ENVIRONMENTAL PROTECTION

WATER RESOURCE MANAGEMENT

DIVISION OF WATER SUPPLY AND GEOSCIENCE

Well Construction and Maintenance; Sealing of Abandoned Wells

Standards for Individual Subsurface Sewage Disposal Systems

Proposed Amendments: N.J.A.C. 7:9A-4.3, 5.9, 9.7, and 12.6; and 7:9D-1.1, 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10 through 1.16, 2.1 through 2.11, 3.1, 3.2, 3.4, and 4.1 through 4.8

Proposed Repeal and New Rule: N.J.A.C. 7:9D-1.8

Proposed New Rules: N.J.A.C. 7:9D-1.17 and 3.5 and 7:9D Appendix

Authorized By: Bob Martin, Commissioner, Department of Environmental Protection.

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.

Calendar Reference: See Summary below for explanation of exception to calendar requirement.

DEP Docket Number: 08-17-05.

Proposal Number: PRN 2017-103.

A **public hearing** concerning this proposal will be held on Thursday, August 10, 2017, at 10:00 A.M. until the close of comments:

New Jersey Department of Environmental Protection

First Floor Hearing Room

401 East State Street

Trenton, New Jersey

Directions to the hearing room may be found at the Department's website, http://www.state.nj.us/dep/where.htm.

Written comments may also be submitted at the public hearing. It is requested (but not required) that anyone submitting oral testimony at the public hearing provide a copy of any prepared text to the stenographer at the hearing.

Submit comments by August 18, 2017, electronically at http://www.nj.gov/dep/rules/comments.

The Department of Environmental Protection (Department) encourages electronic submittal of comments. In the alternative, comments may be submitted on paper to:

Colin Emerle, Esq.

Attn: DEP Docket Number: 08-17-05

DEP - Office of Legal Affairs

Mail Code: 401-04L

401 East State Street, 7th Floor

PO Box 402

Trenton, New Jersey 08625-0402

This notice of proposal may be viewed or downloaded from the Department's website at http://www.nj.gov/dep/rules.

The agency proposal follows:

Summary

As the Department has provided a 60-day comment period on this notice of proposal, this notice is excepted from the rulemaking calendar requirement pursuant to N.J.A.C. 1:30-3.3(a)5.

The Well Construction and Maintenance; Sealing of Abandoned Wells rules (hereinafter, "the rules") at N.J.A.C. 7:9D establish a regulatory program that helps ensure the protection of the State's groundwater and public health. The rules implement N.J.S.A. 58:4A-4.1 through 29, referred to as the Subsurface and Percolating Waters Act (the Act). Under the Act, the Department has established requirements and standards for the permitting, construction, and decommissioning of wells, the licensing of well drillers and pump installers, and the activities and responsibilities of the State Well Drillers and Pump Installers Examining and Advisory Board. The Department is proposing to include the New Jersey Water Pollution Control Act (WPCA), N.J.S.A. 58:10A-1 et seq., as statutory authority for the rules because improperly or illegally constructed wells could result in unpermitted pollutant discharges that contaminate nearby water sources. In addition, the Department regulates injection wells, which are wells through which liquid or gas is injected for the purpose of disposing of waste, maintaining pressure, recharging an aquifer, or environmental remediation, pursuant to the WPCA, and the rules govern the operational use of such wells.

The Department is proposing amendments to update the rules with regard to well drilling materials, methods, and technologies, including changes reflecting the increasing use of green energy systems, such as closed loop geothermal systems. The Department is also proposing amendments to the rules to implement provisions in the Act mandating the establishment of a continuing education program for all licensed well drillers and pump installers. In addition, the

Department is proposing amendments to the enforcement provisions to address industry concerns, including increased oversight of individuals who are in violation of this chapter, and to clarify the procedures by which the Department may suspend or revoke a license. Finally, the Department is proposing certain amendments to the Standards for Individual Subsurface Sewage Disposal Systems, N.J.A.C. 7:9A, which govern the proper location, design, construction, installation, alteration, repair, and operation of individual subsurface sewage disposal systems, for consistency with the requirements for well design in the rules.

General Administrative Updates

The Department proposes amendments to the reflect changes in contact information due to organizational changes within the Department, amend section headings consistent with the proposed amendments, consolidate contact information, and other administrative updates.

The Department is proposing amendments to delete references to the "Bureau of Water Systems and Well Permitting" and to replace it with the "Department," so that the rule remains accurate in the event of organizational changes within the Department. The Department is proposing to consolidate contact information located throughout the rules in a new subsection at N.J.A.C. 7:9D-1.17 to make it clear where correspondence should be directed and make it easier to update in the future.

The Department proposes to shorten or replace references to and citations of the New Jersey Subsurface and Percolating Waters Act with simple reference to the Act, which is proposed to be defined at N.J.A.C. 7:9D-1.5. Accordingly, at N.J.A.C. 7:9D-2.2(a), the Department proposes to delete the word "State" because the definition of the "Act" establishes that it references the New Jersey statutes mandating establishment of this rule.

The definition of "Commissioner" is proposed for amendment to add the phrase "his or her designee" to indicate throughout the rules that the Commissioner may appoint a designee.

The Department also proposes to replace the term "well driller of the proper class" with "well driller" throughout the rules, consistent with the existing definition of "well driller." The definitions of "dewatering well driller," "journeyman well driller," "master well driller," "monitoring well driller," "pump installer," and "soil borer" are proposed for amendment to refer to the licensing requirements at N.J.A.C. 7:9D-1.8 rather than reiterate the requirements within the definitions. Consistent with the aforementioned changes, the Department proposes to define "licensee." The proposed definition of "licensee" is intended to refer to New Jersey licensed well drillers and pump installers together throughout the chapter more succinctly. The Department is proposing to add a definition for "days" to specify that, unless otherwise indicated, all timeframes set forth in the rule are "calendar days."

At N.J.A.C. 7:9D-1.3, Applicability, the Department is adding reference to "maintenance," because the rules address the requirement to maintain a well, such that it does not become a physical hazard or allow contamination to enter the well or groundwater, and because the Act intends, as stated in N.J.S.A. 58:4A-13, that the maintenance or "repair or other construction" of wells be accomplished by a licensed individual. At existing N.J.A.C. 7:9D-2.2 and 2.3, the Department proposes to amend both the heading and existing text to include maintenance requirements for the referenced well types.

Throughout the text, the spelling of saltwater, which is spelled as one word when used as an adjective, is proposed for correction. The Department is also proposing to replace the term "ground water" with "groundwater," consistent with the current use of the term in the field of geology and water supply.

The Department proposes to add text at N.J.A.C. 7:9D-1.6(e), and where applicable throughout the chapter, to convey to applicants that the discharge of water used during well drilling operations is regulated pursuant to N.J.A.C. 7:14A-1, the New Jersey Pollutant Elimination System rules, and contaminated water is regulated pursuant to N.J.A.C. 7:26G, the Hazardous Waste rules. These references are proposed to promote compliance with the rules for the large volumes of water that are used and then discharged during the drilling operation.

The Department proposes to delete the definition of "boring log" and "dewatering system permit" because these terms are not used in this chapter.

In Subchapter 3, and throughout the rules, where applicable, the Department proposes to delete the term "seal," where it is intended to refer to the permanent closure or decommissioning of a well.

Continuing Education Requirements (N.J.A.C. 7:9D-1.5, 1.9, and 1.10)

The Department proposes amendments to include the 2005 changes to N.J.S.A. 58:4A-11 that required the Department to establish a continuing education program for all licensed well drillers and pump installers. The Department proposes to establish an examination and continuing education points (CEP) manager of the new continuing education requirements and, thus, avoid the additional costs of administering the program and tracking to ensure each licensee meets continuing education requirements. For a more detailed cost analysis refer to the Economic Impact statement.

The Department determined that it would be most efficient and that the public would be best served, if it could identify an established organization to handle the administrative components of a continuing education program in order to avoid the costs associated with the

development of a new system. For a discussion on the examination and CEP manager's role in licensing see the Summary discussion under the "Application Process, Exams, and Experience" heading, below. With respect to continuing education, an examination and CEP manager will manage tracking of the CEPs for all licensees. Under the proposed continuing education program, an examination and CEP manager will maintain a database of accumulated CEPs for each licensee and provide reports to Department staff for tracking the progress of each licensee prior to license renewal. Prior to the renewal of a license, the Department and the State Well Drillers and Pump Installers Examining and Advisory Board (Board) will verify that only candidates meeting all of the relevant requirements, including continuing education, will be recommended for license renewal.

The proposed continuing education requirements require licensees to demonstrate that they have accrued 21 CEPs at the end of each licensing cycle to qualify for license renewal. This requirement is similar to the requirement for maintaining other national certifications. The requirements will become effective upon the effective date of this rulemaking in the middle of the next three-year licensing cycle, which runs from July 1, 2017 to June 30, 2020. Because licensees will not have a full three years to accrue the 21 CEPs needed for license renewal on June 30, 2020, the Department is proposing to require only 7 CEPs for the first license renewal after these requirements take effect. For the three-year licensing cycle beginning July 1, 2020, and every three years thereafter, the licensees will be required to obtain the 21 CEPs to qualify for license renewal. To allow the selected examination and CEP manager adequate time to determine whether licensees have met the eligibility requirements, the proposed rules also require CEPs to be obtained at least 60 days prior to license renewal.

In order to transition to this new model fairly, the rules will not require someone who has obtained their initial license during the prior three-year licensing cycle to meet the CEP requirements for his or her first license renewal. It would be overly burdensome for these licensees to rush to meet these requirements in advance of their license renewal. These individuals have been licensed for less than three years, and, therefore, would not have the full three years to obtain all 21 required CEPs. Furthermore, these licensees will have recently have established that they are well versed on current technology and the current regulatory requirements through completion of the required licensing examinations.

The proposed rule contains hardship provisions in accordance with the Act at N.J.S.A. 58:4A-11(c). These provisions are necessary to address extenuating circumstances preventing the individual licensee from meeting the conditions for license renewal, including the requirement to obtain CEPs. Consistent with the statute, the Department is proposing a waiver from the license renewal requirements for those licensees serving active duty in the military and for others that are unable to meet the requirements due to illness, disability, or other good cause. As a result of the aforementioned new provisions, the Department is proposing to recodify existing language accordingly.

The Department proposes new definitions at N.J.A.C. 7:9D-1.5 associated with the continuing education amendments described above. “Continuing Education Point” or “CEP” is defined as the unit of measurement for tracking purposes assigned to each continuing education class to ensure all licensees receive the required training. “Examination and CEP manager” is defined as 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 maintenance of continuing education points for all licensees.

The Department proposes new N.J.A.C. 7:9D-1.9(g) to outline the procedures for the review and approval of continuing education courses and new N.J.A.C. 7:9D-1.10(j), which outlines the duties and the responsibilities of the Board, to include the review and recommendation of continuing education courses pursuant to N.J.S.A. 58:4A-10. The Board is responsible for recommendations regarding license renewal for those licensees who have satisfied the continuing education requirements and regarding the formulation of a continuing education program. To that end, the Department is proposing to have the Board review and make recommendations to the Department for all seminars, workshops, training courses, and other means that can be used by a licensee to meet the continuing education renewal requirements. The Department will then make the final determination on the approval or denial of the continuing education course prior to notifying the applicant of the decision. A list of approved courses will be made publically available on the Department's website, which is found at proposed new N.J.A.C. 7:9D-1.17.

This subsection also establishes a time frame for submittal of requests to receive continuing education points for a given course. As the Board is responsible for making recommendations on continuing education courses as described above, requests for approval must be received a minimum of 90 days prior to the start of the course. This allows the Department to review the submissions for content and completeness prior to the next Board meeting, which are held every other month. As per the regulation, the Department would have discretion to review any other requests that are not submitted within that time frame provided the Board has made a recommendation. Approvals issued by the Department will expire at the end

of each licensing cycle. This is necessary to ensure that as the industry evolves and new methods or materials are developed, the courses approved for continuing education credit provide the appropriate training.

The amendments proposed at N.J.A.C. 7:9D-1.9 also contains address information for the Department and the information required in a request for review and approval of a continuing education course, including a course description, qualifications of the instructor, the time, date, and location of the course, and requested number of CEPs. Information regarding procedures to document attendance and to ensure that continuing education credit is assigned accurately is also required. The proposed amendments require submittal of any changes made to a course after the Department's approval is issued in order to allow the Department to determine if a reallocation of CEPs is necessary. Finally, the Department is proposing to exclude courses involving direct sales of products from requesting continuing education points as the focus of these courses is not on the education of the licensees.

Licensing (N.J.A.C. 7:9D-1.1, 1.3, 1.5, 1.6, 1.7, 1.8, 2.5, and 3.2)

The Department proposes amendments to the rules that govern the licensing of well drillers and pump installers in accordance with the Act. These amendments clarify or amend the role, responsibility, and categories of a licensed driller or pump installer to reflect changes in the industry. For example, an increase in geothermal-related drilling has resulted in a new group of drillers that work exclusively on geothermal wells and, therefore, do not need to meet experience or education requirements necessary for water well drilling. In addition, amendments to the licensing requirements and categories are necessary to align New Jersey's license classes more

closely with the skills and expertise necessary in the field, as well as the changing nature of the drilling industry.

At N.J.A.C. 7:9D-1.1, where the scope of the chapter is set forth, the Department proposes language to expressly state that the rules are intended to ensure that well drillers and pump installers have the necessary education, training, and experience to conduct their work in a way that protects the State's water resources and the public health.

In order to clarify the role of a licensed well driller or pump installer versus that of a licensed Master plumber, as defined at N.J.S.A. 45:14C-I et seq., the Department proposes to add a definition for "appurtenance." The new definition is intended to eliminate confusion by defining the instruments and equipment a New Jersey licensed well driller or pump installer is authorized to work on under the rules, as distinct from instruments and equipment that a New Jersey Master Plumber (regulated by the Department of Community Affairs) is authorized to work on pursuant to N.J.A.C. 13:32. In the past, local inspectors questioned whether New Jersey licensed well drillers and pump installers could legally install treatment equipment, such as water filtration and softening equipment. This matter was resolved by an April 25, 1988 consent order in *New Jersey Water Well Association, Inc., Kaye Well Drilling Inc., Pickwick Well Drilling vs. Township of Jackson and Department of Community Affairs* (Docket No. L-7540-87PW, Superior Court of New Jersey, Law Division, Ocean County) that clarified that the placement of the main discharge valve is the primary factor in determining which license prevails. The consent order set forth that licensed well drillers and pump installers alone have the authority to install treatment equipment or other appurtenances located before the main discharge valve to ensure that water passing through meets potable standards.

The Department is also proposing to amend the definition "well water system" to "well system" with clarification that appurtenances are part of the well system. Since some wells circulate fluids other than water, the word "water" has been removed from the definition. For example, a closed loop geothermal well circulates fluid as part of a heat exchange process with the surrounding formation.

The existing rules require anyone installing, repairing, or replacing a well pump to be or to be employed by a licensed pump installer or well driller. Pursuant to this provision, it is possible for an unlicensed individual to perform work merely because they are employed by a licensee. Both stakeholders and the Department agree that this provision does not adequately ensure that pump installation or repair is being appropriately supervised. The Department proposes to amend this requirement to instead require that any person engaging in such activities be either licensed or be "in the presence of and under the on-site supervision" of a licensee. This amendment ensures that all onsite work is either accomplished by or directly overseen by a qualified individual, who has demonstrated an understanding of the rules by earning a license.

The Department also proposes to require companies engaged in such activities to display the company name on their equipment, such as drill rigs and pump trucks, consistent with the equivalent requirement for drillers found at N.J.A.C. 7:9D-1.6(d). These provisions are proposed to ensure that the work is being performed by or overseen by licensees and to allow State and local enforcement field staff to readily identify unlicensed individuals that are operating in violation of the rules.

The Department proposes new N.J.A.C. 7:9D-1.6(g) to require licensees to 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. This is to ensure that any

correspondence, such as that for license renewal, continuing education, and enforcement actions, are sent to the proper address.

License Classes (N.J.A.C. 7:9D-1.5, 1.7, 1.8, 2.1, and 2.5)

In order to prevent unlicensed individuals from opening a well and potentially causing damage, the rules at N.J.A.C. 7:9D-1.7 establish which activities each license class is authorized to perform. In this section, the Department proposes to specify which licensees may perform winterization, maintenance, disinfection and/or decommissioning activities, to amend the general provisions for well driller licenses and pump installer licenses in order to reflect new well categories set forth in proposed Subchapter 2, and to add new driller license classes as discussed in the following section under the heading New and Amended License Classes. The responsibilities of each license classification do not change as a result of these amendments, rather the well category labels have changed based on the proposed changes in Subchapter 2.

In order to protect the large populations served by public community water supply wells, the existing rule prohibits journeymen and journeyman (Class B) well drillers from constructing public community water supply wells without the supervision of a master well driller. To be consistent and equally protective, the Department proposes to also prohibit these drillers from decommissioning public community water supply wells without the supervision of the master well driller.

The Department proposes amendments to define “journeyman (Class B)” well driller and to clarify in Subchapters 2 and 3 that this driller class is permitted to construct and decommission dewatering wells (proposed Category 6) that penetrate confined aquifers, respectively. This change corrects an inadvertent omission by the Department in the existing rules. Under the

existing rules, journeyman (Class B) well drillers have the authority to construct and decommission other types of wells constructed in confined aquifers and, therefore, should also have the ability to do so for dewatering wells. Proposed amendments to N.J.A.C. 7:9D-2.2(a)19 correct an oversight in the existing rules by clarifying that journeyman (Class B) well drillers are permitted to perform pump work consistent with current industry practice and the existing rules at N.J.A.C. 7:9D-1.7(a)3ii.

In order to better align the license categories with the specialties of well drillers observed in the field, the Department proposes three new well driller license classes: environmental resource and geotechnical, vertical closed loop geothermal, and elevator borehole.

The environmental resource and geotechnical well driller license class is proposed in order to consolidate and replace the existing classifications of monitoring well driller and soil borer. With the expanding use of direct push drilling methods and development of new categories of wells for environmental projects, there is no longer a clear separation between the required skills of both drilling classifications. Soil borers traditionally focused on the installation of borings, which were constructed without a permanent well casing or other equipment. Current industry practices frequently require the conversion of these “temporary” borings to permanent wells during installation, a function that a soil borer is not authorized to do under the existing rules.

Therefore, at new N.J.A.C. 7:9D-1.8, the Department proposes that to require individuals that hold a soil borer or monitoring well driller license as of the effective date of this rulemaking to transition into the new license class environmental resource and geotechnical well driller upon renewal of their license. Consistent with existing rule and statute provisions, all licenses issued pursuant to this chapter are issued on the same date (last issuance July 1, 2014) and expire three

years thereafter. The Department will not issue or renew a soil borer or monitoring well driller license on the next issuance date that follows the effective date of this rulemaking. However, upon adoption, licensed soil borers and monitoring well drillers will continue to hold a valid license for the remainder of the licensing cycle. Therefore, this section must continue to set forth the activities a licensed soil borer and monitoring well driller are authorized to conduct for the interim period between the effective date of this rulemaking and the next renewal date. The experience requirements required for soil borers and monitoring well drillers to transition to the new environmental resource and geotechnical well driller license are discussed in the application process, exams, and experience section that follows. Accordingly, a definition of environmental resource and geotechnical well driller is proposed at N.J.A.C. 7:9D-1.5.

Due to the expanding geothermal industry and increased focus on using energy saving technologies, as well as the unique nature of this type of drilling, the Department is proposing a new classification of vertical closed loop geothermal well driller. Over the past three years, the Department has issued an average of 243 individual closed loop geothermal well permits and eight site-wide geothermal well permits per year. The site-wide permits allow for installation of up to 500 wells per site for each permit issued. Therefore, with the increase in installation of closed loop geothermal wells, it's the Department's view that a new license class is necessary.

As required by the Act at N.J.S.A. 58:4A-23, the Department regulates the construction of boreholes for the installation of elevator shafts. The Department believes that this type of drilling warrants a separate license class. Therefore, the Department is proposing the new classification of elevator borehole well driller. Accordingly, a definition of elevator borehole well driller is proposed at N.J.A.C. 7:9D-1.5.

Administration of Exams and Eligibility (N.J.A.C. 7:9D-1.8, 1.10, and 1.5)

As a result of the transition to an examination and CEP manager, described below, the Department proposes to repeal existing N.J.A.C. 7:9D-1.8, which sets forth the procedures for applying for a well driller and pump installer license through a State-administered licensing program. Proposed new N.J.A.C. 7:9D-1.8 will set forth new procedures for applying for a license through a revised process, which will be coordinated with an examination and CEP manager.

