or greater in accordance with (n)1 above; and
3. After the completion of either (o)1 or 2 above, concrete shall be poured to form a slab which shall extend beyond the perimeter of the casing after any settlement is filled in

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accordance with (o)1 and 2 above. This slab shall be a minimum of six-inches thick and located at or below grade.

- (p) The driller shall obtain written approval of a decommissioning plan from the Department pursuant to this chapter according to the procedures set forth at (k) above prior to deviating from the methods or materials set forth in this subchapter.

7:9D-3.2 Specific requirements for the decommissioning of dewatering wells and dewatering wellpoints

- (a) Any dewatering well constructed into confined aquifers shall be decommissioned only by a New Jersey master, journeyman or journeyman (Class B) well driller in accordance with N.J.A.C. 7:9D-3.1.
- (b) Decommissioning of all other dewatering wells and dewatering wellpoints shall be performed by the licensed well driller of the proper class and shall be completed within five business days after the dewatering well or dewatering wellpoint is taken out of service.
- (c) The well driller shall obtain written approval from the Department prior to instituting any modification in the decommissioning procedures. Applications shall be submitted pursuant to N.J.A.C. 7:9D-1.17.
- (d) For all dewatering wells 25 feet or less in depth, that have not penetrated a confining layer, decommissioning shall be completed by employing one of the following methods:
1. If backfilling of the borehole is utilized:
 - i. Backfilling the hole with clean native materials;
 - ii. Tamping the backfill materials in layers to within several feet below proposed finished grade;
 - iii. Placing a minimum of a three foot concrete plug; and
 - iv. Backfilling the remaining portion of the hole with top soil or native soil materials;or
 2. If decommissioning with an approved grout material, the decommissioning of the dewatering well or dewatering wellpoint shall be completed in accordance with N.J.A.C. 7:9D-3.1.
- (e) If the casing and screen are completely removed from a dewatering well which is greater than 25 feet in depth but has not intersected a confining layer, the top 25 feet of the original

borehole shall be cleared of all obstructions or drilled out to allow for the placement of a grout plug in accordance with N.J.A.C. 7:9D-3.1.

- (f) If the casing and screen are left in place in a dewatering well greater than 25 feet in depth which has not penetrated a confining layer, the entire well/hole shall be decommissioned from the bottom of the well to the top in accordance with N.J.A.C. 7:9D-3.1. In order to prevent surface contamination from entering any annular space which has been gravel packed, the top 25 feet of the gravel pack and casing shall be removed to allow for the placement of a grout plug in accordance with N.J.A.C. 7:9D-3.1.
- (g) Dewatering wells penetrating bedrock shall have that part of the well drilled into the bedrock formation sealed with neat cement grout. The balance of the hole shall be sealed in accordance with N.J.A.C. 7:9D-3.1, as applicable.

7:9D-3.3 Specific requirements for the decommissioning of hand dug wells

- (a) Water shall be pumped from the well in order to ensure that no debris lies at the bottom of the well and to minimize settlement of the fill material.
- (b) The total depth of the well shall be sealed using one of the following methods:
 1. The entire well shall be sealed in accordance with N.J.A.C. 7:9D-3.1 using only cement-based sealing materials; or
 2. The well shall be filled with sand or gravel to three feet from the land surface. The sand or gravel shall be thoroughly tamped. The remainder of the well shall be filled in with topsoil. Additional topsoil shall be mounded over the well to allow for settlement.

7:9D-3.4 Specific requirements for the decommissioning of Category 4 uncased borings

- (a) All borings shall be decommissioned within 72 hours of completion.
- (b) Borings less than 25 feet in depth may be decommissioned by backfilling with cuttings and then tamping in order to restore to the maximum extent possible the natural conditions of the site that existed prior to drilling the borings.
- (c) All borings 25 feet or greater in depth shall be decommissioned using an approved sealing material in accordance with N.J.A.C. 7:9D-3.1.
- (d) The decommissioning of borings installed by direct-push technologies using a pumpable grout mix shall be in accordance with this subchapter, except as follows:

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1. The drive casing may be used as a tremie pipe provided the drive point is of the sacrificial type, or the casing is equipped with a grout shoe and is withdrawn as the decommissioning material is pumped into the driven borehole;
 2. The direct-push device may be removed and a second casing of equal diameter to the drive casing may be used as a tremie pipe provided the casing is equipped with a sacrificial tip or plug, and is reinserted into the same hole to the boring's original depth;
 3. If an outer casing is simultaneously driven with the direct push device and inner drive casing and the cone and inner casing are retrieved, the outer casing may be used as tremie pipe; or
 4. If the direct-push device and drive casing are retrieved, the borehole may be overdrilled using a hollow stem auger and decommissioned in accordance with this subchapter.
- (e) The decommissioning of borings greater than or equal to three inches in diameter and 50 feet or less in depth installed by direct-push technologies may use sodium-based bentonite chips and bentonite pellets in accordance with N.J.A.C. 7:9D-3.1(n)2.

7:9D-3.5 Specific requirements for damaged, destroyed, and/or lost wells

- (a) When a well has been damaged, destroyed, and/or lost such that it cannot be decommissioned in accordance with this subchapter, the property owner or its agent shall contact the Department in writing and provide the following information, as appropriate:
1. The name, address, and telephone number of the current property owner;
 2. The facility and location information where the well was located, including county, township, lot, and block;
 3. Timeframe when it was discovered that the well was damaged, destroyed, or lost;
 4. The approximate date the well was damaged, destroyed, or lost;
 5. Detailed description of the attempts made to locate the well in the case of lost wells, or attempts made to clear obstructions to facilitate decommissioning in the case of damaged or destroyed wells;
 6. Circumstances by which the well was damaged, destroyed, or lost; and
 7. Well permit number and well construction specifications, if known. If the well permit number is not known or a copy of the well record is not available, a well search

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request shall be conducted by following the well search directions on the Department's website pursuant to N.J.A.C. 7:9D-1.17.

- (b) The owner of the property on which a well is located shall, upon the Department's determination that further measures are needed, undertake additional measures to locate a well, to clear obstructions to facilitate decommissioning, and/or further investigate the condition of the well.

SUBCHAPTER 4. CIVIL ADMINISTRATIVE ORDERS AND PENALTIES; DENIAL, SUSPENSION, AND REVOCATION OF LICENSES; DENIAL AND REVOCATION OF PERMITS; AND REQUESTS FOR ADJUDICATORY HEARINGS

7:9D-4.1 Purpose

This subchapter establishes the procedures governing the issuance of civil administrative orders, the assessment of civil administrative penalties, and the denial, suspension, or revocation of any license, or the denial or revocation of a permit, issued pursuant to the Act. This subchapter also governs the procedures for the submittal and review and grant or denial of any requests for adjudicatory hearings.

7:9D-4.2 General provisions

- (a) The Department or the Board may investigate any possible violation of any provision of the Act or any provision of any rule, permit, license or administrative order promulgated or issued pursuant thereto including, but not limited to: obtaining a license or permit through error or fraud; failure to obtain a license prior to engaging in well construction or pump installation; aiding and abetting in violation of the Act or this chapter; failure to obtain a permit or to construct, modify, or decommission a well in accordance with the Act and this chapter; exhibiting gross negligence; and incompetence or misconduct in the practice of well drilling or pump installation pursuant to this chapter. The Department may take one or more of the following actions, including, but not limited to:
1. Suspension of a well driller's license or pump installer's license for a period that is less than one year;
 2. Revocation of a permit or a well driller's license or pump installer's license;
 3. Issuance of an administrative order; and/or
 4. Assessment of an administrative penalty.