The Department proposes to transition the administration of the license examination program (and responsibility for the continuing education program) because, the Department recognized the need for improved test questions and clear exam study materials that are current to the evolving industry. In order to address this need, the Department will seek out an organization that can both handle the administrative components of the program and better serve the regulated community.

The Department will identify an organization to administer New Jersey's license examination and continuing education program. The Department will look for candidates that can offer a robust examination program that includes the periodic review and rotation of peer-reviewed exam questions to prevent overexposure and ensure that applicants are being tested on the necessary and current skills required for their specialty. Applicants from the well drilling community have the added benefits of improved exam study materials, instant test scores, and more opportunities to test. While the Department can administer the current licensing examination only four times per year, the Department will find an examination and CEP manager that can administer the exam with less notice.

Finally, by transferring the responsibilities for proctoring exams, responding to challenges to exam questions, reviewing exam grades, and developing exam questions, the Department will reduce associated costs and focus more effort on enforcement needs discussed below in the changes to Subchapter 4.

While an examination and CEP manager will administer the licensing and examination program, the Department will retain oversight of all applications for licensure and for license renewal. The examination and CEP manager's primary role will be the administration of the licensing exams and tracking of continuing education credits. Applicant qualifications and exam results will continue to be reviewed by the Department in conjunction with the Board. Likewise, the Department and the Board will continue to verify that all candidates meet the qualifications set forth in this chapter prior to license renewal but the examination and CEP manager will track continuing education points for all licensees. Finally, to ensure that all candidates for licensure have a working knowledge of this chapter, the Department and Board will develop a New Jersey exam module for the examination and CEP manager to test each candidate on the rules.

Proposed new N.J.A.C. 7:9D-1.8(a) outlines the process and qualifications for an application for a license, including eligibility requirements, submittal of the application, and resolution of any final enforcement actions. In this section, the Department proposes to carry forward the existing requirement, that applicants submit a complete application form and meet experience requirements. The Department is proposing new requirements to ensure that an applicant is in good standing and has resolved any final enforcement actions, or satisfied the conditions of a revocation or suspension of a previously issued license. The Department also proposes to carry forward the existing experience requirements for New Jersey license applicants and make amendments to the experience requirements for out-of-State applicants.

N.J.A.C. 7:9D-1.8(a) Table 1 lists the required proficiency as demonstrated by a passing certification exam, as well as the experience and supervision requirements for each license class. The Department proposes to restructure the existing license categories to align with current industry practice. The type of exams listed for each category were selected because they represent the skills that an applicant must be proficient in to responsibly and safely engage in the activities authorized under each license class.

The proposed certification requirements for a licensed journeyman well driller who is applying for a master well driller license are split into two tracks in order to acknowledge the equivalency of the prior State-administered examination. The first track found in Table 1 is for a journeyman well driller that is licensed after the effective date of this rulemaking. This applicant must sit for the required examinations listed in Table 1 in order to be licensed as a journeyman well driller under the program administered by the examination and CEP manager. Therefore, those examinations would satisfy several of the certification exam requirements for the master well driller license. The second, alternate track is proposed for journeyman well drillers, who held a valid license at least one day prior to the effective date of this rulemaking. These applicants have already demonstrated equivalent knowledge by passing the State-administered exam. Therefore, the Department will exempt this group of applicants from the requirement to sit for several certification exams.

The Act, at N.J.S.A. 58:4A-23, requires that journeyman well drillers have at least three years of experience and that master well drillers have a total of five years of experience with at least two years as a journeyman well driller. The Department proposes to require three years of experience for journeyman and journeyman (Class B) well drillers and two years of experience for the remaining classifications of licenses, which include dewatering well drillers, vertical closed

loop geothermal well drillers, elevator borehole well drillers, environmental resource and geotechnical well drillers, and pump installers. Applicants who are applying for these license classes practice in more specialized fields where consensus from stakeholder input is that two years of training is adequate. Consistent with the two-year requirement for all other license classes, the Department proposes to increase the number of years of required experience from one year to two years for applicants for a pump installer license. The high failure rate on the pump installer's exam currently administered by the Department seems to indicate that the existing experience requirement for these candidates is not adequate. The Board and stakeholders were consulted and agreed that an additional year of experience is appropriate.

The Department also proposes to require applicants for a master, journeyman, journeyman (Class B), environmental resource and geotechnical, vertical closed loop geothermal, or dewatering well driller license to demonstrate experience in the construction or decommissioning of five wells within five years preceding the date of the application for a license. The proposed language codifies current Department practice that has been established through consultation with the Board and ensures that each applicant has documented evidence of onsite well construction or decommissioning. The Department is proposing an additional requirement for applicants for a master, journeyman, and journeyman (Class B) license that sets forth that all five wells used to document experience must be either Category 1, 2, or 3, which are the types of wells that these drillers are likely to drill over their careers.

Finally, the Department proposes to amend, establish, and expand the supervisory requirements for each license classification as described below, except master well drillers. There is no supervision requirement for an applicant for a master well driller license, regardless of the track they are on, because these applicants are currently licensed as a journeyman well driller and

are authorized to do work without supervision on all wells but public community supply wells. A supervision requirement is not necessary for these applicants as they have demonstrated knowledge of the fundamentals of well drilling, grouting, and pump systems under their existing journeyman well driller license.

An applicant for a journeyman, journeyman (Class B), environmental resource and geotechnical well driller, or vertical closed loop geothermal well driller license must be supervised by a licensed environmental resource and geotechnical, journeyman (Class B), journeyman, master, or vertical closed loop geothermal well driller while obtaining his or her years of experience. The supervisory drillers were selected because they are each authorized to install, maintain, and decommission wells requiring similar knowledge of well installation, grouting a permanent casing in place, and well decommissioning.

An applicant for a dewatering well driller license must be supervised by a dewatering, environmental resource and geotechnical, journeyman (Class B), journeyman, or master well driller. This is the only license class for which a licensed dewatering well driller may fulfill the supervision requirement because most dewatering well drillers almost exclusively construct driven wellpoints and may not necessarily be experienced in some of the more complex drilling or grouting techniques that are necessary to supervise an applicant for another well driller license.

The Department proposes supervision requirements for an elevator borehole well driller that will become effective two years after the effective date of this rulemaking. To facilitate the licensing of individuals who have demonstrated knowledge of the construction of elevator boreholes through education and experience, but hold no valid well drilling license, the Department proposes to delay the establishment of a supervision requirement. Once the supervision requirement takes effect, the Department will require supervision by a licensed master,

journeyman, journeyman (Class B) or elevator borehole well driller as these drillers are all authorized to drill Category 7 elevator boreholes under the proposed amendments to the rules.

The Department proposes to allow applicants for a pump installer license to be supervised by a licensed pump installer, master, journeyman, or journeyman (Class B) well driller because all of these license classes may perform work on pump systems under this chapter.

In this section, the Department also proposes to establish experience requirements for out-of-State applicants or applicants with out-of-State experience because these applicants are unlikely to have worked under New Jersey licensed drillers, but may nonetheless be sufficiently experienced. This is necessary to permit applicants who are fully qualified for a license, but have obtained experience through another state licensing program or through work outside of New Jersey, to be eligible for a license.

The Department proposes to approve alternate certification exams to meet the examination requirements if one of the required certification exams is discontinued or is significantly changed. While the Department will work with the examination and CEP manager that will administer testing to ensure that it is available and consistent, unforeseen circumstances (for example, changes in the drilling industry) could feasibly result in an exam no longer being offered. Although this is unlikely, the Department proposes this provision to address this circumstance.

As noted above, existing license classes of monitoring well driller and soil borer will be replaced with the new environmental resource and geotechnical license class. Licensed monitoring well drillers may renew their licenses under the environmental resource and geotechnical well driller license, which will be equivalent in its responsibilities, authorized activities, and requirements. In consultation with the State Well Drillers and Pump Installers Examining and Advisory Board (Board), the Department determined that soil borers, due to the nature of their

work, have experience in both drilling and grouting, which are the fundamentals of well construction. However, they may not be as well versed in the regulations regarding the construction of monitoring wells or the associated skills, such as setting a well screen or permanent casing. Therefore, a Department-designed training course focusing on these topics will be required in order to transition to an environmental resource and geotechnical well drilling license. A licensee who fails to complete the training course shall no longer hold a license pursuant to this chapter. The Department will notify all licensed soil borers in the State of the training requirement for re-categorization of their license. The Department will offer ample training courses to meet demand

The journeyman (Class B) license was created in 2001, in response to industry requests for a well driller license specific to small businesses that primarily focus on residential domestic and irrigation wells. Due to the nature of their work, these well drillers possess the fundamental skills of drilling and grouting that are necessary for groundwater protection during construction and are familiar with well development and pump systems similar to a journeyman well driller. The difference between a journeyman and a journeyman (Class B) is that journeyman (Class B) would not be familiar with the construction of a monitoring well or other well type that is used for environmental remediation projects. Therefore, the Department proposes to offer a training course addressing these issues to individuals with a valid journeyman (Class B) well driller license to allow them to upgrade their license to a journeyman well driller license. This is the same training course that will be offered to licensed soil borers who wish to transition their licenses to an environmental resource and geotechnical well driller license.

The Department proposes that previous experience obtained as a licensed monitoring well driller or soil borer is equivalent to the experience gained as an environmental resource and

geotechnical well driller and, therefore, will satisfy the supervision requirements found at Table 1. This provision is necessary during the transitional period and until the monitoring well driller and soil borer license types are replaced with the new license class (environmental resource and geotechnical well driller). As the monitoring and soil borer license classes are similar to the new license class and as any gap in knowledge will be addressed by the aforementioned training course, it is appropriate for the experience under these well drillers to be used to satisfy the supervision requirements to obtain a license during this transition period.

The application requirements at proposed new N.J.A.C. 7:9D-1.8 are similar to existing provisions and require basic information from the applicant, including name, address, telephone numbers, education, and the last four digits of an applicant's Social Security number for tracking purposes. The existing requirement for a General Education Diploma (GED), which is a high school equivalency measure, is proposed to be eliminated in response to stakeholder comments that qualified individuals were being excluded from sitting for the exam for lack of a GED. The Department proposes to require submittal of documents, such as W-2 forms, well records, copies of out-of-State licenses, references, and other documentation to substantiate an applicant's experience requirements.

Recommendations from the Board (N.J.A.C. 7:9D-1.10)

Pursuant to the Act, the Board is responsible for the review of the license applications and for making recommendations for licensure for all candidates for a well driller or pump installer license. The rule, as amended, codifies the existing process that the Department and Board follow to certify or decline to certify an applicant. Upon receipt of an application for a license, the Department will verify that the candidate has submitted a complete application and met the

requirements for licensure. Provided a complete application is received at least 10 working days prior to the next scheduled Board meeting, that application and any others received, will be presented to the Board at that meeting. The 10-day deadline for submission provides the Department time to review the application and determine if it is complete prior to the next Board meeting. Pursuant to the Act, at N.J.S.A. 58:4A-10, the Board has the authority and responsibility to review the list and make recommendations for issuance, renewal, or denial of a license. The Department proposes to continue to assist with the administrative functions of this procedure and notify each applicant in writing of the Board's recommendation. Upon payment of an initial licensing fee to the Department, those applicants who have been recommended for licensure will be issued a license.

The Department proposes new N.J.A.C. 7:9D-1.10(g), which addresses certification of applicants for a new license by the Board. The Department proposes that the Board recommend the issuance of a license for those individuals that meet the eligibility requirements of N.J.A.C. 7:9D-1.8, have passing grades on all required certifications, and have submitted a completed application. The Department proposes that the Board not recommend the issuance of a license to an applicant that has an outstanding enforcement action under this chapter, has outstanding issues related to a revocation or suspension, or has used experience to qualify for licensure from a well that was constructed in violation of this chapter. This will ensure that no person is issued a license if they have exhibited conduct in violation of this chapter in accordance with the requirements at N.J.A.C. 7:9D-1.8(a)2.

License fees and renewal (N.J.A.C. 7:9D-1.9 and 1.10)

The Department proposes to require proof of compliance with continuing education requirements that will be tracked by an examination and CEP manager with periodic reports provided to the Department. The Department will provide licensees that have satisfied the continuing education requirements with renewal forms or a general notice that directs licensees to the license renewal forms that are available online in advance of renewal deadlines.

The Department proposes to delete the Department's $50.00 examination fee for a well driller or pump installer license, because the Department anticipates contracting an outside party as the examination and CEP manager. Fees will be determined once the contract with the examination and CEP manager is negotiated, and additional rulemaking will be pursued, if necessary. As a result of this deletion, existing language at N.J.A.C. 7:9D-1.9(c), (d), and (e) is proposed for recodification with amendment at proposed N.J.A.C. 7:9D-1.9(b), (c), and (d), respectively. Amendments to these sections are described below.

While the existing rule lists the initial license and late renewal fee of $300.00 for each license class separately, amendments are proposed to simply state that initial and renewal fees for all well driller licenses are $300.00. New language is also proposed to address requirements for a licensee who fails to renew a license within the time period prescribed at or by the late renewal deadline. The Department proposes to require anyone whose license is expired for more than six months to successfully apply for a new license and demonstrate that he or she has met the continuing education requirements for the lapsed license.

Construction Standards

Permitting (N.J.A.C. 7:9D-1.11, 1.12, 1.13, 1.15, and 1.16)

The permitting requirements at N.J.A.C. 7:9D-1 set forth provisions for the issuance of well permits, including site-wide and emergency well permits, and establish electronic submittal requirements and the need for accurate locational information.

The Department proposes to clarify at N.J.A.C. 7:9D-1.11(b) that a well shall only be redesignated if it meets the construction standards of the new well use. For example, it is common practice for municipalities to drill non-potable Category 2 test wells to assess aquifer yield prior to installing a Category 1 potable public community water supply well. Category 2 construction requirements at N.J.A.C. 7:9D-2.3 do not require a minimum of 50 feet of grout seal from the bottom of the casing, as is required in the construction of all potable Category 1 wells. Converting a non-potable test well to a public community water supply, if the well does not meet potable Category 1 construction standards, would have a potentially negative impact on large numbers of consumers and, therefore, is prohibited by the proposed rule.

The Department proposes to expand the use of site-wide well permits to newer well uses where the completed well construction results in a sealed borehole that does not pose a threat to the subsurface waters of the State, or where the wells are installed as part of a well system that is used for a single purpose. For example, Electrode wells are an example of a newer well use that results in a sealed borehole during installation and act as a system to remediate contamination. This change decreases the permitting fees for these well fields and simplifies the review process of the permits and records by the Department.

The Department proposes to codify the existing permit condition that establishes that permits are non-transferable. This is necessary to ensure that the contractor that signs the well permit application is the party that assumes responsibility for the construction of the well. If a property is sold or a property owner hires another licensed well driller, a new permit is required.

The Department is proposing amendments to N.J.A.C. 7:9D-1.11(e) to require a well driller to keep a copy of the State well permit available onsite for inspection in all cases, except for those general permits-by-rule pursuant to N.J.A.C. 7:9D-1.11(g)6. The Department also proposes to require that the well driller provide a separate copy to the property owner to have available for inspection. These amendments are proposed to assist the Department and local administrative authorities in determining compliance during field inspections.

Accordingly, the definition of "administrative authority" at N.J.A.C. 7:9D-1.5 is proposed for amendment to reflect organizational changes within the Department and to include a County Environmental Health Act (CEHA) certified agency as an administrative authority consistent with the Safe Drinking Water Act rules (N.J.A.C. 7:10), which establish that these agencies are responsible for review, approval, or inspection of any proposed construction of new or modified public non-community or non-public water systems, including treatment systems.

The Department proposes to amend N.J.A.C. 7:9D-1.11(f) to require that all permit applications be submitted using the Department's electronic permitting system (e-permitting). E-permitting is a cost effective and efficient way to process permit applications and currently 98 percent of all well permits are submitted using the e-permitting system. Using this system, well drillers have the benefit of checking the status of submitted applications and reviewing deficiencies without the delay associated with conventional mail. In lieu of the traditional paper signature of the well driller, each well driller has been given a unique log on ID that allows the well driller to electronically certify the permit. In certain instances, especially where deviations from standards are being requested, the Department has proposed the amendments to N.J.A.C. 7:9D-1.11(f)1 to allow for paper permit submittals with prior approval from the Department.

Additionally, new language is proposed to clarify that the potential sources of contamination identified on the well permit application refer to septic systems and other contaminants identified in N.J.A.C. 7:9D-2.7(a) through (c). This provision is not intended to refer to those contaminant sources regulated by the Department's Site Remediation Program.

The Department is proposing to require that all well permits submitted for public community water supply wells to include a reference to the application number of the Permit to Construct required pursuant to the Safe Drinking Water Act rules at N.J.A.C. 7:10-11. Under the Safe Drinking Water Act rules, the licensed professional engineer is required to submit a sealed schematic drawing of the proposed well construction, yet it is the well driller who has the responsibility to ensure that the well is constructed in accordance with this chapter for protection of groundwater. By using the application number to coordinate review of the schematic with the Safe Drinking Water and Well Permitting programs, the Department will retain the ability to issue both permits concurrently and ensure that the well driller is not asked to construct a well designed by an engineer that does not meet the standards of this chapter.

Similarly, the Department proposes to require that a copy of the schematic drawing of the proposed well construction be submitted with a permit application for test well for future potable use. Water systems drill such test wells to assess aquifer yield prior to converting them to public community water supply wells and obtaining the required permit approval. In this instance, the Department would not yet have the submittal of the Permit to Construct required pursuant to the Safe Drinking Water Act rules at N.J.A.C. 7:10-11.5 and, therefore, submittal of the schematic is necessary to verify that the test well is constructed consistent with standards for construction of a potable well.

The Department proposes amendments to the requirements for the submittal of well permits and well records to update the terminology and requirements for locational data, including the standards for geographic information system submittals and to establish that future such updates will be provided via the Department's website.

The Department proposes to clarify that it is the responsibility of the property owner to provide accurate information for the driller to record on the well permit application. Existing language establishes that the property owner is responsible for ensuring that the information on the well permit application is true, however, because the driller prepares and submits the application, it is more accurate to state that the property owner is responsible for providing the driller with the correct information. It is the responsibility of the well driller to provide accurate locational, construction, property, and property owner information for the well. Locational information is critical to ensure that a well is not constructed in close proximity to a septic system or contaminated site. Accurate construction information is necessary to ensure that nearby sources of contamination or geological factors have been considered in the design of the well (for example, certain circumstances may require additional casing). Information about the property owner is necessary to document the person responsible for ensuring this well is maintained in accordance with this chapter after installation is complete. Due to electronic permitting security measures, a property owner cannot obtain access to the electronic version of the well permit. Therefore, the well driller must certify that they are acting as an authorized agent for the owner and must ensure that information is relayed accurately on the electronic well permit application. In situations where the well permit is submitted on paper, the owner's signature will still be required.

The Department is proposing amendments to require a well driller to submit cancellation forms for all approved well permits for wells that were never constructed and that are expired, within 90 days of expiration using the electronic permitting system. This provision is intended to assist the Department with compliance by allowing staff to focus on wells that were constructed and to ensure that the Department maintains accurate records of well locations.

The Department proposes amendments to expand the number of well types that are eligible for a site-wide permit and to amend the definition of "site-wide permit" consistent with these changes. Site-wide permits are typically issued for environmental or geotechnical projects that can involve hundreds of wells. The types of wells that the Department permits and expects to continue to permit as site-wide permits are dewatering wells and wellpoints, temperature probes, electrodes (including heated element wells), 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 wells. The wells permitted under a site-wide permit might also function as part of a system, or are sealed as they are constructed in order to function properly. For example, borros anchors, used to measure settlement, consist of a one-inch pipe that is sealed or grouted in place as they are constructed, to eliminate any annular space. A small ¼ inch pipe inside the well is attached to an anchor and used to measure changes in elevation. For these wells, the Department is proposing to relocate language from existing N.J.A.C. 7:9D-2.6(a)1 and 2, which is proposed for deletion by allowing a well driller to obtain a site-wide permit where 10 or more wells of the same use are installed on site. Accordingly, the Department is also proposing to modify the fee tables at N.J.A.C. 7:9D-1.16 to cross reference the expanded list of well types that are now

eligible for a site-wide permit. Therefore, it would be costly to pay an individual permit fee for each well type.

The Department proposes new text at N.J.A.C. 7:9D-1.15(b) to require that a well record submission for a site-wide permit includes the total number of installations, including a local identification number, and the total depth and description for each installation and a site plan that depicts the location of each installation. This is necessary to assist the Department in tracking the number of wells drilled and subsequently ensuring that all wells are decommissioned. Similarly, a table of local identification numbers will also be required with the submittal of a well decommissioning report. This will allow the Department to keep a record of those wells that are still active to ensure that they are eventually decommissioned, so as to eliminate threats to safety and groundwater.