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- (b) The Department or the Board may also take action against any person who has aided or abetted a violation.
- (c) Any person whose license has been suspended or revoked shall not be considered a licensee and shall not conduct any activity for which a license is required, unless in the presence of and under the onsite supervision of an appropriately licensed well driller or pump installer, until the license is re-instated or a new license has been issued.
- (d) Upon the Department's request, any licensee, any person holding a well permit, any person on whose property a well is located and any person who aids and/or abets a licensee or holder of a permit shall submit any additional information reasonably necessary to determine compliance with the Act, this chapter, an order, permit, or license.
 - 1. Information shall be provided in the form and manner satisfactory to the Department.
 - 2. Any licensee, any person holding a well permit, any person on whose property a well is located, and any person who aids and/or abets a licensee or permit holder who receives a request for information made pursuant to this subsection shall:
 - i. Conduct a diligent search of all documents and records in his or her possession, custody, or control, and shall make reasonable inquiries of present and past employees who may have knowledge or documents relevant thereto; and
 - ii. Have a continuing obligation to supplement and correct the information and shall submit the corrected or additional information within 10 calendardays of its discovery.
 - 3. Any licensee, any person holding a well permit, any person on whose property a well is located, and any person who aids and/or abets a licensee or permit holder shall allow any authorized local, county, or State official, upon the presentation of credentials at a reasonable time and in a reasonable manner, to:
 - i. Enter the premises, property, facility, vessel, building, or location for purposes of inspection, sampling, monitoring, copying records or documents, photographing, or videotaping to determine compliance or non-compliance with the Act and this chapter;
 - ii. Have access to and copy, any records or documents that must be kept pursuant to a license, permit, the Act or this chapter; and

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- iii. Inspect the premises of any well drilling or pump installation business to review equipment, materials, practices, or operations related to well drilling or pump installation.
- (e) No administrative action taken pursuant to this subchapter shall affect the availability of any other remedies available pursuant to the Act or other applicable law, including, but not limited to, injunctive relief. Any person who fails to comply with a Department directive or order to seal a borehole or well shall be liable to the Department in an amount equal to three times the cost of sealing the borehole or well.

7:9D-4.3 Administrative orders

- (a) The Department may issue an administrative order:
1. Against any person who has violated any provision of this chapter, permit, or license, or any provision of the Act pursuant to which this chapter has been promulgated, and/or against any person who negligently aids and/or abets in the commission of such violations, to require the cessation and/or correction of such violations; and
 2. To order the decommissioning of any well or borehole to be decommissioned pursuant to N.J.A.C. 7:9D-3.1(c).

7:9D-4.4 Civil administrative penalties

- (a) The Department may, in accordance with (d) below, assess a civil administrative penalty of not more than \$5,000 for each violation directly related to the construction of a well, and a civil administrative penalty of not more than \$1,000 for each violation that is not construction-related, against any person that violates any provision of the Act or any provision of any rule, permit, license, or administrative order promulgated or issued pursuant thereto.
- (b) The authority to assess a civil administrative penalty pursuant to (a) above is in addition to any other remedies available to the Department pursuant to law.
- (c) The Department may consider each violation of any provision of the Act, or any rule, permit, license, or administrative order issued pursuant thereto, as a separate and distinct violation. Each day during which a violation continues shall constitute an additional, separate, and distinct offense subjecting the violator to daily penalties in accordance with this subchapter.

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(d) The Department may assess a civil administrative penalty for the following non-construction related violations at the mid-point of the following stated ranges unless adjusted pursuant to (i) below:

1. Failure to submit a well record or well decommissioning report to the Department within 90 days of completion of the well or well decommissioning: \$400.00 through \$1,000;
2. Failure to display the name of the person or well drilling company on the equipment used for the installation, removal, maintenance, alteration, or repair of the well or the pump: \$400.00 through \$1,000;
3. Failure to respond to request for information from the Department in accordance with N.J.A.C. 7:9D-4.2: \$400.00 through \$1,000;
4. Failure to keep a copy of the well permit or well decommissioning plan onsite at all times for inspection by any authorized local, county, or State official: \$250.00 through \$750.00;
5. Failure to provide a New Jersey license of the proper class upon request during a work site inspection by any authorized local, county, or State official: \$250.00 through \$750.00;
6. Failure to provide a copy of the permit to the property owner: \$250.00 through \$750.00;
7. Failure to cancel a well permit within 90 days of the permit's expiration date: \$100.00 through \$500.00; or
8. Failure to notify the Department in writing of a change in mailing address or telephone number within 14 calendar days of the change: \$100.00 through \$500.00.

(e) All violations, except those listed in (d) above, are construction-related violations. The Department may assess a civil administrative penalty for all violations, other than those listed at (d) above, as follows:

1. To assess a penalty for a construction-related violation the Department shall:
 - i. Determine the seriousness of the violation pursuant to (f) below;
 - ii. Determine the conduct of the violator pursuant to (g) below; and
 - iii. Use the information in (e)1i and ii above to identify the civil administrative penalty range within the matrix in (e)2 below.

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2. The civil administrative penalty for each construction-related violation shall be assessed at the midpoint of the range within the following matrix, unless adjusted pursuant to (i) below:

SERIOUSNESS				
		Major	Moderate	Minor
CONDUCT	Major	\$4,000 - \$5,000	\$2,750 - \$3,750	\$2,000 - \$2,500
	Moderate	\$2,750 - \$3,750	\$2,000 - \$2,500	\$1,250 - \$1,750
	Minor	\$2,000 - \$2,500	\$1,250 - \$1,750	\$500.00 - \$1,000

- (f) The Department shall determine the seriousness of the violation as major, moderate, or minor as follows:

1. Major seriousness shall include any violation that has caused or has the potential to cause serious harm to public health, safety, welfare, or the environment or which seriously deviates from the requirements of the Act, or any rule, permit, license, or order adopted or issued pursuant thereto. Violations of major seriousness also include those which are in complete contravention of such requirements or, if some of the requirements are met, which severely impair or undermine the operation or intent of the requirements, including, but not limited to:
 - i. Falsifying any statement, representation, or certification in any application, record, report, or other document submitted or maintained, under the Act, or any rule, permit, license, or order adopted or issued pursuant thereto;
 - ii. Constructing, commencing, or proceeding to drill, build, modify, install, re-designate, maintain, replace, repair, or decommission a well, pump, or appurtenances without a permit, approved decommissioning plan pursuant to N.J.A.C. 7:9D-3.1(j), or a proper license;
 - iii. Refusing, inhibiting, prohibiting, or otherwise preventing immediate lawful entry and inspection of any premises, building, property, facility, vessel, or place, by any authorized local, county, or State official; or

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- iv. Constructing, commencing, or proceeding to build, modify, install, maintain, re-designate, replace, repair, destroy, or decommission a well, pump, or appurtenances in violation of this chapter or a permit condition imposed pursuant to this chapter, except as provided at (f)2i below.
 2. Moderate seriousness shall include any violation, which has caused or has the potential to cause substantial harm to public health, safety, welfare, or the environment or which substantially deviates from the requirements of the Act, or any rule, permit, license, or order adopted or issued pursuant thereto. Violations of moderate seriousness also include those which are in substantial contravention of such requirements or, if some of the requirements are met, which substantially impair or undermine the operation or intent of the requirements, including, but not limited to:
 - i. Failure to notify the Department prior to drilling, if required by the permit; and
 - ii. The installation, repair, removal, replacement, or modification of any pump or appurtenance in violation of this chapter;
 3. Minor seriousness shall include:
 - i. Any violation not included in (f)1 or 2 above; and
 - ii. The inadvertent submission of inaccurate or incomplete information to the Department that is corrected within the timeframe established by the Department.
- (g) The Department shall determine the conduct of the violator as major, moderate, or minor as follows:
 1. Major conduct shall include any intentional, deliberate, purposeful, knowing, or willful act or omission by the violator;
 2. Moderate conduct shall include any unintentional but foreseeable act or omission by the violator; and
 3. Minor conduct shall include any other conduct not identified in (g)1 or 2 above.
- (h) When the Department determines that the violator has gained an economic benefit from a violation, the Department may, in addition to any other civil administrative penalty assessed pursuant to this subchapter, include as part of a civil administrative penalty established under (d) or (e) above, the economic benefit (in dollars) which the violator has realized as a result

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of not complying, or by delaying compliance, with the requirements of the Act, or any rule, license, permit, or administrative order issued pursuant thereto.

1. Economic benefit shall include:

- i. The amount of savings realized from avoided capital or non-capital costs resulting from the violation;
- ii. The return earned or that may be earned on the amount of the avoided costs;
- iii. Any benefits accruing to the violator as a result of a competitive market advantage enjoyed by reason of the violation; and
- iv. Any other economic benefits resulting from the violation.

2. The Department may consider the following factors in determining economic benefit:

- i. The amount of capital investments required, and whether they are one-time or recurring;
- ii. The amount of one-time non-depreciable expenditures;
- iii. The amount of annual expenses;
- iv. The useful life of capital;
- v. Applicable tax, inflation, and discount rates;
- vi. The amount of low interest financing, the low interest rate, and the corporate debt rate; and
- vii. Any other factors relevant to economic benefit.