Amendments are proposed at N.J.A.C. 7:9D-1.11(g) to be consistent with the restructuring of well categories in Subchapter 2 and to clarify that the activities listed in this subsection are permitted under general permits-by-rule, consistent with the Act at N.J.S.A. 58:4A-14a(2).

The Department proposes to establish a general permit-by-rule for those elevator boreholes or jackholes that require casing and are installed in accordance with N.J.A.C. 7:9D-2.5(c), the Uniform Construction Code (UCC) at N.J.A.C. 5:23, and the American Society of Mechanical Engineers Safety Code for Elevators and Escalators at A17.1. The construction of elevator boreholes is decreasing due to changing technology and the establishment of holeless installations. Furthermore, pursuant to the UCC, new elevator shaft installations are required to have PVC liners, leak detection systems and double bottom jacks to protect against potential fluid leaks and groundwater contamination. Therefore, the Department has determined that there is no environmental or public safety benefit associated with the issuance of individual permits for this

activity and that the regulated community would be better served by a general permit-by-rule provided the installation meets the criteria set forth in the proposed general permit-by-rule.

The Department proposes to clarify that wells permitted under general permits-by-rule pursuant to subsection (g) continue to be subject to the construction requirements found in Subchapter 2. Additionally, the Department is codifying existing practice and will not require a well record for these types of wells based upon the limited environmental and public safety risk associated with construction of these wells.

The Department proposes amendments to existing N.J.A.C. 7:9D-1.12, which addresses the procedures for obtaining an emergency well drilling permit. At N.J.A.C. 7:9D-1.12(b), the Department proposes to require electronic submission of emergency permits consistent with the proposed mandatory electronic submission of all well permits at proposed N.J.A.C. 7:9D-1.11(f). An exception is proposed at N.J.A.C. 7:9D-1.12(b)1 to allow submission via fax prior to the start of drilling for companies that cannot submit electronically due to factors of hardship, such as poor internet reception. In those situations, the Department is proposing to carry forward the requirement for the well driller to submit a completed emergency well permit application with applicable fees and original signatures within five days or the well driller is considered in violation of this chapter. The Department has proposed N.J.A.C. 7:9D-1.12(b)1 to deny issuance of future emergency permits for well drillers who do not submit the completed application with applicable fees in that five-day time period.

The Department is proposing to delete existing language that requires a description of the emergency, as there is no place to add this information when submitting emergency well permits electronically.

Emergency permits are issued most often in situations where a homeowner's potable well is without water and a new well is immediately necessary. However, the rule at proposed N.J.A.C. 7:9D-1.12(b)2, states that a Category 1 potable well or a Category 2 non-potable well shall not be drilled under an emergency permit without prior consultation with the Department if the well is to be located within a constrained area, as identified via the Department's well permitting portal (for example, contaminated area or areas with the potential for saltwater intrusion). This provision is necessary to prevent possible contamination of the well and aquifer. Through the electronic permitting system, the well driller is able to verify the location of the proposed well in relation to contaminated areas, such as those designated as Classification Exception Areas, Currently Known Extent of Groundwater Contamination, etc. The Department may issue a well permit in these constrained areas, but will require additional construction measures to ensure that the well construction is protective of public health and the environment.

The Department proposes to require the well driller to keep a printed copy of any approved emergency permit onsite for inspection by any local, county, State, or Federal authorities.

Proposed new N.J.A.C. 7:9D-1.12(d) addresses requests for emergency permit approvals for wells constructed in known or suspected contaminated areas. This provision specifies that the driller is responsible for constructing the well in accordance with this chapter. This includes determining if the well is located in a constrained area where additional construction requirements may be required to prevent contamination, even if the well is constructed during non-business hours. Without Department approval in advance, the well driller may be unaware of those additional construction requirements and is assuming responsibility if he or she proceeds with construction of that well. Maintaining a copy of the permit application will be required to provide

adequate information to any authorized local, State, or Federal representatives that are attempting to determine compliance during a field inspection.

Amendments are proposed to N.J.A.C. 7:9D-1.16(a), to revise the methods of payment for all well permit applications to include electronic check or credit card, consistent with the electronic permitting system. The Department will continue to accept check or money order for those well permitting applications for which the well driller has received prior approval to submit on paper.

The Department proposes to delete N.J.A.C. 7:9D-1.16(c) because the Department no longer performs the service of publishing a list of acceptable electronic media. Expedited permits are now processed through the electronic permitting system where payment is accepted by electronic check or credit card.

The Department proposes to amend the heading of N.J.A.C. 7:9D-1.15 to reflect that this section will now include well decommissioning reports.

Additional amendments to N.J.A.C. 7:9D-1.15 include, a requirement that all well records be submitted electronically unless prior approval has been granted from the Department. This change will assist the Department in tracking well records in a more efficient manner. The Department also proposes to delete duplicative requirements to have a well record signed by the well driller on site once the well is completed. As discussed above, each well driller has been given a unique log on ID that allows them to submit through the electronic portal in lieu of the traditional paper signature. Paper submission will be allowed by the Department only where applicants have no access to a computer.

The Department proposes amendments to clarify well record reporting requirements for pumping equipment having a capacity of 70 gallons per minute or greater and to be consistent with language used elsewhere in the chapter.

Permanent pumping equipment for larger capacity wells is often installed once aquifer tests have been run to assess well yield and after the 90-day submission requirement for well records has passed. As the permits to construct the well are not transferable and only accessible in the electronic permitting system by the driller or company who obtained them, reporting pump information cannot be accomplished through the electronic permitting system if it was installed by a driller or pump installer from a different company. Therefore, the Department is proposing to allow an email submission of well pumping equipment information in cases where the pump was installed by someone from a different drilling company. It is not unusual, for the drilling and pump installation work to be handled by different companies, especially for larger public community supply wells, where one company is often contracted to construct the well and another company is contracted at a later date to install the pump.

Similar to the permits and well records, the Department is proposing to require that all well decommissioning reports to be submitted via the electronic permitting system within 90 days of completion. The proposed rule also identifies the information that must be included in a decommissioning report, so that the Department may determine whether the well was decommissioned in accordance with this chapter, such as the date the well was decommissioned, the well use, and GPS location of the decommissioned wells. This information will assist the Department in identifying which well has been decommissioned, particularly in cases where there are multiple wells on the same property or where identification numbers used by consultants do not match those on the well permit. This amendment is consistent with existing requirements for the submission of GPS coordinates for all constructed wells.

The Department proposes to require a well driller to keep a copy of an approved decommissioning plan onsite while work is ongoing. Decommissioning plans are required for

wells, such as multiple cased wells or those with obstructions that require the driller to take additional measures, to properly decommission wells as outlined in N.J.A.C. 7:9D-3.1(j). A copy of the plan will ensure that a State or local representative can verify that the plan is being properly implemented for protection of the groundwater.

Well Construction (N.J.A.C. 7:9D-1.5, 1.6, 2.1, 2.2, 2.7, 2.8, 2.9, and 2.10)

The Department proposes to amend the well construction standards, set forth in N.J.A.C. 7:9D-2. The standards establish categories of wells based on well use; specify well construction standards for each category; set minimum distance requirements; and outline procedures for deviations from construction standards.

At N.J.A.C. 7:9D-2.2(a)4, the proposed amendment prohibits use of any material or equipment for construction or maintenance of a well that is poses a significant hazard to public health, safe drinking water, or groundwater. The Department proposes to delete the word "significant" because the term is subjective and the provision is intended, appropriately so, to protect against any hazard.

The Department proposes to move the existing provision at N.J.A.C. 7:9D-2.2(a)6, which restricts Category 1 and 2 wells from being enclosed or located within a basement or cellar to N.J.A.C. 7:9D-2.3(b)1, which sets forth the specific construction requirements for Category 1 and 2 wells.

The Department is proposing to amend N.J.A.C. 7:9D-2.2(a)8 and 10 to protect groundwater while drilling. Proposed new language codifies the standard industry practice of hydrating and pooling granular- or sodium-based bentonite around the outside of the well casing while drilling. This practice is required in other states, such as Minnesota and Michigan, to seal

the small annular space created by driving well casing in order to protect groundwater. Additionally, the Department will require that the head of drilling fluid be maintained in boreholes drilled in unconsolidated formations. This change is necessary to prevent collapse of the borehole around the casing and ensure proper grouting of the well, specifically where grouting of the annular space does not occur immediately after setting the casing.

Existing provisions at N.J.A.C. 7:9D-2.2(a)9 require a four-inch oversized borehole during construction for all wells types. With recent advances in technology, the Department is proposing new language to exempt the construction of Category 3 environmental and geotechnical wells using direct push technology and Category 5 closed loop geothermal wells, from this requirement. The development of smaller tremie grout lines and grout pumps, allow for effective grouting of the smaller boreholes created by direct push technology as discussed below in the Summary for proposed N.J.A.C. 7:9D-2.4(d). These advances in technology also apply to the construction of closed loop geothermal wells, which does not allow for the four-inch oversized borehole.

The Department proposes to replace the term "aquifer" with "water bearing unit," where pertinent, consistent with the proposed definition at N.J.A.C. 7:9D-1.5. A "water bearing unit" is a geologic unit that can produce water and is separated from other geologic units that may or may not be aquifers or be a part of an aquifer. Water quality can vary across confining layers, even within a single aquifer. Therefore, in order to avoid mixing water of varying quality, it is important to clarify that all return water is delivered to the originating water bearing unit. This definition was crafted with assistance from New Jersey Geological and Water Survey staff and is used at N.J.A.C. 7:9D-2.2 and 2.3 to restrict communication between units to protect groundwater.

The Department proposes to amend the definition of "confining layer" to demonstrate that a confining layer is not restricted to named or formally recognized aquifers and consists of a

single body, whereas a water bearing zone can be composed of multiple confining layers. This term is used in Subchapter 2, where wells are required to be constructed into a confining layer when located in close proximity to septic or other contamination sources; wells constructed within a confining layer have a reduced potential to introduce communication between water bearing zones or spread suspected contamination or salt water.

In order to maintain groundwater quality, it is imperative that wells constructed across more than one water bearing unit do not allow communication between these units. Accordingly, the existing rule prohibits drillers from screening or gravel packing across more than one water bearing unit. The Department proposes to clarify that it is not the driller, but rather the Department that will determine the location and extent of water bearing units. A request to deviate from this prohibition must be approved according to the deviation procedures set forth in N.J.A.C. 7:9D-2.8 and included on the well permit application submitted to the Well Permitting Program. The Department proposes an amendment that emphasizes that an approval issued by the Department under another program, for example the Site Remediation Program, is not sufficient to allow the driller to screen or gravel pack in more than one water bearing unit.

The Department proposes to amend existing N.J.A.C. 7:9D-2.3(g) to ensure that the water associated with a flowing well that naturally rises to the ground surface is prevented from being discharged as a nuisance by requiring that it be contained and returned to the originating water bearing unit.

There are several proposed amendments intended to address safety hazards associated with well drilling activities and to protect groundwater quality. Amendments are proposed to clarify that the top of the borehole must be protected from surface contamination while the well is under construction. Amendments are also proposed to ensure that the wellhead must be protected when

work is temporarily suspended to switch drill rigs or leave for the evening and clarify that decommissioning is only required if the well driller has permanently suspended construction or when the borehole or partially constructed wells cannot be used as intended. Proposed N.J.A.C. 7:9D-2.2(a)14ii specifies the instances when removal of the drilling rig from the borehole is permitted, that is, to conduct geophysical tests or enable the well driller to change equipment.

The existing rule at N.J.A.C. 7:9D-2.2(a)15, requires the capping of the well casing "until the pump is installed" or the well is placed in service or decommissioned. The Department proposes to delete this phrase as the well should be capped at all times, while not in service or decommissioned, to protect groundwater quality.

Under certain circumstances where the Department determines that a well or appurtenance has become a hazard to safety or groundwater quality, the Department may order work be done on the well to mitigate the risk. The Department proposes an amendment to this existing language, in accordance with the Act, at N.J.S.A. 58:4A-4.2, to establish that the property owner is responsible for hiring a well driller to perform the work after the Department issues its order.

The Department proposes to limit the depth to which a borehole can be overdrilled below the finished well. This amendment is necessary to prohibit vertical migration of water of differing quality, even within the same aquifer. The Department recognizes that some overdrill is needed to set the well screen and, therefore, proposes to allow a borehole to be overdrilled up to 20 feet, which represents the length of a standard drill rod.

Existing N.J.A.C. 7:9D-2.2(b) already addresses wells installed in areas of known contamination or saltwater intrusion, and the Department proposes to extend these requirements to wells constructed in areas of suspected contamination or saltwater intrusion. Wells drilled

through known or suspected contaminated zones are required to be double-cased with the annual space sealed between well casings to protect all underlying aquifers.

In addition, language is proposed that specifies that the driller shall notify the Department of Category 1 or 2 wells proposed to be drilled within 500 feet of salt water. This provision is necessary to limit the introduction or acceleration of saltwater contamination from individual wells into area aquifers used for public supply. With advance notice to the Department prior to construction, the Well Permitting Program can set additional conditions on the permit that will protect the aquifer and the well during construction. Additionally, the 500-foot requirement provides a buffer area for encountering saltwater intrusion consistent with the Source Water Assessment Program (SWAP) established under 1996 amendments to the Federal Safe Drinking Water Act and administered by the Department that determines the vulnerability of each drinking water source to area contaminant sources. Saltwater is considered a major pollutant source as defined by the Safe Drinking Water Act rules at N.J.A.C. 7:10-11, which prohibits the construction of a public community water supply well without the appropriate treatment if it is located within 500 feet of a major pollutant source.

Categories 1 and 2 (N.J.A.C. 7:9D-2.3, 2.1, 1.5, and 2.7)

The Department proposes to amend N.J.A.C. 7:9D-2.1(a), which establishes well categories based on well use, to be more specific with regard those uses and to align them with the amended license classes proposed at N.J.A.C. 7:9D-1.7. Aquifer storage and recovery (ASR) wells are proposed to be added to the list of wells types included in Category 1 Potable Water Supply Wells, as these wells are used to supply water to the public for consumption. The list of Category 2 Non-Potable Water Wells is proposed to include the additional examples of injection

and recharge wells, which have been permitted as Category 2 wells in past practice and non-potable aquifer storage and recovery wells, such as those used for cooling at industrial power plants. The Department proposes to delete the word "supply" from the title of Category 2 as injection wells and other wells in this category do not supply or deliver water to the end user as part of their function. The definition of potable water is proposed for amendment to be more consistent with the existing definition in the Safe Drinking Water Act rules (N.J.A.C. 7:10).

The Department is proposing to define several types of wells at N.J.A.C. 7:9D-1.5. Accordingly, the Department proposes to add a definition for "aquifer storage and recovery well" or "ASR well" consistent with amendments to N.J.A.C. 7:9D-2.1(a)1 and 2 that propose to include some of these types of wells as Category 1 and 2 wells. The Department also proposes to define "non-public well" as a well that provides potable water to individual residences, or a system that serves less than 15 connections and fewer than 25 individuals, because this type of well is regulated as a Category 1 Potable Water Supply Well pursuant to N.J.A.C. 7:9D-2.1(a)1. A new definition for "standing column well" is proposed to establish that this type of well is a part of an open loop geothermal well system for which the Department expects to see more installations in the future.

At N.J.A.C. 7:9D-3.4 and throughout the rule, the Department is proposing to update section headings consistent with the restricting of well categories as described above.

Amendments are proposed at N.J.A.C. 7:9D-2.3(a)1 and 2 to clarify that the installation, design, location, construction, testing, and disinfection of Category 1 and 2 wells systems must be done in accordance with the Safe Drinking Water Act rules at N.J.A.C. 7:10-11 or 12. Amendments are also proposed in paragraph (a)2 to specify when wells shall be disinfected, that is, following installation, redevelopment, maintenance, well, and/or pump repair.

Amendments are proposed at N.J.A.C. 7:9D-2.3 to ensure protection of public health, by referencing the American Water Works Association standard for disinfecting wells. This amendment is proposed to address concerns regarding handling and placement of gravel pack and to ensure that any gravel pack that is stored onsite is properly disinfected prior to construction of both potable and non-potable wells.

N.J.A.C. 7:9D-2.3(a)4, which addresses standards for potable water supply wells drilled in consolidated formations, is proposed for amendment to clarify that the well casing must be at least six inches in diameter and eliminate duplicative requirements that are addressed elsewhere in these rules.

The Department proposes amendments to allow flexibility where circumstances exist that do not allow construction of Category 1 and 2 wells in accordance with the construction standards. Typically wells constructed in consolidated formations where competent rock is encountered prior to setting the casing, require 50 feet of casing set a minimum of 20 feet into unweathered rock. The Department proposes to allow an alternate method of well construction in consolidated formations that is necessary in geological areas of northern New Jersey, where the large amount of overburden and depth to bedrock make well construction by the typical method, impractical. In the past, the Department has consistently approved these methods as a deviation pursuant to N.J.A.C. 7:9D-2.8 and proposes to allow to streamline the approval process by eliminating the need for a deviation request.

The Department also proposes to amend N.J.A.C. 7:9D-2.3(d)3, the requirements for obtaining a deviation when a mud seam or broken rock prevents the well driller from constructing a well in accordance with this chapter. The existing language requires the driller to pull out the permanent casing and reinstall before applying for a deviation from the Department.

However, as this approach may not be feasible in all cases, the Department proposes to require a driller to request a deviation before acting, so that the Department will work together with the driller to find a feasible and protective solution.

The Department proposes to exclude irrigation wells from the requirement to be equipped with a pitless adapter, the primary function of which is to establish a sanitary connection between the well pump and the water line leading to a house. Irrigation wells are typically disconnected from interior plumbing systems used for sanitary purposes and used seasonally during the warmer months. Therefore, protection from bacteriological contamination and freezing is not a concern for these wells. The Department also proposes at N.J.A.C. 7:9D-2.3, to update the name of the performance standards relating to pitless adapters and the contact information for the Water Systems Council.

Also in N.J.A.C. 7:9D-2.3(b) and consistent with current practice for larger capacity wells, where the pitless adapter is attached using a weld and not a mechanical joint, the proposed rule will allow the pitless well unit and lateral discharge line to be welded, such that it is water-tight. The welded connection is more secure than a bolted connection, which has a rubber seal that can shift in place, leaving the well susceptible to surface contamination.

The definition of a flowing well has been added to clarify the circumstances when a non-vented well cap should be used. The Department is proposing to include amendments to protect wells from various weather-related hazards. With respect to contamination related to flood events, the Department proposes to allow a watertight cap instead of a downward facing vent for wells located within the 100-year floodplain and for flowing wells. For wells located in the 100-year floodplain, it is important to prevent the entry of floodwaters into the well and, therefore, into the groundwater, however, an elevated downward facing vent may not always be feasible.

As such, the proposed amendment allows for the installation of a water-tight cap as an alternative method where elevation is not feasible. In the case of a flowing well, the water pressure is high enough to cause the water to reach equilibrium above ground surface so that it runs out of the casing and onto the ground. A well cap is required in order to contain the water so that the well can properly function. This is reflected in the existing rules at N.J.A.C. 7:9D-2.2(a)16, which conflicts with the existing requirement to install a downward facing vent. The proposed amendment will correct this inconsistency by clarifying that flowing wells shall be capped rather than a downward facing vent.

At N.J.A.C. 7:9D-2.3, the existing rules require protection from freezing for the lateral discharge line in the northern counties only. The Department proposes to require protection from freezing for all the lateral discharge lines, well pumps, and well appurtenances throughout New Jersey, because there is potential for freeze in all regions of the State. All construction related requirements that relate to freezing are proposed to consolidate all requirements relating to freeze protection in one location; other sections of N.J.A.C. 7:9D-2.3(b) are proposed to be recodified accordingly.

The Department is proposing to amend the rules to reflect changes in the industry and to provide clarification, with respect to pumps. The Department is proposing amendments to include changing technology and current industry practices regarding pressure sensing and relieving devices. For example, Variable Frequency Drive (VFD) pumps use transducers for overload protection rather than a pressure switch. Accordingly, the word “device” is proposed to reflect the expanded options of pressure relieving devices. The rules are proposed for amendments to ensure that these sensors are installed in accordance with manufacturer’s specifications.

The Department proposes to clarify that a foot-valve or check-valve is required for each pump system. This change is necessary because municipal wells have the check valve on the discharge line, which is a part of the pump system, rather than directly attached to the pump itself.

Also at N.J.A.C. 7:9D-2.3(b)6, the Department proposes amendments to allow for other methods of protection of the pump controls beyond the existing language, which only contemplates a weather-proof, locked cabinet. This amendment reflects the introduction of new products that allow storage of these accessories in weather proof containers outside the main building. Irrigation wells, for example, can be protected and secured in the middle of a field using these devices provided they follow the manufacturer's specifications, which will address protection from the weather.