3. If the total economic benefit was derived from more than one violation, the total economic benefit amount may be apportioned among the violations from which it was derived, so as to increase each civil administrative penalty assessment to not greater than \$5,000 per day for each construction related violation and not greater than \$1,000 per day for each non-construction related violation.

(i) The civil administrative penalty shall be established at the mid-point of the ranges set forth at (d) and (e) above, unless adjusted by the Department in its discretion to an amount no greater than the top nor less than the bottom of each applicable range, on the basis of the following factors:

1. The compliance history of the violator;
2. The type, number, frequency, extent, and severity of the violations;

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3. The nature, timing, and effectiveness of any measures taken by the violator prior to the issuance of an order to mitigate the effects of the violation for which the penalty is being assessed;
4. The nature, timing, and effectiveness of any measures taken by the violator prior to the issuance of an order to prevent future similar violations;
5. Any unusual or extraordinary costs or impacts directly or indirectly imposed on the public or the environment as a result of the violation;
6. Any economic benefit realized by the violator;
7. The deterrent effect of the penalty;
8. The cooperation of the violator prior to the issuance of an order in correcting the violation, remedying any environmental damage caused by the violation and ensuring that the violation does not reoccur;
9. The potential or actual harm to the public health, safety, or the environment resulting from the violation; and
10. Other specific circumstances of the violator or violation determined on an individual case basis.

(j) The Department may settle any civil administrative penalty assessed pursuant to this section according to the following factors:

1. Mitigating or extenuating circumstances not previously considered in the notice of civil administrative penalty assessment;
2. The timely implementation by the violator of measures leading to compliance not previously considered in the penalty assessment;
3. The nature, timing and effectiveness of measures taken to mitigate the effects of the violation or prevent future similar violations not previously considered in the penalty assessment;
4. The compliance history of the violator not previously considered in the penalty assessment;
5. The deterrent effect of the penalty not previously considered in the penalty assessment; and/or
6. Any other terms or conditions acceptable to the Department.

7:9D-4.5 Basis for denial of license

(a) Upon the recommendation of the Board, the Department may deny issuance of a well drilling license of the proper class or pump installer license upon a determination that:

1. That a licensee has been found guilty of fraud or deceit in obtaining his or her license;
2. The applicant has provided false or inaccurate information in the application;
3. The applicant has failed to correct a violation or otherwise failed to comply with the Act, this chapter, a permit, a court order, an administrative order, or has failed to pay a due and owing penalty;
4. The applicant's experience is based on well drilling or pump installing not in accordance with the Act or this chapter;
5. The applicant did not possess the requisite experience as required at N.J.A.C. 7:9D-1.8;
6. The applicant has not been recommended by the Board; or
7. Other good cause.

7:9D-4.6 Basis for suspension or revocation of license

(a) Upon recommendation from the Board, the Department may suspend or revoke, on an individual case basis, any license, upon a determination that:

1. A licensee has committed fraud, error, or deceit in obtaining his or her license;
2. A licensee has committed one or more construction-related violation(s);
3. A licensee has committed one or more non-construction-related violations;
4. A licensee has demonstrated gross neglect, incompetence, or misconduct in the practice of well drilling or pump installation or repair in the State of New Jersey;
5. A licensee has willfully violated any provision of the Act or any other State statute relating to the installation or repair of wells and well pumping equipment;
6. A licensee has failed to correct a violation or otherwise failed to comply with the Act, this chapter, a permit, a court order, an administrative order, or has failed to pay a due and owing penalty;
7. A licensee has committed a violation which causes, or has the potential to cause, substantial harm to public health, safety, or welfare of the environment; or
8. Other good cause.