It is common knowledge that excessive levels of sand and silt can damage well and plumbing systems. The existing rule requires that all well screens be properly sized to produce water free of sand and silt. This standard has proven to be too subjective. Therefore, the proposed language establishes a threshold of five ppm or less. A limit of five ppm is recommended for wells primarily used to supply homes, institutions, municipalities, and industries by the United States Environmental Protection Agency and National Water Well Association in the Manual of Water Well Construction Practices (1976). More recently, references from the Handbook of Ground Water Development (Roscoe Moss Co., 1990) have maintained five ppm as the recommended limit to avoid the detrimental effects on all well systems. The Department is confident, based on the references noted above, as well as its experience and stakeholder input, that this threshold will prevent damage that can shorten the life span of a well and minimize that likelihood of a plug in an irrigation system.

The Department proposes an amendment to N.J.A.C. 7:9D-2.3(d)2 in order to expand the acceptable methods of construction in consolidated formations by referring to alternate construction methods listed in N.J.A.C. 7:9D-2.3(a)4ii. At N.J.A.C. 7:9D-2.3(d)1, the Department also proposes to update the reference to existing Table 2 found in N.J.A.C. 7:9D-2.3(e)4, which is proposed to be recodified.

At N.J.A.C. 7:9D-2.3(e)3 and 4, the Department proposes to update the referenced industry standards and provide web addresses where standards can be obtained. The Department proposes to delete existing language regarding ABS plastic casing, which is no longer used in the well drilling industry for the installation of Category 1 or Category 2 wells.

The Department proposes to amend N.J.A.C. 7:9D-2.3(f)1 to include a referenced standard for the disinfection of gravel pack used in the construction of wells. The Department proposes to amend N.J.A.C. 7:9D-2.3(f)3ii to differentiate between single cased wells and wells with maintenance casings and allow for additional gravel pack to be installed outside of the maintenance casing.

Stainless steel casing is an approved material for use in well construction under the existing rules but the existing rule contains no references to standards for manufacturing and installation. Current regulations only reference standards for the manufacturing of standard steel casing, which are different than the manufacturing standards for stainless steel casing. Therefore, the Department proposes to incorporate a reference to the ASTM standards for stainless steel casing. In N.J.A.C. 7:9D-2.7 and 7:9A-4.3, the Department establishes minimum setback requirements for Category 1 and 2 wells from various sewage disposal systems. At N.J.A.C. 7:9D-2.7, the Department proposes to alter the distance requirement related to seepage pits to be consistent with the rules governing the installation of individual septic systems at

N.J.A.C. 7:9A-4.3. The Department is proposing to maintain the 150-foot setback between a new well and seepage pit and delete the 100-foot minimum setback in favor of a new provision that will allow the Department to reduce the minimum distance requirement as a condition of permit approval, in cases where the well is constructed with additional casing or where the well casing is sealed into a confining layer. In these two cases, the aquifer is sufficiently protected from sewage disposal despite the shorter setback.

The minimum setback to a well from a disposal field is 100 feet and may be modified if additional well casing length extends beyond the minimum of 50 feet required for all potable (Category 1) wells pursuant to N.J.A.C. 7:9D-2.3(a)3 and 4. The additional well casing length compensates for the fact that the new or expanded onsite wastewater treatment system does not meet the minimum required setback. In lieu of this, the footnote will still allow the minimum casing requirements, if the casing is demonstrated to be installed into an impervious substratum, effectively sealing the upper units receiving the wastewater discharge from the lower water supply bearing units.

The Standards for Individual Subsurface Sewage Disposal Systems at N.J.A.C. 7:9A-4.3 sets forth the minimum distance of separation required for sewage disposal fields, seepage pits, and other septic systems constructed adjacent to a well. The Department proposes to amend this section as well, in order to ensure consistency between the minimum distance requirements for wells found in Chapter 9A and 9D. At N.J.A.C. 7:9A-4.3, the Department proposes to amend the table that establishes minimum setbacks and its associated footnotes.

Categories 3 and 4 (N.J.A.C. 7:9D-1.5, 2.1, and 2.4)

The Department proposes to amend N.J.A.C. 7:9D-2.1 with respect to Category 3 and 4 wells to identify that all wells in this category are cased non-water supply wells used for environmental engineering and remediation or geotechnical investigation and to provide a list of examples of these wells. In addition, the additional types of wells are proposed to be included in Category 3 and 4. These include wells formerly regulated as Special Use Wells under the existing rule (that is, cathodic protection and methane gas extraction wells), which are proposed as Category 3 wells, because their construction is comparable to the well types included in this category and borros anchors, inclinometers, extensometers, electrodes, and injection wells used for bioremediation or chemical remediation. The latter were not explicitly listed in the existing rules but have been regulated in practice as Category 4 wells. These types of wells are all constructed with permanent casing, consistent with other wells in this category. The category title is proposed for amendment to more accurately describe the function of wells in this category and to reflect the proposed driller license class, the environmental resource, and geotechnical well driller.

At N.J.A.C. 7:9D-2.1, the Department proposes to replace the existing categories of wells known as “Special Use Wells” and “Geotechnical Wells” with a new category: Category 4, Uncased Environmental Resource and Geotechnical Boring Wells. This proposed category includes all uncased non-water supply wells that are used for environmental engineering and remediation or geotechnical investigation, such as, test borings, probe holes, and other wells installed without a permanent casing. In this category, the Department is including wells without a permanent casing, such as wick drains and uncased boring, that are installed through direct push technology where the drive rod is used to keep the borehole open for sampling or other geotechnical investigation.

The Department proposes to expand the scope of N.J.A.C. 7:9D-2.4 to apply to Category 4 wells, in addition to Category 3, consistent with the proposed restructuring of well categories as described in the summary for N.J.A.C. 7:9D-2.1.

The Department proposes amendments to the construction requirements for the Category 3 and 4 wells as follows.

Monitoring wells are primarily used to measure water quality where there is a discrete sampling zone and the limitation on screen length is necessary to prevent migration of contamination elsewhere in the aquifer. However, observation wells can be used during aquifer pump tests for monitoring the elevation of the water table for the purposes of obtaining a water allocation permit or water use registration. For this application, it is necessary for these monitoring wells to have a screened interval over 25 feet to mimic the construction of the proposed production well and to gather accurate data on the capacity of the aquifer. Therefore, the Department proposes to amend N.J.A.C. 7:9D-2.4 to include the term "observation well," a definition for which is proposed at N.J.A.C. 7:9D-1.5. The existing requirement limiting the depth of the filter pack to five feet above the top of the screen is proposed for recodification at N.J.A.C. 7:9D-2.4(a)5 to clarify that this requirement applies to all monitoring wells, including observation wells.

At recodified N.J.A.C. 7:9D-2.4(a)6, the Department proposes to change the minimum depth of protective steel casing from three feet to two feet below grade. According to stakeholders, it is preferable to install protective casing, which is sold in five foot lengths, such that two feet is below grade and three feet is above. This change in installation technique required for above grade well installations should have no impact on the protection that this casing provides and will provide for better visibility of the well in the field.

For below grade installations, the Department is proposing to update the reference at recodified N.J.A.C. 7:9D-2.4(a)8 to the Department's Field Sampling Procedure based upon 2005 revisions.

A new exemption from the requirements to install protective steel casing on above grade well installations and manholes, locking caps, and seals on flush-mounted wells is proposed for wells connected via a manifold system. The network of piping used to connect the wells is necessary for the system to function and, therefore, it is not practical to install protective steel casing, manholes, locking caps, or seals on each well.

At N.J.A.C. 7:9D-2.4(b)1, the Department proposes to amend the rules to allow Category 3 and 4 wells to use a maximum of 10 feet of well screen to screen across the overburden bedrock interface. The existing rules do not allow screening across the overburden bedrock interface without a deviation approved in advance from the Department. However, screen placement based upon contaminant locations is often a field determination, which does not allow for prior Department approval. As many contaminants tend to settle on top of the bedrock, it is essential for well drillers to have the ability to install a screen spanning the interface to allow for site investigation in this zone.

Proposed new N.J.A.C. 7:9D-2.4(d) permits the use of direct push technology to a maximum depth of 30 feet for the installation of Category 3 and 4 wells in unconsolidated aquifers. The existing rules limit the use of direct push technology because it creates an annular space that does not meet the four-inch oversized borehole requirement and was previously difficult to grout. However, advances in grouting technology have addressed this concern. Smaller diameter tubing is now available that can be inserted in a smaller annular space, thereby allowing drillers to grout the well from bottom to top effectively. Direct push technology is

often favored as it results in a lower cost to the end user and is beneficial in the installation of Category 3 injection wells where a smaller annular space results in fewer disturbances to the native soil and prevents failure of the grout seal due to pressure exerted by the injected substances. As such, the Department proposes to define "direct push," which is used in this section and throughout the rule, to specify that this method of drilling involves static force, hydraulic down pressure, and percussion to advance a sampling tool.

Consistent with the restructuring of well categories, proposed new N.J.A.C. 7:9D-2.4(e) and (f), relate to direct push technology and are a relocation of existing text to improve organization of the rule.

Categories 5, 6, and 7 (N.J.A.C. 7:9D-1.5, 2.1, and 2.5 and 7:9D Appendix A)

The Department proposes to amend the types of wells categorized included in Category 5, 6, and 7 wells, as well as the construction standards for these wells. The proposed changes to the well categories are consistent with amendments to the license classes proposed at N.J.A.C. 7:9D-1.7. A new Category 5 is proposed for closed loop geothermal wells at N.J.A.C. 7:9D-2.1(a)5, because these wells have a unique construction. This amendment is consistent with the new class of license for closed loop geothermal well drillers. Category 6 wells, which is a new category for dewatering wells, is consistent with the proposed license classification by the same name. The new Category 7 wells, boreholes or jackholes drilled for the installation of elevator shafts, are consistent with the new elevator borehole driller license. Consistent with the restructuring of well categories, the Department proposes to relocate existing N.J.A.C. 7:9D-2.5(c), which addresses the construction requirements for all cathodic protection wells, as N.J.A.C. 7:9D-2.4(f).

With regard to the amendment of construction standards at N.J.A.C. 7:9D-2.5, consistent with the amended well categories, these installation requirements will no longer apply to Category 4 wells. For Category 5 wells, the Department proposes to delete the requirement that the tremie pipe be installed with the closed loop; and instead require it to be installed to the total drilled depth. This change is necessary because while it is important that the total drilled depth is sealed without gaps or bridging of the grout, it is not necessary to install the tremie pipe with the closed loop to obtain an adequate seal. The Department also proposes to update terminology within the construction standards and in the tables at N.J.A.C. 7:9D-2.9, which set forth allowable grout mixes. For example, the phrase "sealed under pressure" is proposed to be replaced with "tremie pressure grouted" and "high grade" is to be replaced with "sodium-based." The use of "sodium-based" is more accurate because this commonly used type of grout is highly expansive and, therefore, provides an effective seal.

The Department proposes to eliminate references in this subsection and in Table 5 at N.J.A.C. 7:9D-2.9, to Thermal Grout 85, which is no longer manufactured and to add bentonite-based geothermal grout mixed in accordance with Table 5 in N.J.A.C. 7:9D Appendix A. These mixes were developed recently as a result of the rise in geothermal system construction. They are used successfully for the installation of vertical closed loop geothermal wells and have been approved by the Department in conjunction with the Board for use in the construction of these wells. As part of the review of the deviation request, the Board reviewed submission of independent laboratory data that verified the permeability of the grout mixtures in accordance with N.J.A.C. 7:9D-2.9(b). Additionally, field demonstrations were required to demonstrate that the material can be used effectively in a manner that is protective of groundwater.

The Department proposes to allow the use of bentonite-based geothermal grout in consolidated formations provided the mix contains a minimum silica sand content of at least 200 pounds per 50 pounds of bentonite. Bentonite-based grout is not approved under the existing rules for use in consolidated formations because of the potential for the grout to wash out into the geological formation. This is no longer a concern due to the development of mixes containing at least 200 pounds silica sand per 50 pounds bentonite, which prevent wash out and are utilized by the industry in many other states.

The Department proposes to update reference numbers for the ASTM standards for the polyethylene piping. The term "160 psi," which modifies "polyethylene pipe" has been relocated from N.J.A.C. 7:9D-2.5(a)4 to (a)4i because it only applies to the existing polyethylene piping described therein and not to the PEXa piping material described at proposed new N.J.A.C. 7:9D-2.5(a)4ii.

The Department proposes to establish PEXa crosslinked high density polyethylene piping (PEXa) as an approved piping material for vertical closed loop geothermal wells. On September 14, 2011, the Department approved the use PEXa for geothermal applications in New Jersey, based upon documentation submitted by REHAU Inc., that demonstrated that PEXa is protective of groundwater because it meets or exceeds the applicable standards for high density polyethylene (HDPE) found in the existing rules at N.J.A.C. 7:9D-2.5(a)4i. The pressure rating of PEXa is 160 psi at 73.4 degrees Fahrenheit, which is equal to that of HDPE and the required minimum burst pressure of PEXa is over 750 psi, which exceeds that of standard HDPE at 475 psi. In 2008, PEXa was approved by the International Ground Source Heat Pump Association (IGSHPA), which develops and promotes industry related standards on the use of ground source heat pumps. The Department proposes new N.J.A.C. 7:9D-2.5(a)5iii that allows the joining of

PEXa piping by polymer electro-fusion fittings or cold-expansion compression-sleeve fittings as approved by IGSHPA.

At N.J.A.C. 7:9D-1.5, the Department proposes to amend "closed loop geothermal well" to remove the phrase "from one well to another" because a closed loop geothermal system may be composed of a single well that does not require the insertion of the closed loop piping from one well to another.

The Department is proposing to recodify existing N.J.A.C. 7:9D-2.5(d) containing provisions governing the installation of Category 7 elevator jackholes or boreholes as N.J.A.C. 7:9D-2.5(c) and proposes amendments to require compliance with standards of the Department of Community Affairs and the American Society of Mechanical Engineers. The proposed incorporation by reference of the American Society of Mechanical Engineers (ASME) Standard A17.1, is to addresses construction requirements for cylinders that are to be installed in the ground for hydraulic elevators. Well drillers that install these systems have raised concerns that elevator shaft installation is already regulated by another State agency, the Division of Community Affairs (DCA). Standard A17.1, was adopted into New Jersey Code via N.J.A.C. 5:23 (the Uniform Construction Code). Specifically, section 3.18.3.8 refers to the hydraulic cylinder and leak detection and containment systems that are essential to the protection of the State's groundwater resources. Such installations are permitted through DCA and installed in accordance with approved plans. Therefore, the Department is proposing to reference this standard to ensure that the installations comply with both DEP and DCA rules. As discussed in the permitting section of the Summary, the construction of the elevator shaft in accordance with these standards is necessary for the protection of groundwater.

Category 8 (N.J.A.C. 7:9D-1.5, 2.1, and 2.6)

Oil and gas exploration wells, which are regulated under existing N.J.A.C. 7:9D-2.1(a)4, are proposed as a separate category at proposed N.J.A.C. 7:9D-2.1(a)8 as Category 8 wells.

The Department proposes to amend N.J.A.C. 7:9D-2.6 to apply to Category 8 wells consistent with the reorganization of the well categories. Wells for oil and gas exploration are currently regulated at existing N.J.A.C. 7:9D-2.5(e), which is proposed for relocation at N.J.A.C. 7:9D-2.6(a). Existing N.J.A.C. 7:9D-2.6(a)1 through 3, which set forth requirements for test borings and direct-push borings, are proposed for deletion. Existing N.J.A.C. 7:9D-2.6(a)1 and 2, which establish when a well driller can request a site-wide permit, is addressed through proposed amendments at N.J.A.C. 7:9D-1.11(c). N.J.A.C. 7:9D-2.6(a)3 is proposed for relocation as N.J.A.C. 7:9D-2.4(e).

Materials/Methods Deviation (N.J.A.C. 7:9D-2.8)

The Department proposes to amend the heading of N.J.A.C. 7:9D-2.8 to include the approval of alternative materials and methods. The existing rule addresses deviations from constructions standards, but does not establish a review process for newly developed materials and drilling methods. At N.J.A.C. 7:9D-2.8(a), the Department proposes to allow a deviation request in cases where “health hazards” exist on site and prevent compliance with this chapter. This amendment is necessary to allow applicants and the Department flexibility where public health is endangered by strict compliance with the standards of this chapter. For example, a well that is constructed, in accordance with this chapter, in an area of known radioactive material would generate radioactive waste in the form of cuttings, which would constitute a health hazard. The Department also proposes to add the terms “groundwater resource,” to clarify that

construction of any well, including those that deviate from standards, must be protective of this resource. Also at N.J.A.C. 7:9D-2.8(a), the Department proposes language that clarifies that a driller may request a deviation from the standards of this chapter when unusual conditions exist and compliance will result in a well that is not protective of water quality.

At N.J.A.C. 7:9D-2.8(a)5, the Department proposes to require an applicant for a deviation to provide information regarding health hazards, as well as unusual site conditions. The Department proposes to require that applications for a deviation request that are necessary to comply with the site remediation technical rules at N.J.A.C. 7:26E include a statement from the authorized Licensed Site Remediation Professional (LSRP) or Department case manager, that explains why compliance with both this chapter and the site remediation technical rules is not feasible. Applicants for this type of deviation must also describe the reasons that the deviation is necessary. In the past, the Department has permitted deviations for remedial investigations that involve monitoring wells that are not compliant with this chapter but are nonetheless required to investigate the extent of contamination and subsequently remediate an area in order to comply with N.J.A.C. 7:26E. The amendment described above is intended to provide a clear path to compliance in these cases.

As a result of confusion in the past stemming from approvals under other Department rules that require the construction of a well that does not meet standards in this chapter, the Department proposes to amend N.J.A.C. 7:9D-2.8(b) to clarify that only an approval from the Department's well permitting program issued pursuant to this chapter authorizes the construction of a well that deviates from the standards in this chapter. The Department has codified existing text as N.J.A.C. 7:9D-2.8(b)1 and 2 to clarify that the well permitting program will provide an approval or denial of the deviation to the well driller.

As noted above, the existing rule does not include a procedure to approve alternate materials, technologies, or methods of installation that are not currently addressed in this chapter. Typically, requests for approval of these alternative materials, technologies, and methods are submitted by a manufacturer that has developed a new method or product for widespread industry use. For example, new geothermal grouts have been developed for use by the industry but, these grouts are not currently listed as approved materials under this chapter. In the past the Department has worked with the Board to issue blanket approvals that allow the use of new materials in well construction. At N.J.A.C. 7:9D-2.8(c), the Department proposes to establish a procedure for approval in the rule to ensure that there are clear and consistent submission requirements and a timely decision.

The proposed rule establishes that the material, method, or technology for which a deviation application is submitted must not be expressly prohibited by this chapter and must meet standards specified elsewhere. For example, any grout materials submitted for approval would be required to meet the permeability value specified at N.J.A.C. 7:9D-2.9(b) for use in sealing the annular space between casings. In addition, the material, technology, or method must be protective of health and suitable for the conditions of the site. For example, the use of grout that is not resistant to salt water would not be permitted in shore communities. The Department proposes to require that the material, technology, or method and the testing done in support of the approval process, meet current and commonly-accepted industry standards and guidelines set forth by organizations such as the NGWA, IGSPHA, or AWWA. In the absence of such standards or guidelines regarding testing, the Department will establish the procedures of the tests. The Department also proposes to retain the ability to require any test to be repeated, at any time, if field performance indicates that the material no longer conforms to any requirement of

this chapter. The proposed rule requires applicants to submit documentation to address all criteria described above. Finally, the Department proposes to retract or modify an approval under this section if new information becomes available that demonstrates that the approved technology, method, or material does not comply with the requirements at N.J.A.C. 7:9D-2.8(c).

Sealing Materials (N.J.A.C. 7:9D-2.9)

N.J.A.C. 7:9D-2.9 establishes the required materials for the sealing of the annular space of a well. The Department proposes to clarify that only grout materials listed at N.J.A.C. 7:9D-2.9(a)1 through 6 are permitted unless otherwise approved in writing by the Department, and to move all the tables found therein to proposed new N.J.A.C. 7:9D Appendix A and change references accordingly and to update the rules to reflect current grout products and terminology.

Existing Tables 1 and 4 are proposed in N.J.A.C. 7:9D Appendix A without change. The Department proposes to delete Table 5, which contains specifications on Thermal Grout 85, as this material is no longer manufactured. New proposed Table 5 will contain specifications on newly developed bentonite-based geothermal grout, which has been approved by the Board based on field testing and literature review. References to these tables throughout the rules are proposed to be amended accordingly.

The Department proposes to allow the use of sodium-based bentonite chips and shaped pellets to seal the annular space of a well. The existing rules did not allow the use of these chips and pellets due to concerns regarding gaps and bridging of the grout seal. Claims by manufacturers that the chips and pellets could be used effectively were evaluated in a recent study, *In-Situ Study of Grout Materials 2001-2006 and 2007 Dye Tests* by the Nebraska Grout Task Force (October 2009). This study was initiated in 1999, when the "ultimate well," intended

to provide state and regulatory personnel with a working knowledge of well design, developed cracking and voids in the bentonite-based grout seal over a period of 16 months. In response, a task force comprised of Nebraska State officials and industry suppliers CETCO, Baroid, and Wyo-Ben, expanded the project to examine the performance of 11 other well grouting materials, including bentonite chips. In the study, clear well casing, video cameras, and dye testing were used over a two-year period to evaluate the integrity of the grout seals in over 60 wells drilled in different geologic conditions throughout Nebraska. The study found that the bentonite chips performed better than other tested grout materials in tests that evaluated the ability of each grout material to seal annular space. Finally, these chips and pellets are used successfully throughout the industry in several other states including Michigan, North Carolina, and Delaware.

The Department proposes to reference the materials in N.J.A.C. 7:9D-2.9(a)1 through 5 and establish that only those materials, and not bentonite-based chips or pellets, must be accurately measured prior to mixing. By contrast, chips and pellets are hydrated as they fall through the annular space or borehole and do not require prior mixing or measuring. Additionally, the Department proposes to codify the existing practice of requiring the permeability value for all grout mixes to be obtained using ASTM method D5084 or equivalent.

The Department proposes to allow the use of bentonite-based thermally enhanced geothermal grout in consolidated formations provided the mix contains a minimum silica sand content of at least 200 pounds per 50 pounds of bentonite. For additional discussion on this issue see the discussion of N.J.A.C. 7:9D-2.5(a)ii in the Construction of Categories 5, 6, and 7 section above.

New text is proposed to clarify that a cement-based grout must be used in saltwater environments, such as those in Cape May and other shore communities in New Jersey.

Bentonite-based grouts are negatively impacted by salt water, which can adversely affect the ability of the grout to swell and adequately seal the borehole or annular space.

The Department proposes to clarify that any grout mixtures or materials not specified in this subsection must be approved as a deviation according to the procedures at N.J.A.C. 7:9D-2.8.

Sealing Procedures (N.J.A.C. 7:9D-2.10)

N.J.A.C. 7:9D-2.10 establishes the procedures required for sealing the annual space of a well. The Department proposes amendments to N.J.A.C. 7:9D-2.10(a)4 to correct the spelling of the term "Halliburton" and clarify that the Halliburton method can be performed using only one plug. The Department proposes to require that grouting using this method be accomplished with the casing held in suspension, which allows the well driller to displace grout from the inside of the borehole into the surrounding annular space.

The Department proposes to allow the well driller to use bentonite chips and pellets to a maximum depth of 50 feet to seal the annular space. As discussed in the Summary for sealing materials above, the Nebraska study established that bentonite chips and pellets can be effectively used to seal the annular space in wells. The Department is setting a 50-foot depth limit for the use of the bentonite chips and pellets consistent with the 50-foot minimum grout seal required pursuant to N.J.A.C. 7:9D-2.3(a). To ensure that all bentonite chips and pellets are installed effectively, the Department proposes to require that chips and pellets completely fill the annular space in accordance with the manufacturer's specifications.

The Department proposes to clarify that the provisions for sealing the annular space are waived for wells driven into undersized boreholes, provided that hydrated bentonite chips and

pellets are placed around the driven casing in accordance with N.J.A.C. 7:9D-2.2(a)8. The Department proposes to replace the term "driving" with "driven," which is used throughout the rule to describe boreholes or wells that are installed by the action of driving or pounding. The definition is proposed for amendment to clarify that casing is only considered "driven" when it is vertically pounded into the ground and not rotated during installation. Driven casings are exempt from existing requirements to seal the annual space between the borehole and the casing because the driving or pounding of casing into an undersized borehole does not create an annual space that would need to be properly sealed to prevent surface water intrusion into the well.

The Department proposes to specify that only pumpable grout slurry mixtures, and not bentonite chips and pellets, must be weighed with a mud balance or verified by the well driller. Under the existing rule, settlement of the grout to a depth of more than 10 feet from ground surface must be regrouted using the pressure tremie method. The Department proposes to increase the settlement depth from ground surface to 50 feet, and to allow grouting of the annual space using bentonite chips to a depth up to 50 feet consistent with the aforementioned amendments. This method offers an alternative to tremie grouting from bottom to top and will make regrouting more convenient and easier for the well driller.

Well Development (N.J.A.C. 7:9D-2.11)

N.J.A.C. 7:9D-2.11 establishes the acceptable well development and redevelopment methods. The Department proposes amendments to include gas surging as an approved method. The well drilling industry commonly uses the injection of harmless gases to maximize well yield and remove sediment build up. For example, repetitive bursts of nitrogen gas can be used to loosen plugged sediment from wells screens and the surrounding aquifer. The Department is

proposing to add a definition for well development to clarify that the methods allowed under these rules intend to produce water free of visible sand and/or silt, and increase its productivity.

The Department proposes amendments to ensure that any chemicals, including acids, used for chemical treatments of the well to improve well yield or break down mud cakes or clays are neutralized prior to disposal or properly contained. This is necessary because the many gallons of chemically treated water circulated and pumped from the well during the development process must be disposed of in accordance with N.J.A.C. 7:26G to be protective of water quality and the surrounding environment.

The Department proposes to require prior approval in accordance with the alternate methods section at N.J.A.C. 7:9D-2.8 for a well development or redevelopment method that is not otherwise specified under this chapter. Well development can involve the use of chemicals, explosives, and other techniques that, if not performed properly, can damage the well and the surrounding environment.

Well Decommissioning (N.J.A.C. 7:9D-1.5, 2.8, 3.1 3.2, 3.5, and 3.6 and 7:9D Appendix A)

N.J.A.C. 7:9D-3 sets forth requirements for the decommissioning of all categories of wells. In this subchapter and throughout the Rules, the Department proposes to correct terminology by replacing the term “sealing” with “decommissioning,” as the latter means the permanent closure of the well, while sealing is filling in of the annular space between casings or of a borehole.

With respect to the decommissioning of wells, the Department proposes to state (at N.J.A.C. 7:9D-3.1) the responsibilities of the well owner and well driller to decommission wells that are not in use or that pose a threat to human health or groundwater. The Act, at N.J.S.A.

58:4A-4.1, requires the well owner to have a well decommissioned in accordance with this chapter, if the well is not in use or if it endangers groundwater or life. In addition, the Act also establishes that the well driller is responsible for decommissioning a borehole or well that is abandoned during construction or is not completed or constructed in accordance with this chapter, as adopted at the time of construction.

The Department proposes to add reference to the Act and this chapter as appropriate to cross-reference relevant section. Consistent with language from the Act, the Department proposes language to clarify that it has the authority to order a well to be sealed when the well endangers life or health.

New language is proposed at N.J.A.C. 7:9D-3.1(c) to establish that the Department may order decommissioning of a well or associated appurtenances, if it has the potential to pose a hazard either physically or to the groundwater. For example, the Department may order the decommissioning of a well that has a cracked lateral discharge line that is contaminating the well in accordance with the Act at N.J.S.A. 58:4A-4.2.

New N.J.A.C. 7:9D-3.1(d) is proposed to be consistent with the Act, which states that a driller is responsible to properly decommission an improperly constructed well and a property owner is responsible for the proper decommissioning of a well that is inactive, no longer used for the intended purpose or in a state of disrepair, such that it is a potential pathway for contamination to enter the groundwater. The proposed language is to provide the Department with the ability to enforce the decommissioning provisions, such that drillers and property owners are made to comply with applicable requirements that seek to ensure proper decommissioning of unused/improperly constructed wells that pose a risk to the State's aquifers if left open. The proposed provision is intended to lead to increased compliance by stating that

those who fail to comply with an order to decommission a well or borehole are subject to penalties pursuant to Subchapter 4.

Recodified N.J.A.C. 7:9D-3.1(f) is proposed for amendment to make the onsite supervisory and documentation requirements of well decommissioning activities consistent with those of well construction/installation activities.

According to recodified N.J.A.C. 7:9D-3.1(g), a driller must obtain the applicable well record(s) prior to decommissioning. The Department proposes to amend this requirement to exempt hand dug wells and domestic wells with a diameter of two inches or less (point wells). Hand dug wells and point wells do not comply with this chapter and, therefore, the Department no longer allows their installation in New Jersey. In the past, no well permits or well records were required for installation of these wells and, therefore, the requirement to locate a well record would prove futile. For all other types of wells, the well record serves to assist the well driller in ensuring that the entire length of the well is decommissioned in order to prevent any debris or contaminants migrating through the abandoned well. Also, at recodified N.J.A.C. 7:9D-3.1(g), the Department proposes to indicate that well records may be obtained from the well owner or local regulating agency (for example, health department). If a well record is not available from either of these sources, the well driller shall follow the directions for a well search on the Department website.

Amendments to N.J.A.C. 7:9D-3.1 also establish that the Department may require groundwater sampling prior to decommissioning. For wells that no longer function for the intended use, it may be essential to conduct water quality tests to identify the cause of the well failure. This information can identify area wide water quality issues or assist in the design of a

replacement well to avoid similar problems. For example, in saltwater areas, water quality data can identify zones of saltwater intrusion that have a negative impact on area water supplies.

The Department proposes recodified N.J.A.C. 7:9D-3.1(i) with amendments to clarify that the list of types of hazardous waste is intended to provide examples and is not an exhaustive list.

The Department also proposes to amend recodified N.J.A.C. 7:9D-3.1(j), which establishes which wells can be decommissioned without first obtaining written approval from the Department pursuant to subsection (k), by listing those wells that do require written approval prior to decommissioning.

The Department proposes to eliminate the requirement to obtain prior approval in order to decommission a domestic well that has a diameter of two inches or less for which no well record can be obtained. Under the existing requirement, if a well record cannot be obtained the well driller must leave the work site and wait for Department approval to decommission the well. This approval process provides no benefit to the Department or the well owner, particularly because these two-inch wells are typically shallow wells that can be easily decommissioned by using the most common and basic method, which involves placing a tube at the bottom of the well and grouting from bottom to top.

Despite the fact that radiological materials can be hazardous, they are not included on the Federal list of hazardous waste materials at 40 CFR 261 that is referenced by the well drilling community. Therefore, the Department proposes to clarify that prior approval is required for decommissioning wells contaminated by radiological materials.

The Department proposes amendments to create consistency with the language in the Act at N.J.S.A. 58:4A-23, which establishes that the Department regulates the drilling of a hole or

well for the installation of an elevator shaft. These amendments clarify that the elevator shaft refers to the hydraulic cylinder that is regulated by the Department of Community Affairs in accordance with N.J.A.C. 5:23.

The Department proposes new language to require Department approval prior to decommissioning a well if the measured depth, diameter, or construction does not match the well details found on the well record. This amendment will allow the Department to ensure that the entire length of the borehole is grouted in accordance with the standards of this subchapter. For example, a well depth that measures shorter than the depth listed on the well record could indicate that there is an obstruction located in the well that needs to be addressed prior to decommissioning.

The Department proposes to codify the procedures used in practice to obtain a prior approval pursuant to existing N.J.A.C. 7:9D-3.1(g) (proposed N.J.A.C. 7:9D-3.1(j)). All decommissioning plan approvals will be valid for one year and must include well location, well construction, and method of decommissioning. This information is required to determine the proper method of decommissioning. For example, when decommissioning multiple cased wells, the Department will verify that the annular space between casings is addressed. Some drilling contractors contend that they are not obligated to comply with this requirement because a liner or a driven casing used in rock well construction is not considered a true casing that would be used to meet the definition of "multiple cased well." Accordingly, the Department proposes to define "multiple cased well" to indicate that this is a well that contains more than one casing or liner, such as temporary, surface, maintenance, starter, or driven casings. This definition is intended to eliminate confusion and to specify when sealing is in fact required. To that end, a definition for

"liner" is also proposed to express that this is a well casing that is inserted into an existing cased borehole as a means of repair or protection of the groundwater.

Additional information required as part of a decommissioning plan may include hazardous conditions, such as obstructions in the well, which may require additional steps to remove objects from the well during the decommissioning. The proposed two-year approval time frame will allow the Department to ascertain that the well is decommissioned in a timely manner that is protective of the surrounding environment. If too much time passes, it will also allow the Department to reassess site conditions that change over time and to ensure that modifications to the decommissioning procedures are not necessary. Finally, the Department proposes to require submission of the name and license number to verify that a licensed well driller is decommissioning.

The Department proposes to clarify that unsealed annular space between casings must be decommissioned in accordance with this chapter in order to protect groundwater quality.

The Department proposes to require the use of the grout tables in proposed new N.J.A.C. 7:9D Appendix A and to clarify that the use of alternate or additional sealing materials shall only be allowed if the Department approves a deviation pursuant to N.J.A.C. 7:9D-2.8.

Amendments are proposed to allow the use of bentonite-based geothermal grout in consolidated formations where the sand content of the bentonite-based thermally enhanced geothermal grout is at least 200 pounds per batch and the permeability meets the maximum value of 1 x 10-7 centimeters per second as specified at N.J.A.C. 7:9D-2.9(b). For further information on this amendment, see Categories 5, 6, and 7 section of the summary.

Proposed N.J.A.C. 7:9D-3.1(m)3 requires the use of cement-based grout in saltwater environments. Bentonite-based grouts are negatively impacted by salt water, which can affect the ability of the grout to swell and adequately seal the borehole or annular space.

The Department proposes to set forth an alternate decommissioning method, which allows the use of bentonite chips and shaped pellets via gravity pouring. As discussed in the Summary discussion for sealing materials, the use of bentonite chips and shaped pellets has been shown to be as effective as a grouting materials, when installed correctly. Therefore, the use of bentonite chips and shaped pellets is permitted provided the material is installed from the bottom to the top of the annular space in accordance with the manufacturer's specifications. In the proposed rule, bentonite chips and pellets are permitted to a depth of 50 feet for sealing an annular space between casings consistent with minimum casing and grout seal requirements established at N.J.A.C. 7:9D-2.3. The Department proposes to double the maximum allowable depth of installation to 100 feet for the remaining open borehole where the placement of the chips and pellets is not restricted to a small annular space and there is less potential for bridging of the grout materials.

Existing N.J.A.C. 7:9D-3.1(k) is proposed for recodification as proposed N.J.A.C. 7:9D-3.1(o) with amendments to paragraph (k)2 to delete the phrase "with concrete" because any of the approved grout materials under this chapter can be used to fill settlement of the grout in the well. The Department amendments specify that concrete shall be used to pour a slab, which is a minimum of six inches thick and extends beyond the perimeter of the casing. The Department proposes to change the settlement depth requiring the pressure tremie method from 10 to 50 feet to allow for the use of bentonite chips and pellets, consistent with amendments discussed above that allow for their use via gravity pouring to a depth of 50 feet. The use of bentonite chips and

pellets to a maximum depth of 50 feet has been determined to provide adequate seal of the annual space. Therefore, the pressure tremie method is no longer the only method that can be used to address grout settlement to a depth of 50 feet.

The Department proposes to delete existing subsection (l), pertaining to the requirements for submission of a Well Abandonment Report. This requirement is proposed to be addressed at proposed N.J.A.C. 7:9D-1.15(c).

The Department proposes to require that a driller obtain a deviation approval of a decommissioning plan from the Department pursuant to subsection (k), prior to deviating from the methods or materials prescribed in N.J.A.C. 7:9D-3. The Department also proposes amendments to clarify that written approval from the Department in accordance with this chapter is required prior to the modification of any decommissioning procedures. Verbal approval does not permit the Department to adequately track modifications or determine whether they are necessary.

The Department proposes amendments to N.J.A.C. 7:9D-3.2(c) to replace the reference to "well sealer" with "well driller," which is the correct term.

At N.J.A.C. 7:9D-3.4, the Department proposes to amend the timeframe for the decommissioning of uncased borings from 48 hours to 72 hours of completion. This amendment is consistent with stakeholder input that indicated that the existing timeframe was too short. The Department has received and approved deviation requests to extend the timeframe to allow for water quality sampling prior to decommissioning. Accordingly, the Department also proposes to amend "boring" or "soil boring" to clarify that a boring is a hole that must be decommissioned pursuant to this chapter within 72 hours of completion.

The Department proposes new N.J.A.C. 7:9D-3.5 to codify the procedures to decommission damaged, destroyed, or lost wells in cases where the wells cannot be

decommissioned in accordance with N.J.A.C. 7:9D-3. For example, a well driller may not be able to decommission a well that has been buried under a building foundation and cannot be located or has been smashed as part of site construction activities and cannot be decommissioned using a tremie pipe. Any portion of open borehole remaining from a damaged, destroyed or lost well may act as a conduit for surface contamination. Therefore, the Department proposes to establish a process to ensure that the well driller has made the necessary attempts to locate and/or decommission such wells. The Department also proposes submission requirements for property owners or their agents in order to identify those wells that are damaged, destroyed, or lost and cannot be decommissioned in accordance with this chapter. The required information is necessary for the Department to determine whether a damaged or destroyed well is a potential source of nearby contamination and to require additional steps that may be necessary to locate and/or decommission the well accordingly. In the case of a lost well, the information provided may assist the Department in matching the well with a well record. A well search will be required if the well driller is unable to locate this information. In addition, the Department proposes that a property owner may have to conduct further work if sufficient effort has not been made to locate or decommission the well.

The definition of "decommissioning" is proposed for amendment to replace the citation to Subchapter 3 with a reference to the entire chapter. The requirement to comply with the decommissioning provisions of this chapter do not change as a result of this amendment, rather the broader reference to the entire chapter ensures that this provision will not require amendment should the decommissioning standards be recodified elsewhere in the rule.

Enforcement (N.J.A.C. 7:9D-4)

N.J.A.C. 7:9D-4 sets forth enforcement provisions, such as the imposition of civil administrative penalties and requests for adjudicatory hearings for violations related to the Act. Amendments are proposed throughout Subchapter 4 to align the rule language more closely with the Act at N.J.S.A. 58:4A-12. In the subchapter heading, the Department proposes to delete the term "injunctive relief" because such relief can only be granted by the courts, not the Department. In addition, the term "orders and" and the phrase "denial and revocation of permits" are proposed to be added to the heading to clarify that, as outlined in N.J.A.C. 7:9D-4.1, this subchapter also establishes the procedures governing the issuance of civil administrative orders, the assessment of civil administrative penalties, as well as the denial or revocation of a permit and the denial of a license.

The Department proposes to amend N.J.A.C. 7:9D-4.2 to add "failure to obtain a license prior to engaging in well construction or pump installation" and "failure to obtain a permit" as a reason that the Department or the Board may investigate any possible violation of the Act, rule, or any permit, license, or administrative order promulgated or issued pursuant thereto. Also at N.J.A.C. 7:9D-4.2, the Department proposes to clarify that the actions listed therein are set forth by the Act and to amend these actions to be consistent with the language of the Act at N.J.S.A. 58:4A-12.

The Department proposes to amend N.J.A.C. 7:9D-4.2(b) to change "will" to "may" to give the Board or the Department discretion to take action against a person who has aided or abetted a violation as there may be situations where action is not warranted.

Accordingly, the Department proposes to define "person" to include individuals as well as responsible corporate officials, corporations, companies, partnerships, firms, associations,

water supply facility owners or operators, political subdivisions of the State, any state, interstate, or Federal agencies, as any use of the word person may be applicable to any of these entities.

The Department proposes to allow the Department to request information and perform inspections in order to ensure that all well construction, maintenance, decommissioning, and pump installation are performed consistent with this chapter and the Act. Also, at N.J.A.C. 7:9D-4.2(d), as a result of stakeholder input, the Department proposes language that will clarify the enforcement standards requiring any person to provide information to the Department and allow entry on a site for the purposes of assessing compliance with this chapter. This provision is necessary to allow the Department to enforce the regulations more efficiently by gathering evidence to determine compliance or non-compliance.

Finally, in N.J.A.C. 7:9D-4.2, the Department proposes to specify that any administrative action taken shall not limit other available remedies that the Department may pursue under the Act. This includes the ability to assess treble damages and take action against any person who fails to heed such an order pursuant to the authority set forth at N.J.S.A. 58:4A-4.2.a.