7:9D-4.7 Procedures for civil administrative orders, assessment of civil administrative penalties, and suspension or revocation of license and adjudicatory hearings

(a) Any order, any notice of civil administrative penalty assessment, any notice of suspension of license, or any notice of revocation of license issued pursuant to this subchapter shall:

1. Be served by certified mail, return receipt requested, or personal service at the address on file with the Department upon the person or persons who are the subject of the order or notice;
 - i. Where certified mail and personal service has been attempted by the Department and has not been successful, service shall be by first class mail to the address on file with the Department;
2. Identify the person or persons subject to the order or notice;
3. Set forth a concise statement of the facts alleged to constitute a violation;
4. Identify the specific provision or provisions of the Act, rule, permit, license, or order which have been violated;
5. Describe the remedial or other action which must be implemented or caused to be implemented by the violator and the time periods within which such implementation shall commence and be completed;
6. Identify the office within the Department to which any required reply or other correspondence must be directed;
7. Advise the person or persons named in the order and/or notice of the right to request an adjudicatory hearing pursuant to the provisions of N.J.A.C. 7:9D-4.8;
8. In the case of a civil administrative penalty assessment, specify the amount of the civil administrative penalty to be imposed;
9. In the case of a suspension or revocation of a license, a description of the specific grounds for the suspension or revocation; and
10. In the case of a suspension of license the length of time for which a suspension shall remain in effect.

(b) If a civil administrative penalty is assessed against more than one person for the same violation or violations, each shall be jointly and severally liable for the penalty assessed.

(c) Suspension or revocation of license shall commence, and payment of a civil administrative penalty is due upon receipt by the violator of a final order or notice of the Department in a

contested case proceeding or when the notice of suspension or revocation of license or notice of civil administrative penalty assessment becomes a final order as follows:

1. If no hearing is timely requested pursuant to N.J.A.C. 7:9D-4.8, an order, a notice of civil administrative penalty assessment, notice of suspension, or notice of revocation becomes a final order on the 21st day following receipt of the order or notice by the violator;
2. If the Department denies a hearing request, an order, a notice of civil administrative penalty assessment, notice of suspension, or notice of revocation becomes final upon receipt by the violator of the notice of denial;
3. If a hearing request is submitted by the violator and subsequently withdrawn, the order, the notice of civil administrative penalty assessment, notice of suspension, or notice of revocation becomes final upon such withdrawal unless the violator and the Department have executed an administrative consent order or comparable instrument providing otherwise;
4. Any person whose license has been suspended or revoked shall surrender their license to the Department within two business days of receipt of the final notice of suspension or revocation. Suspended or revoked licenses shall be returned in person or via certified mail to the address set forth at N.J.A.C. 7:9D-1.17.

7:9D-4.8 Procedures to request an adjudicatory hearing to contest an administrative order, administrative penalty assessment, suspension of license, revocation of license or permit, or the denial of license or a permit

(a) Any person (hereinafter "petitioner") requesting an adjudicatory hearing to contest an administrative order, civil administrative penalty assessment, denial, suspension, or revocation of a license or permit or to challenge any permit or license condition, or who believes himself or herself to be aggrieved with respect to decisions made by the Department, shall:

1. Submit the original request in writing to:
New Jersey Department of Environmental Protection
Office of Administrative Hearings and Dispute Resolution
Attention: Adjudicatory Hearing Requests
401 E. State Street,
Mail Code 401-07A
P.O. Box 420
Trenton, New Jersey 08625-0420

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2. Submit a copy of the request to the offices indicated in the document being contested.
- (b) All written requests for an adjudicatory hearing must be received by the Department within 20 calendar days after receipt by the petitioner of notice of the Department's action being contested. If the Department does not receive a hearing request within the allotted time, it shall deny the hearing request.
- (c) Any written request for an adjudicatory hearing shall include the following:
1. The name, address and telephone number of the petitioner and of its legal or authorized representative;
 2. The date the petitioner received a copy of the document being contested;
 3. A copy of the document being contested;
 4. A list of all issues being contested;
 5. An admission or denial of each of the Department's findings of fact;
 - i. If the petitioner lacks sufficient knowledge or information to form a belief as to the truth of a finding, the petitioner shall so state and this shall have the effect of a denial.
 - ii. A denial shall fairly meet the substance of the findings denied. When the petitioner intends, in good faith to deny only part or a qualification of a finding, the petitioner shall specify so much of it as is true and material and deny only the remainder.
 - iii. The petitioner may not generally deny all of the findings, but shall make all denials as specific denials of designated findings.
 - iv. For each finding the petitioner denies, the petitioner shall allege the fact or facts as the petitioner believes it or them to be;
 6. A description of any facts or issues which the petitioner believes constitute a defense to the allegations made by the Department;
 7. Information and documentation supporting the hearing request and specific reference to, or copies of, other written documents relied upon to support the request;
 8. An estimate of the time required for the hearing (in days or hours); and
 9. A request, if necessary, for a barrier-free hearing location for physically disabled person;
- (d) If the petitioner fails to provide all of the information required by (c) above, the Department may deny the hearing request.