At N.J.A.C. 7:9D-4.3, the Department proposes to clarify that an administrative order may be issued for violations of provisions set forth in a permit or license, as well as those set forth by this chapter or the Act and that the Department may direct any person to cease and/or correct a violation. In order to protect public health and groundwater quality, the Department also proposes to identify other circumstances under which the Department may issue an administrative order against a person who has violated this chapter, or the Act, including wells that are not in use, abandoned, not completed, or not constructed in accordance with regulatory requirements or endanger or threaten groundwater or life as specified at N.J.A.C. 7:9D-3.1(c).

The Department proposes to amend N.J.A.C. 7:9D-4.4 to be consistent with language found in the Act at N.J.S.A. 58:4A-24.c, and to clarify that each day during which a violation continues, may constitute an additional, separate, and distinct offense subjecting the violator to penalties. Also in this section, additional language is proposed to clarify that the Department may assess a civil administrative penalty of up to $5,000 for each violation directly related to the construction of a well and of up to $1,000 for each violation that is not construction-related. The proposed rule also clarifies that violations of permit requirements may also result in a civil administrative penalty assessment.

The Department proposes to separate non-construction-related violations from construction-related violations. In the existing rule, construction and non-construction-related violations are assessed in different matrices that set forth penalties based on seriousness and conduct. The matrix for non-construction-related violations is proposed to be replaced with a list of violations and associated penalty ranges. The penalty range for these violations remains the same. The incorporation of a list should eliminate any confusion by clearly establishing the situations that constitute a non-construction-related violation under this chapter, thus categorizing all other violations as construction-related. The Department believes that this will have an added deterrent effect as any violation not specifically identified as non-construction-related will be assessed at higher penalty ranges under the matrix for construction-related violations.

The Department proposes to outline the process for assessing a penalty for a construction-related violation by laying out the steps that will be used to determine the seriousness of the violation given the conduct of the violator and how it will use those determinations to identify a penalty range in accordance with the matrix set forth at N.J.A.C.

7:9D-4.4(e)2. The proposed rule establishes that a penalty for a construction-related violation shall be established at the midpoint of the matrix, unless adjusted in consideration of the factors listed at N.J.A.C. 7:9D-4.4(i), which include compliance history, frequency, and severity of the violation(s) and the mitigating measures taken prior to the issuance of the order. The matrix set forth in existing N.J.A.C. 7:9D-4.4(e)2 is relocated without amendment from N.J.A.C. 7:9D-4.4(d)2.

Recodified N.J.A.C. 7:9D-4.4(f) is proposed with amendments to describe major, moderate, or minor seriousness, including examples of the types of activities that may qualify under these types of construction-related violations. The rule establishes that designation of major seriousness applies to violations that have caused or have the potential to cause serious harm to the public health, safety, welfare, or the environment or which seriously deviate from the requirements of the Act, this chapter, a permit, or a license issued pursuant to this chapter. Such violations specifically include falsification of an application, drilling or installing without a permit or license, construction in violation of a permit condition, and other acts that may compromise the public safety through contamination of the groundwater or endangering the water supply. These violations undermine the intent of the Act, could potentially endanger life or public health, and, therefore, are considered the most serious violations.

Similarly, the rule establishes that violations that cause or have the potential to cause substantial harm to the public health, safety, welfare, or the environment or which substantially deviate from the requirements of the Act, are considered to be of moderate seriousness. Such violations include failure to notify the Department, where required, or installation or repair of pumps in violation of the chapter. Violations of minor seriousness are those that are not considered to be of major or moderate seriousness. Such violations also include the inadvertent

submission of inaccurate information or incomplete information that is corrected in a timely fashion.

The Department proposes to include the amount of economic benefit the violator has gained as a result of the non-compliance or delayed compliance as a part of a civil administrative penalty. This penalty is intended to remove the economic advantage a violator may have gained as a result of the violation. These amendments are consistent with the Act, at N.J.S.A. 58:4A-24.c, which provides that the Department may consider economic benefit when assessing civil administrative penalties. The Department proposes to identify the types of economic benefit that shall be included. The Department lists factors, such as annual expenses and financing rates, that can be used to determine the economic benefit for each violation. The Department allows for economic benefit from multiple violations to be apportioned among the violations, provided it does not exceed the $5,000 per day per violation limit allowed under the Act.

Amendments are proposed to update cross-references consistent with the reorganization of this section and to identify the factors that the Department may consider when increasing or decreasing a penalty from the mid-point of the penalty range. To that end, the Department proposes to include the type, number, extent, frequency and severity of the violation, which will allow the Department to adjust civil administrative penalties accordingly for repeated or infrequent violations. The Department proposes amendments to clarify that it will consider the measures that the violator took prior to the issuance of an order to mitigate the effects of a violation or to prevent future similar violations. New language is proposed to include other factors that the Department may consider when assessing a penalty, including economic benefit, the deterrent effect of a penalty, the cooperation of the violator prior to the issuance of an order, and the actual or potential harm resulting from the violation. The penalties that the Department

establishes, in order to be meaningful, must encourage compliance. Penalties that are too low or that are less than the cost of compliance do not encourage compliance or deter non-compliance.

At N.J.A.C. 7:9D-4.5, the rule sets forth the circumstances under which the Department, after receiving a recommendation of the Board, will deny issuance of a license. In this section, the Department proposes to add language that establishes that an applicant for a license may be denied if they have failed to comply with the Act, this chapter, a permit, court order, administrative order, or have failed to pay any due and owing penalty for violations of the Act. The Department also proposes the language, "or other good cause," that will offer the Board discretion in certain cases to recommend that the Department deny a license. N.J.A.C. 7:9D-4.5(a)4, 5, and 6 specify that denial of a license may be based upon well drilling pump installation work that was performed illegally. This is to clarify that a license candidate will not be "given credit" to satisfy license experience requirements for non-conforming work. Further clarification of the required experience and Board approval are also added, as applicants cannot be granted a license if the experience prescribed at N.J.A.C. 7:9D-1.8 is not obtained. The reference to the applicant being recommended by the Board is for consistency with the Act and duties of the Board elsewhere in Subchapter 1.

A license may be revoked or suspended for any of the reasons listed at proposed N.J.A.C. 7:9D-4.6. The Department proposes to clarify when a license may be revoked or suspended pursuant to a court or final administrative order. Proposed N.J.A.C. 7:9D-4.6(a)8 sets forth that a license can be revoked or suspended for other good cause. Consistent with N.J.S.A. 58:4A-12, proposed N.J.A.C. 7:9D-4.6 is amended, such that the Department may suspend or revoke a license if the licensee has committed fraud in obtaining their license. Amendments are also proposed to replace the terms "other State Act" with "statute," as the latter is more accurate.

At N.J.A.C. 7:9D-4.7, the Department proposes that notices must be attempted by a personal mail service in addition to certified mail, consistent with the Act at N.J.S.A. 58:4A-12 and to include that a violation of permit may also be the subject of a notice or order issued pursuant to this chapter. The Department also proposes to add that anyone served a notice, (for example, notice of suspension of a license), as well as an order, has the right to request an adjudicatory hearing. Additionally, the Department proposes to delete an incorrect reference to N.J.A.C. 7:10A-2.8. The proposed rule at N.J.A.C. 7:9D-4.7, also establishes that an administrative order becomes effective upon receipt by the violator of a final order of the Department in a contested case proceeding or when the order or notice of non-renewal becomes a final order. Finally, the Department proposes to establish that any person whose license has been suspended or revoked subject to a final order shall be required to surrender their license to the Department, so that they are no longer able to represent themselves as a licensee.

Amendments are proposed at N.J.A.C. 7:9D-4.8 to improve syntax and to set forth the submission requirements for a written request for an adjudicatory hearing. Finally, amendments are proposed to clarify that a final order of suspension, revocation, or denial of a license is considered a final order unless a stay has been granted by the court.

Board Procedures for Disciplinary Recommendations (N.J.A.C. 7:9D-1.10)

Proposed new N.J.A.C. 7:9D-1.10(i) outlines the Board procedures for making recommendations to the Commissioner regarding possible disciplinary action against a licensee. The Act, at N.J.S.A. 58:4A-12, states that after a hearing, the Board shall make a recommendation to the Commissioner, who may then suspend or revoke a license. While this procedure is set forth in the Act, it is not currently incorporated into this chapter. Proposed N.J.A.C. 7:9D-1.10(i)1

establishes a procedure by which, anyone, including the general public, government representatives, customers, or industry personnel, may bring a written and sworn charge of a suspected violation of the Act or chapter to the attention of the Board.

This section also sets forth procedures, consistent with the Act, for holding a hearing regarding a complaint. The Board shall first determine if the charges that have been filed shall be heard or dismissed as trivial or unfounded. If a hearing is to be held, the Board shall schedule it within three months of the filing of the written and sworn complaint, unless there is good cause for delay. This timeframe gives the Board, complainant, and the licensee a reasonable amount of time to prepare, given the Board's meeting schedule (that is, every other month). The proposed rule establishes that the Board is required to serve notice to the licensee alerting them that they have the right to testify in their defense and obtain legal counsel, should they wish. The notice shall contain the time, date, and place of the hearing, copies of all documentation regarding the charges and a statement regarding the licensee's rights to appear with or without counsel and to produce evidence in their defense. As per the Act, the proposed rule indicates that the Board has the right to subpoena documents and other witnesses to testify.

According to the proposed rule, and consistent with the Act, the Board shall hold a hearing where the licensee may appear personally or by counsel to question the witness(es) or produce evidence in their defense. Furthermore, the Board shall review all the materials and testimony presented during the hearing and conduct deliberations as allowed by the Senator Byron M. Baer Open Public Meetings Act, N.J.S.A. 10:4-6. The proposed rule establishes that the Board shall vote to dismiss the charges or make a recommendation regarding disciplinary action to the Commissioner subsequent to the hearing. The Board's recommendation is not the final agency action and, therefore, does not give rise to a right to a contested case hearing pursuant to the

Administrative Procedures Act, N.J.S.A. 52:14B-1 et seq. However, the licensee may contest the Department's decision to take such action based upon the Board's recommendation pursuant to the Administrative Procedures Act, N.J.S.A. 52:14B-11.

Finally, the Department proposes new language that establishes procedures for obtaining or reinstating a license after revocation or suspension of a license. Individuals, whose licenses were revoked, would be eligible to apply for a new license after a period of one year in accordance with N.J.S.A. 58:4A-12. Individuals whose licenses were suspended may be reinstated once the suspension period has ended, provided that they have satisfied all outstanding issues related to the suspension and the Board has reviewed and approved their reinstatement.

N.J.A.C. 7:9A Standards for Individual Subsurface Sewage Disposal Systems

The Department proposes three corrections in N.J.A.C. 7:9A, unrelated to this rulemaking. Typographical errors are corrected at N.J.A.C. 7:9A-5.9(a)2 and 9.7(a)7 and a codification error is corrected at N.J.A.C. 7:9A-12.6(d)ii. The Department is also proposing amendments to N.J.A.C. 7:9A-4.3 Table 4.3 Footnote 4 to amend the distance between a well and disposal field consistent with the requirements at N.J.A.C. 7:9D-2.7.

Social Impact

The Department expects the proposed amendments, new rules, and repeal to have a positive social impact by providing updated and thorough construction standards, licensing standards, and enforcement provisions to better protect water quality and human health, while promoting new and innovative technologies and streamlining the process for geothermal wells.

Over 600,000 well permits have been issued throughout New Jersey since 1947. As the number of wells increases, at a rate of 14,000 to 18,000 per year, so does potential for adverse impacts to groundwater, which is a vital source of drinking water. Therefore, it is essential to ensure that construction and decommissioning standards are current, clear and enforceable. The proposed amendments are intended to ensure that all who engage in activities associated with well drilling and maintenance are qualified and understand construction standards and conduct those activities in a manner that protects the integrity of the water resource, and safeguards society's general welfare.

The proposed rulemaking includes amendments that codify new and proven construction methods and that establish a clear process for timely and efficient Department review of new materials, technologies, and methods. These amendments will have a positive social impact for consumers as new, effective, and potentially less costly methods, materials, and technologies are approved and employed. In addition, the proposed rulemaking includes amendments to the existing provisions that allow flexibility where deviations from strict compliance are necessary to identify and remediate contamination. This amendment will have a positive social impact as investigation and remediation will progress more quickly, thereby restoring environmental quality and/or enabling site development.

The proposed rulemaking will shift administration of licensing exams to an examination and CEP manager, thus modernizing New Jersey's licensing program and to making it comparable to the many other states that have adopted a similar approach. This shift in administration will allow for continual testing consistent with the most recent industry advancements. The examination and CEP manager's administration of the licensing and continuing education program

will decrease the State staff resources expended. Furthermore, if a nationally-recognized organization is selected, it may expand job opportunities for licensees both inside and outside the State as licensed individuals may apply the relevant examinations towards license qualifications in other states. Currently, there is no license reciprocity or recognition between New Jersey and other states.

The proposed rulemaking is not expected to significantly increase the number of out-of-State drillers applying for New Jersey licenses because experienced drillers licensed or working in other states are eligible to sit for the current New Jersey exams. The proposed rulemaking will continue to require all applicants for a master license to meet the statutory minimum requirement of five years of drilling experience, two years of which must be as a New Jersey licensed journeyman.

The benefit of the proposed amendments will be realized by licensees, who will have an increased frequency of testing, better study materials and the potential to work beyond New Jersey; by consumers, who are better protected from unqualified drillers by the improved testing for licensure; and by the general public, who will also be better protected from environmental and public health impacts as the proposed improved testing requirements will ensure that only qualified candidates are granted a license to drill.

The license classes are proposed for change to better reflect the drilling expertise of licensed individuals. Accordingly, amendments are also proposed to the well categories for consistency with license classes and to more appropriately group similar well types. For example, a new license and well category is proposed for vertical closed loop geothermal wells, as well as

amendments proposed to establish new construction standards that codify commonly approved deviations. These amendments will allow for more efficient permitting and installation of vertical closed loop systems, as well as more consumer choice as more drillers are licensed for this specialty drilling.

The rulemaking also includes a continuing education program. Continuing education requirements for drillers and installers, which are commonly required by other states, improve both the knowledge and skill set of drillers and pump installers and promote a progressive ethic of learning and development among practitioners in the field. This amendment will bring drillers and installers in line with other regulated trades (that is, electricians and plumbers, etc.) and promote the protection of water quality, as well drillers and pump installers will be educated on the latest information regarding State rules and industry standards.

Most importantly, by updating the State's regulatory requirements to make them clearer and more readily enforced, the proposed revisions will level the playing field for all licensees. Compliant licensees have expressed that they felt as though they have been at a competitive disadvantage with others who chose to operate outside the rules. For example, drillers have long complained to the Department that the inability to enforce the rules adequately enables certain companies to undercut competitors by submitting bids based on insufficient grout or other required materials; allows unlicensed individuals to operate openly; and allows violators to renew licenses without addressing outstanding violations of non-compliance. Proposed amendments will clarify enforcement provisions and, therefore, allow the Department to more effectively enforce the rules. The increased ability to enforce the rules will result in not only more environmental protection but consumer protection, as unlicensed drilling decreases.

Finally, the proposed revisions to codify the procedures associated with the duties of the New Jersey Well Drillers and Pump Installers Licensing Board as set forth in the Act, will improve transparency and the Department's ability efficiently act upon Board recommendations. The procedures included in the proposed rule include the review and evaluation of innovative technologies and materials for application in the field and the review and hearings of complaints against licensed individuals. While the Board currently performs the former function, which is critical to integrating the latest state of the industry standards in the construction of all wells, the rules lack flexibility to allow the Department to accept deviations from specified construction procedures or use of prescribed materials. Accordingly, the proposed amendments clarify the criteria that staff shall use when considering alternative technologies or materials that have been certified by the Board as practicable and otherwise compliant with the rules. This modification is expected to foster the continual integration of new, improved techniques, materials, and approaches as they emerge, which, in turn, will benefit the State through the construction of safer, more efficient wells. Furthermore, the proposal of clear procedures has the potential to create enhanced economic opportunities for those who design technologies, equipment, and materials.

The Act allows the Board to hold hearings when complaints are made against drillers, in order to make recommendations to the Commissioner regarding the subject of license suspension or revocation. These amendments codify the due process afforded to drillers and pump installers and outline the necessary steps for the Board to provide a fair hearing. These procedures also provide a firm basis for enforcement action and, therefore, protect consumers and the environment from negligent and/or incompetent licensees.

In conclusion, the proposed amendments make certain that all who engage in well drilling and pump installing activities operate within the State's adopted health and environmental standards, thereby improving groundwater quality, protecting public health, and promoting the well-being of all New Jerseyans.

Economic Impact

New Jersey's economic growth and welfare depend upon an adequate and safe water supply for potable, commercial, industrial, and agricultural uses. Wells are not only an avenue for accessing the State's groundwater supply; they also serve as a potential direct conduit for contamination via land surface or traversing subsurface waters. The rulemaking is expected to have an indirect positive economic benefit to the general public, by supporting the Department's comprehensive regulatory review of the standardized requirements for constructing and decommissioning wells without the need for increased taxes or other direct public expenditures. The amendments will provide the drilling industry and well owners with significant benefits as permitting and licensing becomes more efficient while protection of the State's groundwater resources is maintained. The rulemaking will allow a broader range of approved construction techniques and materials and provides for revised well categories and associated licensing classes that are more reflective of the modern drilling industry within New Jersey. In addition, consumers and the environment will be better served by the rules as they establish formal procedures to address grievances arising from improper or illegal activities.

The drilling industry and well owners will directly benefit from amendments to allow new, more cost effective construction materials and technologies, which are proven to be protective of groundwater quality. The procedures established in the rulemaking will provide

the industry with clear criteria for applications to request Department approval of new material and technologies, thereby improving the application process, reducing the timeframes for review and approval and providing for consistent Board recommendations. While the Department, with the Board's review and recommendation, has approved new materials and technologies on a case-by-case basis, doing so has been cumbersome and time consuming. The rulemaking will establish a process and clarify submission requirements to ensure consistent and timely decisions. In addition, well drillers, industry suppliers, and well owners are likely to benefit as a wider selection of materials and methods become available, which may reduce well construction costs. Therefore, this rulemaking will result in an overall benefit for all of the groups affected.

By establishing new and more specific well categories and license classes, the proposed amendments recognize the diversity of work currently performed by drillers and realigns the license categories to more closely reflect the types of drilling activities within the industry. The proposed amendments will directly affect the drilling companies, individual licensed drillers, and the Department. The Department will incur a minimal cost associated with updates to the current data management system used to track driller licenses and process well permit submissions. All of the impacted groups, including the Department, will realize benefits, such as reduced time spent on preparation and review of permit applications resulting from new category-specific standards. The new licensing classification and testing structure (described below) will benefit licensed individuals in that it will no longer require individuals to have technical knowledge of well types they never install; instead, they will be tested and licensed according to their specialty. For example, a closed loop geothermal well driller will no longer be required to answer questions about the installation of pumps or water wells. There are no significant economic impacts associated with changes to the well categories.

The proposed amendments will shift responsibility for the administration of the New Jersey well driller and pump installer licensing exams and the new continuing education requirements, which are mandated by the Act, to an examination and CEP manager. The groups affected by these changes are the Department, licensed drillers and pump installers, drilling companies, and the Board. Licensed individuals may incur increased costs, including higher exam fees and the cost of continuing education courses. The total cost of the required exams will vary depending on the examination and CEP manager that is selected, the license class, and any existing certifications that the licensed individual already holds. Although it is possible that exam costs will increase, licensed individuals may realize several new benefits, including certifications that are recognized by other states, improved study materials, a license that is specific to their expertise, instant test scores, and more opportunities to test throughout the year and at their own pace. The lack of study materials specific to the New Jersey exams has been a chronic complaint voiced by the industry. Although the current New Jersey license exam fee is only $50.00, many applicants routinely fail the New Jersey exams, which results in added testing expense, and delayed ability to attain a desired license class. The current exam fee has not been raised in 10 years.

The proposed amendments will result in a cost savings to the Department, which does not offer a continuing education program and which currently administers the licensing exams at a loss. The current $50.00 exam fee does not cover the costs incurred by the Department for the processing of exam applications, challenges to exam questions, exam facility rental, the review of exam grades, creating new exam modules, or the proctoring and grading of exams, and maintenance of the database system. Furthermore, the State tests approximately 131 applicants

per year, which resultes in a mere $6,550 per year. This loss of revenue is nominal and does not outweigh the cost of administration that are noted above.

With respect to the continuing education program, the Department will avoid all the costs of directly administering this program by allowing an examination and CEP manager to manage those responsibilities. The Board will serve, also at no cost, to review and approve courses, consistent with their duties as set forth in the Act. Although the State will have to contract with an examination and CEP manager in order secure services to coordinate both exam and continuing education responsibilities, the Department anticipates an overall cost savings.