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- (e) All adjudicatory hearings shall be conducted in accordance with the Administrative Procedure Act, N.J.S.A. 52:14B-1 et seq., and the Uniform Administrative Procedure Rules, N.J.A.C. 1:1.
- (f) No permit or license which is the subject of a final order of suspension, revocation, or denial shall be valid during the pendency of any action on appeal to a court of competent jurisdiction from that order, unless a stay of the final order has been granted.

APPENDIX A

Table 1

Portland Cement¹

Type of Cement	Pounds of Cement	Gallons of Water	Target Density lbs/gal	Acceptable Density/ Range lbs/gal	Water/ Cement Ratio
I & II	94	5.2	15.6	15.0 to 16.3	0.46
III	94	6.3	14.8	14.2 to 15.5	0.56

¹ Approved for use in saltwater environments

Table 2

Portland Cement and Sodium-based Bentonite; Use Portland Cement Types I or II Only²

Percent Bentonite	Pounds of Bentonite	Pounds of Cement	Gallons of Water	Target Density lbs/gal	Acceptable Density/ Range lbs/gal	Water/ Cement Ratio
5.3	5.0	94	8.3	13.9	13.4 to 14.5	0.74

² Approved for use in saltwater environments

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Table 3

Sodium-based Bentonite (Figures Based on 15 to 30 Percent Solids by Weight)

Pounds of Bentonite	Target Gallons of Water	Acceptable Range of Water (gallons)	Target Density lbs/gal	Acceptable Density Range lbs/gal
50	18	14-34	9.8	9.2 to 10.2

Table 4

Cementitious Thermally Enhanced Grout³

Pounds of Cement (Type I, II or V)	Amount of Superplasticizer (Sulfonated Napthalene)	Pounds of Dried Silica Sand Conforming to the Sieve Analysis ⁴	Pounds of 200 Mesh Sodium Bentonite	Target Gallons of Water	Target Density lbs/gal
94	21 ounces per bag of cement (not to exceed 29 ounces)	200	1.04	6.19	18.2

*Sieve No. (Size, um)

*Percent Passing (%)

8 (2360)	100
16 (1180)	95-100
30 (595)	55-80
50 (297)	30-55
100 (149)	10-30
200 (75)	0-10

³ Approved for use in saltwater environments

⁴ Compound shall be washed, dried silica sand which is graded and shall have less than 20 percent by weight retained on a U.S. Sieve #50 and shall have AFS GFN (American Foundrymen's Society Grain Fineness Number) between 55.0 and 75.0. The silica content (SiO₂) shall be greater than 99 percent.

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Geo Energy Alternatives⁵

Product Name	Thermal Conductivity k (Btu/hr• ft•°F) (ASTM D-5334)	Pounds of GA-XTRA grout powder	Water (gallons)	Density (lb/gal)
GA-XTRA Grout	1.0	50	4.0 +/- .5	12.5 +/- .5

⁵ Approved for use in saltwater environments

**Table 5
Bentonite-based geothermal grout products**

Baroid Industrial Drilling Products

Product Name	Thermal Conductivity k (Btu/hr• ft•°F)	Pounds of bentonite material	Pounds of thermal enhancement compound ² (silica sand)	Water (gallons)	Density (lb/gal)
Barotherm	.4	50	0	14	10.2
Barotherm	.52	50	50	14.6	11.4
Barotherm	.64	50	100	15.5	12.3
Barotherm	.76	50	150	16.5	13.0
Barotherm	.88	50	200	17.6	13.4
Barotherm	1	50	250	19.3	13.7

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Barotherm Gold	.4	50	0	15.3	10.1
Barotherm Gold	.69	50	100	15.3	12.5
Barotherm Gold	.76	50	150	16.3	13.2
Barotherm Gold	.88	50	200	17.3	13.7
Barotherm Gold	1.0	50	250	18.3	14.1
Barotherm Gold	1.0	50	300	19.5	14.4
Barotherm Gold	1.1	50	350	20.0	14.7
Barotherm Gold	1.2	50	400	21.0	15.0