Well owners and the public will also benefit from this change, as the Department will require the examination and CEP manager to carefully review the licensing exams to ensure that only qualified drillers and pump installers can pass. These measures will include the rigorous review and frequent updates of test questions and the use of multiple versions of a test so that individuals who are re-testing are unable to simply memorize the answers. The examination and CEP manager will be required to work with the Department to develop a New Jersey regulatory module to ensure that all pump installer and driller applicants demonstrate knowledge of the State's requirements as appropriate for the license class. The public will benefit because well-educated drillers are more effective at protecting the groundwater resource, which is costly to remediate. Well drilling companies will benefit as they will have a greater selection of appropriately licensed individuals. Finally, the members of the Board will save considerable time as they will no longer be responsible for the development of the technical portion of the exam, but rather will only need to develop a New Jersey regulatory module for the examination and CEP manager's test. These amendments will result in an overall cost savings.

The Act requires that the Department regulate the drilling of wells or boreholes associated with the installation of elevator shafts. At this time, the Department believes that the greatest potential impacts to groundwater are addressed by Department of Community Affairs construction codes and that a permit-by-rule is the appropriate mechanism for DEP regulation. Accordingly, the Department is also proposing a new license class for elevator borehole drillers. As the Department already reviews applications for all licenses, and as a permit-by-rule requires no review, there will be no impact to the program as a result of this amendment. The drilling of these boreholes is considered a specialty within the industry and many of these are currently drilled in violation of the Act without a permit and without a drilling license. The update of license classes and the development of a permit-by-rule will benefit drilling companies and drillers as they are brought into compliance. No significant economic impact is expected as a result of this amendment.

The proposed amendments will clarify the Department and Board procedures for revocation and suspension of a license; will clarify appeal procedures and will clarify and amend enforcement criteria and penalties with respect to companies, and will increase accountability. The groups that are potentially impacted by this amendment are drilling companies, drillers and pump installers, and well owners who fail to comply with the rules. The Department's well permitting and water enforcement programs, the Board, and the Attorney General's Office will be directly affected. While improved and more efficient enforcement may result in increased costs (that is, penalties), for delinquent well owners, pump installers, drillers, and drilling companies, these costs can be readily avoided through compliance. The primary reason for non-compliance with the rules is economic benefit. More effective enforcement not only benefits the public as it increases protection of health and groundwater; it encourages responsibility on the

part of pump installers, drillers, and drilling companies. Clearer procedures will reduce the time and effort invested in enforcement cases by the Department, the Attorney General's Office, and the Board. Stipulating penalties for non-compliance does not create an economic impact. In fact, clearly outlining penalties and enforcement mechanisms for non-compliance will ultimately assist regulated entities to remain in or come into compliance.

Environmental Impact

New Jersey is a densely populated and industrialized state that relies heavily upon groundwater supplies for drinking water, agricultural, industrial, and commercial processes. The many and direct relationships between groundwater and surface water sources are widely known and, thus, protection of the groundwater also provides a real measure of protection to the natural environment. The proposed amendments will allow the Department to provide greater protection of the State's groundwater resources: by allowing a wider use of materials known to be effective barriers to vertical migration of water; by requiring the submission of accurate information in more efficient formats that allow the data to be readily shared and evaluated; by restructuring the well driller licensing program, such that drillers are better versed in their role in protecting groundwater; and by providing the necessary administrative mechanisms to allow for the Department to take enforcement action against those who jeopardize the public health and the natural environment by violating these rules.

The State's water resources continue to be threatened by degradation and/or depletion by a variety of factors, including point and non-point source contamination, and saltwater intrusion. Therefore, the proposed amendments will have a positive environmental impact by continuing to ensure that proper drilling, construction, operation, and sealing of any well within the State is

conducted by an appropriately licensed individual, which is vital in protecting against these threats to New Jersey aquifers. Many of the Department's regulatory programs rely on the enforcement of the well permitting program to ensure that the construction, modification, and abandonment of groundwater wells across the State are completed in a manner that does not compromise groundwater quality.

The very nature of a well as an underground structure compels a need for accurate location information to ensure the well can be tracked or found, especially decommissioning the well at the end of its lifespan. The proposed amendments will require submission of this essential information. Water wells may last as long as 40 to 60 years and, in fact, wells drilled prior to the establishment of the well rules in 1947 still exist. The locations of many wells, even when documented through a general description, are lost when property is redeveloped or sold to another entity. For this reason, requirements for drillers to submit accurate location coordinates for newly installed wells began in July 2008. Given the potential lifespan of wells, it is recognized that almost all the wells that are decommissioned presently lack accurate location information. Documentation on the location and construction information for decommissioned wells is essential to those who rely on the information to assess impacts of contamination, respond to emergencies (for example, power loss that results in a lack of drinking water, floodwaters that contaminate drinking water), and plan for future water use.

The proposed amendments update the use of materials and methodologies that recent information shows to be protective of the environment. Recent field studies confirm the importance of grouting material in the outer annulus to prevent the vertical migration of contaminants along the borehole and between casings within the borehole. The proposed amendments will allow drillers to use a wider variety of materials and techniques not previously

permitted under the current rules. These additions represent new products and their accompanying methodologies and recognize that current trends in well drilling are evolving, especially in the area of drilling for environmental remediation and geotechnical work. To accommodate the dynamic changes within the industry, the proposed amendments provide a process for the Department to evaluate and, if appropriate, to approve new materials and technologies.

Finally, the proposed amendments, which address the enforcement of the well rules will have a positive effect on the environment by discouraging those individuals who would circumvent the protective requirements established for the construction and decommissioning of wells. The proposed amendments clarify the administrative procedures that are intended deter potential violations of the provisions of N.J.A.C. 7:10. The proposed new penalty rules will allow for a fair and consistent enforcement process. The ability to conduct an effective enforcement program provides the regulated community with a strong incentive to conduct their activities in conformance with the Department's rules, thereby protecting the groundwater of the State and those citizens which rely on such as an essential source of water.

Federal Standards Statement

Executive Order No. 27 (1994) and N.J.S.A. 52:14B-1 et seq., require State agencies that adopt, readopt, or amend State rules that exceed any Federal standards or requirements to include in the rulemaking document a Federal standards analysis. N.J.A.C. 7:9D is not promulgated under the authority of, or in order to directly implement, comply with, or participate in any regulatory effort or program established under Federal law or under a State statute that incorporates or refers to Federal law, Federal standards, or Federal requirements. Additionally,

there are no Federal laws, regulations, or standards comparable to any of the standards and requirements set forth in N.J.A.C. 7:9D. Accordingly, Executive Order No. 27 (1994) and N.J.S.A. 52:14B-1 et seq., do not require a Federal standards analysis for this rulemaking.

Jobs Impact

It is anticipated that the proposed amendments to the construction standards for public community water systems will result in a positive impact on jobs. Additionally, as the Department is not proposing any significant changes in the procedural requirements or permitting restrictions associated with the well permitting program, significant gain or loss of jobs is not anticipated. However, any resulting changes in jobs are expected to be positive due to a higher number of candidates being eligible for licensing examinations because of the creation of new license categories. Additionally, the use of an examination and CEP manager to administer the licensing examinations will allow for reciprocity with other states.

The proposed amendments are not anticipated to have a significant impact on employment, because the regulated community has been required to comply with the existing well rules for decades.

Agriculture Industry Impact

The proposed amendments to the N.J.A.C. 7:9D are anticipated to have only a beneficial impact on the agriculture industry. Since 1947, the industry has been required to obtain a drilling permit prior to the construction of wells used for agricultural purposes. The proposed amendments will allow drillers greater flexibility in the selection of construction materials for these wells.

Owners of agricultural property will benefit from the amendments requiring more accurate well location coordinates at the time a well is decommissioned. Agricultural wells are located on acres of land, portions of which are subdivided and sold off for development over time. Without the ability to identify the well location, it is difficult to locate these wells for decommissioning or repairs based on data currently submitted. In addition, more accurate well locations will enable the Department to better assess the impacts these wells have on natural resources and other well users during the agricultural water usage certification process. It will also enable the Department to better assess impacts to agricultural wells presented by new diversion requests in the region.

Regulatory Flexibility Analysis

The implementation of the regulatory program authorized by the Act necessarily impacts the activities of well drilling and related firms. In accordance with the New Jersey Regulatory Flexibility Act (RFA), N.J.S.A. 52:14B-16 et seq., the Department has determined that the proposed amendments, new rules, and repeal may affect "small businesses" as defined in the RFA. However, none of the proposed changes are deemed to increase or decrease current requirements governing all regulated wells, regardless of size. Moreover, the proposed amendments are consistent with and implement the statutory directive of the Act and the proposed amendments are not considered overly burdensome regardless of the size of the drilling company. In fact, many of these amendments were requested by industry representatives as part of the stakeholder process and via the New Jersey Well Drillers and Pump Installers Advisory Board. For example, one proposed amendment, which would require the electronic submission of all permit applications and other well documents, could be perceived to disproportionately

burden smaller businesses, which may lack the resources (that is, a personal computer and high-speed internet connection) to comply. However, since mid-2009, when the Department initiated a voluntary electronic permitting system, more than 96 percent of all well drilling firms in the State, including small businesses, routinely use this system. The relatively modest initial investment to access the Department's electronic portal is more than offset by the convenience, expedience, and efficiency of obtaining permit approvals and permanent online access to all well-related documents. As stated in the Environmental Impact statement, compliance with the proposed amendments aims to ensure that adverse impacts associated with the construction, maintenance, and decommissioning of wells are minimized. Accordingly, the Department is not proposing any differing standards that would apply to small businesses.

Under the existing rules, well drilling firms, regardless of size, are required to submit well permits, well records, and well decommissioning reports within specified timeframes. These reporting requirements are continued under the proposed rulemaking and are not changed as a result of the proposed amendments. Rather, the proposed amendments only provide additional clarification of the information required to be provided to the Department.

However, the use of the electronic permitting system is expected to improve recordkeeping by allowing well drilling firms to track the status of well permits online. The system is designed like an online filing cabinet. Well drillers have the ability to archive completed projects and sort well permits based on criteria such as approval status or well permits with no corresponding well record submitted. In addition, the rules require well drilling firms to keep copies of valid well permits and make them available to Federal and State officials upon request. The electronic system will facilitate this requirement by allowing the well drilling firms to easily locate and print copies of any records upon request.

Housing Affordability Impact Analysis

In accordance with N.J.S.A. 52:14B-4.1b, as amended effective July 17, 2008, by P.L. 2008, c. 46, the Department has evaluated the proposed amendments, new rules, and repeal to determine the impact, if any, on the affordability of housing. The rulemaking, which will affect the regulation of the construction and decommissioning of wells, as well as the licensing of well drillers and pump installers, are not expected to have an impact on the costs of housing or on the affordability of housing. While the proposed amendments to the rules generally allow for greater flexibility in the materials and procedures that may be used in the construction and decommissioning of wells, any fluctuation in the cost of a well will be negligible. Moreover, the proposed amendments do not impose any new requirements on homeowners. Accordingly, the rulemaking will not affect the overall average cost of housing in the State.

Smart Growth Development Impact Analysis

In accordance with N.J.S.A. 52:14B-4.1b, as amended effective July 17, 2008, by P.L. 2008, c. 46, the Department has evaluated the proposed amendments, new rules, and repeal to determine the impact, if any, on the availability of affordable housing and on new house construction in Planning Areas 1 or 2, or within designated centers, under the State Development and Redevelopment Plan (State Plan). The proposed amendments, new rules, and repeal will not have an effect on either the number of homes or projects that would be allowed or produced within Planning Areas 1 or 2, or within designated centers.

Full text of the rule proposed for repeal may be found in the New Jersey Administrative Code at N.J.A.C. 7:9D-1.8.

Full text of the proposed amendments and new rules follows (additions indicated in boldface **thus**; deletions indicated in brackets [thus]):

CHAPTER 9A

STANDARDS FOR INDIVIDUAL SUBSURFACE SEWAGE DISPOSAL SYSTEMS

SUBCHAPTER 4. SITE EVALUATION AND SYSTEM LOCATION

7:9A-4.3 Distances

The minimum separation distance between the various components of the system and the other features listed shall conform to and be maintained in accordance with Table 4.3 below. The location of a new well must be in conformance with the requirements of N.J.A.C. 7:9D. No permit or waiver issued outside of this chapter by any local, State or Federal entity shall be construed to permit deviation from or a waiver of the separation distances requirements listed in the Table 4.3 below.

Table 4.3 Minimum Required Separation Distances (feet)

Component	Well or Suction Line	Water Service Line	Water Course (1,12)	Occupied Building	Property Line (15)	Disposal Field	Existing Seepage Pit or Cesspool	In-ground Swimming Pool
Building Sewer	25(2)	1	-	-	-	-	-	-
Septic Tank	50(2)	10	25(2, 5)	10(6)	5	-	-	10

D-Box(14)	50(2)	10	25(2, 5)	10	5	-	-	10
Disposal Field(11)	100(2, 4)	10	50(2, 3, 5)	25(7)	10	50(8)	50	20
Seepage Pit(9)	150/100(2, 13)	25	100(2, 5)	50(7)	20	50	50(10)	30
Dry Well	50	-	-	-	-	50	50	-

(1) through (3) (No change.)

(4) This distance may be decreased by the administrative authority, to a minimum of 50 feet [only] when **either** the well is provided with a water-tight casing to a depth of [50] **100** feet or more, [and] **or** where the casing is sealed into an impervious stratum which separates the waterbearing stratum from the layer of soil used for sanitary sewage disposal. N.J.A.C. 7:9D shall govern whenever the well under consideration has been installed after July 13, 1979.

(5) through (15) (No change.)

SUBCHAPTER 5. DETERMINATION OF SOIL SUITABILITY

7:9A-5.9 Hydraulic head test

(a) When a hydraulic head test is required by the administrative authority to determine the presence or absence of a perched or artesian zone of saturation, piezometers shall be installed and monitored by the applicant as follows:

1. (No change.)

2. Piezometer B shall consist of a steel or plastic casing, a minimum of two inches in diameter located two to five feet from Piezometer A and extending from above the ground

surface to a minimum of one foot below the bottom of the restrictive horizon. [Peizometer]

Piezometer B must be:

i. - ii. (No change.)

(b) – (e) (No change.)

SUBCHAPTER 9. EFFLUENT DISTRIBUTION NETWORKS

7:9A-9.7 Design procedure for pressure dosing systems

(a) The following procedure shall be used for disposal fields consisting of a disposal bed or disposal trenches**,** which are at equal elevations.

1. – 6. (No change.)

7. Step [Steven] **Seven**: For pump systems, select the proper pump as follows:

i. – iii. (No change.)

8. (No change.)

(b) (No change.)

SUBCHAPTER 12. OPERATION AND MAINTENANCE

7:9A-12.6 System inspection protocol for inspections conducted during real property transfer

(a) – (c) (No change.)

(d) The septic system inspector shall report the results of inspections to the administrative authority in accordance with the following:

1. An initial report shall be made within 24 hours after the inspection by telephone, facsimile, e-mail**,** or another means by which delivery can be verified when any of the conditions identified in the "Health Department Reporting" section of chapter Appendix F is observed; and

[ii] **2**. (No change in text.)

(e) – (g) (No change.)

CHAPTER 9D

WELL CONSTRUCTION AND MAINTENANCE; SEALING OF ABANDONED WELLS

SUBCHAPTER 1. GENERAL REQUIREMENTS FOR PERMITTING OF WELLS, AND FOR LICENSING OF WELL DRILLERS AND PUMP INSTALLERS[,]**;** PROCEDURES AND PRACTICES OF THE STATE WELL DRILLERS AND PUMP INSTALLERS EXAMINING AND ADVISORY BOARD

7:9D-1.1 [Scope] **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

[These rules] **This chapter** shall be liberally construed to permit the Department and the Board to discharge their statutory functions under [the "New Jersey Subsurface and Percolating Waters Act,"] 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) (No change.)

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:

...

"Act" means [the New Jersey Subsurface and Percolating Waters Act,] N.J.S.A. 58:4A-4.1 [et seq.] **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 [Bureau of Safe Drinking Water in the] Department.

...

"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 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.

...

"Boring" or "soil boring" means any hole, any temporarily cased hole**,** or any other such installation using direct-push methods [which do not exceed a duration of 48] **that is decommissioned pursuant to this chapter within 72** hours **of completion**.

["Boring log" means a description of the boring including, but not limited to, the depth and nature of the material that has been penetrated, water zones and any other data or information required by the Department under this chapter.]

...

"Closed loop geothermal well" means a well or a borehole drilled to a specific depth either singly or in a series [wherein] **into which** a continuous closed loop of pipe is inserted [from one well to another] 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 [an aquifer.] **a water bearing zone. A confining unit may consist of one of more confining layers.**

...

"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.

...

"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 [N.J.A.C. 7:9D-3] **this chapter**.

...

["Dewatering system permit" means a permit to drill well(s) for the installation, operation and abandonment of a dewatering well or dewatering well point system for temporary construction dewatering projects only.]

"Dewatering well driller" means a person possessing a New Jersey dewatering well driller's license [who has at least three years of experience under the supervision of a New Jersey licensed master or journeyman well driller or dewatering well driller with concentration in the practical construction of only dewatering wells or dewatering wellpoints or who satisfies equivalent experience and other requirements of] **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 [ground water] **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.

...

"[Driving] **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.**

...

"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.

...

"GPM" means gallons per minute.

"[Ground water] **Groundwater**" means water below the land surface in a zone of saturation.

...

"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 [who has at least three years of experience under the supervision of a New Jersey licensed master or journeyman well driller in the trade, business, or calling of well drilling, with concentration in the practical construction of wells, and the installation and repair of well pumping

equipment and appurtenances thereto, or who satisfies equivalent experience and other requirements] pursuant to N.J.A.C. 7:9D-1.7 **and 1.8**.

...

"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.

...

"Master well driller" means a well driller possessing a New Jersey master well driller's license [who has at least five years experience in the trade, business, or calling of well drilling, including at least two years of experience as a licensed journeyman well driller in this State, skilled in the planning, superintending, and practical construction of wells, and the installation and repair of well pumping equipment and appurtenances thereto, or who satisfies equivalent experience and other requirements] pursuant to N.J.A.C. 7:9D-1.7 **and 1.8**.

...

"Monitoring well driller" means a well driller possessing a New Jersey monitoring well driller's license [who has at least three years of experience under the supervision of a New Jersey licensed master, journeyman, or monitoring well driller in the trade, business, or calling of well drilling, with concentration in the practical construction of wells, or who satisfies equivalent experience and other requirements] 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.

...

"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.

...

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

...

"Pump installer" means a person possessing a New Jersey license as a pump installer [who has at least one year experience under the supervision of a New Jersey licensed master, journeyman or journeyman (Class B) well driller or a New Jersey licensed pump installer, and is qualified to engage in pump installing] **pursuant to N.J.A.C. 7:9D-1.7 and 1.8**.

...

"Site-wide permit" means a permit to drill [well which allows for the construction of an undetermined number of closed-loop geothermal wells or cathodic protection wells or geotechnical

borings or dewatering wells or dewatering wellpoints or other types of wells as determined by the Department,] **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 [who has at least three years of experience under the supervision of only a New Jersey licensed master or journeyman well driller or soil borer or monitoring well driller with concentrations in the practical construction of borings, or who satisfies equivalent experience and other requirements] 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.

...

"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 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 [water] system" means a system**,** [which derives water from a well to supply potable or non-potable water] **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)-(b) (No change.)

(c) No person shall install, repair**, remove, alter,** or replace a well pump or well pumping equipment or engage in such business without being [or employing] **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:-]**7:9D-**

1.11 without [the immediate on-site] **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. (No change.)

(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 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 [of the proper class] and pump installer licenses

(a) Well driller licenses are classified [as master well driller licenses, journeyman and journeyman (Class B) well driller licenses, monitoring well driller licenses, dewatering well driller licenses, and soil borer licenses. The Department may establish other license categories of

the proper class as deemed necessary by recommendation of the Board. The authority to conduct the well drilling activities for each license of the proper class is established] 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. – ix. (No change.)

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;

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. (No change.)

iv. Seal and decommission any well **except public community water supply wells** in compliance with N.J.A.C. 7:9D-3; and

v. (No change.)

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. (No change.)

iv. [Seal and decommission] **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. (No change.)

4. A dewatering well driller is authorized to:

i. (No change.)

ii. [Seal and decommission] **Decommission** only [dewatering wells or dewatering wellpoints which] **Category 6 wells that** have not penetrated any confining layers; and

iii. (No change.)

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.

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.

[5.] **8.** [A] **Prior to July 1, 2020, a** soil borer is authorized to:

i. Drill and install any Category [5] **4** well;

ii. [Seal and decommission only] **Decommission any** Category [5] **4** wells in compliance with N.J.A.C. 7:9D-3; and

iii. (No change.)