Product Name	Thermal Conductivity k (Btu/hr• ft•°F)	Barotherm Gold 1.0 (50-lb bags)	Water (gallons)	Density (lb/gal)
Barotherm Gold 1.0	1.0	4	12.3	14.0
Barotherm Gold 1.0	1.0	6	18.5	14.0
Barotherm Gold 1.0	1.0	8	24.6	14.0
Barotherm Gold 1.0	1.0	10	30.8	14.0

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Product Name	Thermal Conductivity k (Btu/hr• ft•°F)	Barotherm Gold 1.2 (50-lb bags)	Water (gallons)	Density (lb/gal)
Barotherm Gold 1.2	1.2	5	11.9	14.9
Barotherm Gold 1.2	1.2	7	16.7	14.9
Barotherm Gold 1.2	1.2	9	21.5	14.9
Barotherm Gold 1.2	1.2	11	26.3	14.9

Product Name	Thermal Conductivity k (Btu/hr• ft•°F)	Barotherm Max (50-lb bags)	Water (gallons)	Density (lb/gal)
Barotherm Max	1.3	1	9	11.1
Barotherm Max	1.6	1	7	11.6

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CETCO Drilling Products

Product name	Thermal Conductivity k (Btu/hr•ft•°F) (ASTM D-5334)	Thermal Conductivity k (Btu/hr•ft•°F) (ASTM C-518)	Pounds of bentonite material	Pounds of thermal enhancement compound ² (silica sand)	Water (gallons)	Density (lb/gal)
Geothermal Grout	.40	.53	50	0	14	10.2
Geothermal Grout	.85	1.00	50	200	16	13.7
Geothermal Grout	.90	1.05	50	250	17	14.1
Geothermal Grout	.95	1.10	50	300	19	14.2
Geothermal Grout	1.00	1.25	50	350	20	14.5
Geothermal Grout	1.05	1.40	50	400	22	14.6

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Product name	Thermal Conductivity k (Btu/hr•ft•°F) (ASTM D-5334)	Pounds of bentonite	Pounds of thermal enhancement compound ² (silica sand)	Water (gallons)	Density (lb/gal)
High TC Geothermal Grout	.40	50	0	14	10.2
High TC Geothermal Grout	.90	50	200	16	13.7
High TC Geothermal Grout	1.00	50	250	17	14.1
High TC Geothermal Grout	1.07	50	300	19	14.2
High TC Geothermal Grout	1.15	50	350	20	14.5
High TC Geothermal Grout	1.21	50	400	21	15.1

GeoPro Inc.

Product name	Thermal Conductivity k (Btu/hr•ft•°F)	Pounds of bentonite material	Pounds of thermal enhancement compound ⁶ (silica sand)	Target gallons of water	Acceptable Range of Water (gallons)	Target Density (lb/gal)
Thermal Grout Lite	.45	50	0	14.00	13.50 – 14.50	9.8
Thermal Grout Lite	.57	50	50	14.50	14.00 – 15.00	10.9
Thermal Grout Lite	.69	50	100	15.50	15.00 – 16.00	11.7
Thermal Grout Lite	.79	50	150	16.50	16.00 - 17.00	12.5
Thermal Grout Lite	.88	50	200	17.50	17.00 – 18.00	13.2
Thermal Grout Lite	1.00	50	250	19.25	18.75 - 19.75	13.3
Thermal Grout Select	1.00	50	250	19.25	18.75 – 19.75	13.3
Thermal Grout Select	1.07	50	300	20.50	20.00 – 21.00	13.9
Thermal Grout Select	1.14	50	350	21.50	21.00 – 22.00	14.2
Thermal Grout Select	1.20	50	400	22.50	22.00 – 23.00	14.5

⁶All thermal enhancement compound material must meet manufacturer specifications.

Note: All information in Tables 1 through 5 is taken directly from manufacturer data submissions or product specifications. The Department has not independently verified the values listed. All grouts used in the construction of wells must meet performance standards established by the Department despite any inaccuracies reported by the manufacturers.