[6.] **9.** [A] **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 [5] **4** well [which] **that** does not require permanent well pumping equipment;

ii. Seal and decommission any Category 3 and Category [5] **4** well in compliance with N.J.A.C. 7:9D-3; and

iii. (No change.)

(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. -3. (No change.)

(c) (No change.)

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

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

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, including New Jersey modules, which shall have been taken within 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 (after the effective date of this rule)**	**General Drilling, Augering, and Monitoring Two of the following: Cable Tool Air Rotary Mud Rotary Reverse Rotary General Water Systems 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 (one day before effective date of rule)	**One of the following: Cable Tool Air Rotary Mud Rotary 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 M – Augering and Monitoring One of the following: Cable Tool Air Rotary Mud Rotary Reverse Rotary Water Systems General Exam One of the following: Water Systems < 100 gpm 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.**

Journeyman (Class B) well driller	**General Drilling** **One of the following:** **Cable Tool** **Air Rotary** **Mud Rotary** **Reverse Rotary** **Water Systems General Exam** **One of the following:** **Water Systems < 100 gpm** **Water Systems > 100 gpm** **NJ Regulations for Journeyman (Class B)**	**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.**
Environmental Resource and Geotechnical (ERG) well driller	**General Drilling** **Augering and Monitoring** **NJ Regulations for ERG drilling**	**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.**
Dewatering well driller	**General Drilling** **Jetting and Driving wells** **NJ Regulations for Dewatering**	**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.**

Vertical Closed Loop Geothermal (VCLG) well driller	**General Drilling Certified Vertical Closed Loop Drilling One of the following: Cable Tool Air Rotary Mud Rotary 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 (two years after the effective date of this rule), 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 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 (the effective date of the rule):

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 (one day before the effective date of the rule), 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 (one day before the effective date of the rule), 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;

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 [which] **that** applies to all licensees. [Renewals] **An application for renewal** shall be made by submitting**:** the renewal form [provided] **specified** by the Department**, documentation of continuing education requirements in accordance with (f) below,** and the renewal fee prior to June 30.

[(b) A non-refundable $50.00 application fee is required with all applications made for any licensing examination and shall be made by check or money order payable to "Treasurer, State of New Jersey" and submitted to the Department.]

[(c)] **(b)** The initial and renewal fees for all licenses [of the proper class] **issued pursuant to this chapter** and **for** late renewals are as follows:

[1. Master well driller's license $300.00

2.	Journeyman well driller's license	$300.00
3.	Dewatering well driller's license	$300.00
4.	Soil borer's license	$300.00
5.	Monitoring well driller's license	$300.00]
1.	**All well driller license classes**	**$300.00**

Recodify existing 6. and 7. as **2. and 3.** (No change in text.)

[(d)] **(c)** A licensee who fails to renew his or her license prior to the June 30 renewal payment deadline may have his or her license renewed by payment of the appropriate renewal fee and late payment fee within six months following the renewal date of the license**, provided all other requirements of this section are met**.

[(e)] **(d)** A licensee who fails to renew his or her license within six months following the [renewal] **expiration** date of the license shall [not have the license reinstated until he or she successfully passes the written examination prescribed by the Department for applicants for a new license of the proper class] **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. **For all license renewal applications submitted 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:

1. For all license renewal applications submitted 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 outlined in (g)3 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 principle 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 in 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;

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.

[(f)] **(h)** (No change in text.)

(a)-(e) (No change.)

(f) The duties of the Board shall include, but not be limited to, the following:

[1. Examining the qualifications and experience of all persons applying for any well driller license of the proper class or pump installer license;

2. Certifying all applicants scheduled for a license examination and certifying the results of any examinations administered pursuant to N.J.A.C. 7:9D-1.8 to the Commissioner;

3. Recommending to the Commissioner appropriate new rules or amendments to this chapter;

4. Advising the Department regarding any enforcement actions or any complaints against licensed well drillers, licensed pump installers or any person pursuant to this chapter; and

5. Periodically reviewing and modifying the contents of the examinations administered pursuant to N.J.A.C. 7:9D-1.8.]

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;

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 (i) 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 of 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.

(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.

(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 principle 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) (No change.)

(b) The use of a well [may] **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 licensed well driller may obtain a site-wide permit when installing dewatering well point systems, closed-loop geothermal well systems, cathodic protection wells, or soil borings.]

(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 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. (No change.)

(e) [Original] **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 [or copies thereof shall be] **and shall make the permits** available [on-site] **onsite** at all times for inspection by any [authorized local and/or State representative] **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, [regardless of well diameter and total well depth] 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 [on the forms prescribed by the Department giving] **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 [signature of owner, signature of well driller and registration number] **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. Prior to June 30, 2008, the New Jersey Rectangular Coordinate Grid System (Atlas Sheet System) shall be used to report well locational information in a well permit application. In addition to the Atlas Sheet System, well location coordinate data obtained using the methods described at (f)3iv below may also be submitted.]

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. [Starting July 1, 2008, the] **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)3i]**(f)2i** through iv below. Explanatory information and program contacts are provided [in] **on** the Department's ["Guidance for Reporting Well Locations to the New Jersey Department of Environmental Protection Well Permitting Program," available] **website** at [www.state.nj.us/dep/watersupply] **www.nj.gov/dep/watersupply** or by contacting the [Well Permitting Program at (609) 984-6831] **Department pursuant to N.J.A.C. 7:9D-1.17**.

i. (No change.)

ii. Horizontal data points shall be submitted in New Jersey State Plane coordinates using the North American Datum of 1983 (NAD 1983), [in accordance with the Department's Mapping and Digital Data Standards at N.J.A.C. 7:1D Appendix A, using units of United States survey feet.] **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. Locational information collected in latitude and longitude shall be converted to New Jersey State Plane coordinates.]

[iv.] **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' [web site] **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[. GPS receivers used for GIS data collection shall be either mapping or resource grade receivers that meet the standards in N.J.A.C. 7:1D Appendix A];

(2) [i-MapNJ] **NJ-GeoWeb**. Access to [i-MapNJ] **NJ-GeoWeb** and a tutorial [for New Jersey well drillers] is available through the Department's Bureau of Geographic Information Systems' (BGIS) [web site] **website** at http://www.nj.gov/dep/gis; or

(3) (No change.)

(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.-2. (No change.)

3. [Test] **Soil** borings and any Category [5] **4** wells [which] **that** are 50 feet or less in total depth and 8.5 inches or less in borehole diameter;

4. (No change.)

5. Dewatering wells or dewatering wellpoints [which] **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 [licensed] well driller [of the proper class] 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 [abandonment] **decommissioning** report shall be required.

(i) (No change.)

(j) The owner of the property on which a well is drilled shall be responsible for ensuring that all information provided [on] **to the well driller for** the well permit application is true, accurate**,** and complete. [In cases where the licensed well driller or other authorized agent signs for the owner, he or she] **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 [licensed] 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 [a check or money order made payable to the "Treasurer, State of New Jersey"; or] **the required fee.**

[3. Insufficient funds are available in the specified sub-account authorized for well permit application fee payment.]

(l) (No change.)

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

(a) (No change.)

(b) A [licensed] 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 [Department] **well driller** must [receive] **submit** a completed well permit application [from the well driller.] **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 [licensed] 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 application shall include a clear and concise factual description of the nature and scope of the emergency and verification upon request by the Department.]

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 [licensed] well driller an emergency well drilling permit number and specify the date of approval. The [licensed] well driller shall make [the permit number and approval date] **an electronic or paper copy of the approved permit** available for any [on-site] **onsite** inspection by any authorized local, **county,** State**,** or Federal [representative] **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)-(d) (No change.)

(e) An expedited well permit approval may be issued for a public community supply well only in those cases where the [Bureau of Water Systems and Well Permitting] **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) (No change.)

(b) The Department may revoke a well permit upon a determination of the following:

1. (No change.)

2. The owner, well driller**,** or both failed to comply with any requirement of the [State] Act or this subchapter or has not complied with one or more conditions of the State well permit issued for the particular well.

(c) [The] **Within 90 days after the date of expiration of a well permit, the** well driller shall [be responsible for cancellation of] **cancel** all approved State well permits which have [either] expired [or in those instances where the] **and for which** well construction was never initiated. All cancellations shall be [made by the New Jersey licensed well driller using the forms prescribed by the Department.] **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. [A licensed well driller shall, within] **Within** 90 days of completion of the drilling, constructing, installing, repairing, replacing**, redesignating,** or modifying any well requiring a permit to drill, [file] **the licensed well driller who performed the work or provided the onsite supervision shall submit** a completed well record [on the forms provided] **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. (No change.)

    [ii. All well records shall be signed by the well driller who actually performed the construction of the well, or provided the on-site supervision of the well construction;]

2. Where a well is equipped with a pump having a capacity [in excess] of 70 [gallons per minute (gpm)] **gpm or more** and the equipment is installed after the well record has been submitted, the well record shall be amended by the [licensed] 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 [legible using the forms prescribed by the Department giving] **include, at a minimum, the following:** the geologic log [(that is, description of materials penetrated during well drilled)] **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 [ant] **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. [Starting July 1, 2008, the] **The** as-built location of the well shall be reported in all well records as follows:

    i. (No change.)

    ii. Horizontal data points shall be submitted in New Jersey State Plane coordinates using the North American Datum of 1983 (NAD 1983), [in accordance with the Department's Mapping and Digital Data Standards at N.J.A.C. 7:1D Appendix A, using units of United States survey feet.] **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. Locational information collected in latitude and longitude shall be converted to New Jersey State Plane coordinates.]

[iv.] **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[. GPS receivers used for GIS data collection shall be either mapping or resource grade receivers that meet the standards in N.J.A.C. 7:1D Appendix A]; or

(2) (No change.)

(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 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) [Non-refundable payment of well] **A non-refundable** permit fee[s] is required for any well [requiring a permit to drill] **constructed** pursuant to [the State Act and these rules] **this chapter**. Payment shall be made by **electronic** check or [money order,] **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. – 2. (No change.)

3. Each site-wide permit application [for borings, cathodic protection wells, closed loop geothermal well systems or dewatering well systems] **submitted pursuant to N.J.A.C. 7:9D-1.11(c)** shall be accompanied by a fee of $1,300. [A site-wide permit shall allow for the construction of 10 or more borings, cathodic protection wells, closed loop geothermal wells, or dewatering wells or dewatering wellpoints for each project area. Where less than 10 borings, cathodic protection wells, closed loop geothermal wells, or dewatering wells or dewatering wellpoints are proposed to be drilled at a site, individual well permits are required, and the fee at (b)1 above applies.]

[(c) The Department shall annually publish a list of acceptable electronic media for expedited permit processing and the associated additional fee for each individual permit shall be $25.00.]

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 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: [domestic, non-public, public community supply, and public non-community] **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 [Supply] 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 [and]**,** injection**,** [or] **and** recharge wells;
3. Category 3 **Cased Environmental** Resource [Evaluation] **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 [wells], air sparging [wells], soil vapor extraction [wells], recovery [wells, and wells or wellpoints installed for environmental remediation projects]**, 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 Special Use Wells: methane gas extraction wells, closed-loop geothermal wells, dewatering wells or dewatering wellpoints, cathodic protection wells, oil and gas exploration wells, elevator shafts and any other such well which may, in the

discretion of the Department require a permit pursuant to the State Act and N.J.A.C. 7:9D-1.11; and

5. Category 5 Geotechnical Wells: test borings, probe holes, uncased holes drilled or otherwise constructed for the purpose of obtaining data for engineering and/or geophysical, hydrological or geological purposes and borings involving the use of direct-push technologies.]

4. Category 4 Uncased Environmental Resource and Geotechnical Borings: includes all uncased non-water supply wells that are used for environmental engineering and 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 [State] Act:

1. -3. (No change.)

4. The Department may prohibit for use in the construction or maintenance of any well any material or equipment that may pose a [significant] hazard to public health[, safe drinking water or ground water] **or the environment**;

5. (No change.)

[6. No new Category 1 or Category 2 well shall be located or enclosed in a basement or cellar of a building;]

[i] **6**. (No change in text.)

7. (No change.)

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. (No change.)

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 [without prior written approval by the Department] **unless explicitly authorized in a permit issued pursuant to this chapter in accordance with N.J.A.C. 7:9D-2.8**;

13. [Adequate] **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 [temporarily] suspended [and the rig moves away from the drilling site], 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 [pump is installed and/or 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. -17. (No change.)

18. If the Department determines that any well [water] 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 [ground water] **groundwater** or constitute a physical hazard, the Department may order **the property owner to hire a well driller to perform** work [to be performed] on the well **system** or appurtenances thereto as is deemed necessary to prevent contamination of the [ground water] **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 [New Jersey licensed] pump installer or [New Jersey licensed] master [or] journeyman**, or journeyman (Class B)** well driller. All such work shall conform with the standards set forth in N.J.A.C. 5:23-3.16 and 13:31-[1.18(a).] **3; and**

20. Any portion of a [well] borehole which 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 [well] borehole shall be

decommissioned [and sealed] prior to the completion of the well in accordance with N.J.A.C. 7:9D-3.

(b) [Any] **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 [may be required to have double-cased well construction as follows]:

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. 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 as well as the water supply; and]

[3.] **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 [water] system shall be tested, installed, designed, located, and constructed in accordance with all applicable sections of N.J.A.C. 7:10-[12 or] 11 **or 12**;
2. All wells shall be disinfected pursuant to the applicable requirements of N.J.A.C. 7:10-[12 or] 11 **or 12 following installation, redevelopment, maintenance, well repair, and/or pump repair**;
3. (No change.)
4. For potable water supply wells installed in consolidated formations[:
    i. All well casing shall not be less than six inches in inner diameter;
    ii. 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; and
    iii. All wells shall have a minimum length of 50 feet of grout seal extending from the bottom of the casing described in (a)4ii above to grade; and]**, the well casing shall not be less than six inches in inner diameter; and**

5. All well [water] systems [which] **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-[12 or] 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;

[1.] **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[. 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;] **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;

[2. All wells shall be equipped with a down facing casing vent located at least 12 inches above the flood level. All vents shall be screened to prevent the entry of insects;]

3. Any repairs made to existing wells or pump systems, where the well head terminates below ground, shall include extending the well casing above [the land surface] **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 [Pitless Adapter Standard - 1997 (PAS-97) Performance Standards document] **standards for pitless adapters** set forth at [(a)6ii] **(b)6ii** below;

4. -5. (No change.)

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. (No change.)

ii. Pitless well units, pitless well adapters and pitless well caps shall be manufactured and installed in accordance with the [Pitless Adapter Standard - 1997 (PAS-97) Performance Standards of 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, [800 Roosevelt Road, Building C, Suite 20, Glen Ellyn, IL 60137] **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 [3.0] **three** feet of earth [. In northern portions of the State (that is, Passaic, Sussex and Warren counties) additional earth cover to prevent freezing may be necessary] **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-viii (No change.)

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. 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;]

[xi.] **x.** Each well pump **system** shall have a foot-valve or a check valve;

[xii.] **xi.** (No change in text.)

[xiii.] **xii.** Any well with a yield of less than five [gallons per minute (gpm)] **gpm** shall be equipped with a low water level cut-off device;

Recodify existing xiv.-xv. as **xiii.-xiv.** (No change in text.)

[xvi.] **xv.** The pumping equipment shall be located so as to [permit] **allow** convenient access for the removal and repair of the pump and related appurtenances;

[xvii.] **xvi.** (No change in text.)

[xviii.] **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**;

[xix.] **xviii.** A pressure relief **device, such as a** valve**,** is required on all [positive displacement] pumping systems; and

[xx.] **xix.** Pump controls [or] **and** accessories shall [either] be housed **outside of the well casing and either** in a secured **and protected** building or [be enclosed in a weather-proof, locked cabinet] **otherwise secured and protected in accordance with manufacturer's specifications**.

(c) [All] **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 [water] 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) [All] **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 [1] **2** of (e)4 below;

[2. All wells shall have a minimum of 50 feet of casing, with a minimum of 20 feet of casing set into unweathered rock; and]

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 [shall pull out the permanent casing, ream the hole to below the problem zone and

reinstall the well casing. In those instances or situations where the well driller is unable to remove the permanent well casing] **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. -2. (No change.)

3. Plastic well casing shall conform to the following requirements:

i.-ii. (No change.)

iii. Plastic well casing shall meet the requirements specified in the American Society for Testing and Materials (ASTM) Standard F480-[91]**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**[. The Society's address is 1916 Race Street, Philadelphia, PA 19013];

[iv. ABS casing shall meet the requirements specified in the American Society for Testing and Materials Standard D1527, "Standard Specifications for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe, Schedules 40 and 80," incorporated herein by reference, as amended and supplemented. The Society's address is 1916 Race Street, Philadelphia, PA 19013;]

[v.] **iv.** Plastic well casing shall also meet the requirements of the National Sanitation Foundation Standard Number 14; "Plastic**s** Piping System Components and Related Materials," incorporated herein by reference, as amended and supplemented[. The Foundation's address is P.O. Box 130140, 789 Dixboro Road, Ann Arbor, MI 48113-0140]**, which is available at www.nsf.org**;

Recodify existing vi.-vii. as **v.-vi.** (No change in text.)

4. Standard steel casing shall be manufactured and installed to conform to ASTM designation [A-53 or A-120] **A-53/A53M, which is available at www.astm.org**, or American Petroleum Institute (API) standard Specifications [5A or 5L] **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 [Division of Production, 300 Corrigan Tower Building, Dallas, TX 75201] **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 [1] **2** below:

TABLE [1] **2**

(No change in text.)

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.

[5.] **6.** (No change in text.)

(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, as amended and supplemented, and available at www.awwa.org and** may [be disinfected by introducing] **include the introduction of** granular chlorine or chlorine tablets during the gravel pack operation;
2. (No change.)
3. The gravel pack shall not extend into any confining layer above the screen:

   i. (No change.)

   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 [itself above the top of the well screen. The filter pack shall not extend more than 50 feet above the top of any 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.-5. (No change.)

(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 [aquifer;] **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.-4. (No change.)

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 in N.J.A.C. 7:9D-1 and the general construction specifications in N.J.A.C. 7:9D-2.2, the following specific requirements shall apply to all Category 3 **and 4** wells:

1. The State well permit number shall be prominently displayed and permanently affixed to [each] **cased** well**s** in addition to the site-specific well identification number set forth on the approved well permit application (for example, MW-1);

2. -3. (No change.)

4. For all monitoring wells, [except those used for aquifer pump tests,] no more than 25 feet total of well screen shall be installed [and no more than five feet of filter pack

shall be placed above the top of the well screen]. For all monitoring wells constructed without a screen, [except those used for aquifer pump tests,] there shall be no more than 25 feet total of open borehole;

5. No more than five feet of filter pack shall be placed above the top of the well screen;

[5.] **6.** Protective steel casing shall be installed to a minimum depth of [three] **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.] **7.** All flush-mounted [monitoring] 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 wells that require connection to a manifold system, for example, soil vapor extraction wells, or groundwater treatment wells**; and

[7.] **8.** Below-grade **well** installations [of monitoring wells] shall be in accordance with the Department's Field Sampling Procedures Manual, [May, 1992] **August 2005**, as amended and supplemented.

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

1. [The] **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. (No change.)

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

1. [The] **Any** screened interval or [the] 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 [4] **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. (No change.)

2. The tremie or grout pipe shall be installed [with the closed loop] **to the total drilled depth** upon completion of the borehole. The entire annular space between the closed loop and the uncased borehole shall [only] be [sealed under pressure] **tremie pressure grouted** in accordance with N.J.A.C. 7:9D-2.9 and 2.10 using the following materials:

    i. [High grade] **Sodium-based** bentonite, [cementitious thermally enhanced grout or Thermal Grout 85] **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. [Cementitious thermally enhanced grout] **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. (No change.)

4. Pipe material for the underground buried portion of the heat exchanger shall be [160 psi] 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 ASTMD-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-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; [or]

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. (No change.)

2. A dewatering well which penetrates a confined aquifer shall be installed by a New Jersey licensed master**,** [or] journeyman **or journeyman (Class B)** well driller and constructed in accordance with the requirements in N.J.A.C. 7:9D-2.2;

3. -6. (No change.)

[(c) 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 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.]

[(d)] **(c)** 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 [elevator shafts] **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. - 3. (No change.)

4. To prevent any contaminants from entering the [ground water] **groundwater** at the bottom of the casing, the bottom of the casing shall be:

i. - ii. (No change.)

[(e) In addition to the general well drilling and well permitting requirements in N.J.A.C. 7:9D-1 and 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.]

7:9D-2.6 Specific requirements for the installation of Category [5 geotechnical borings] **8 wells**

[(a)] 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, [the following specific requirements shall apply to all test borings and borings using direct-push technologies]:

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.

[1. The driller or borer may request up to 10 individual borings on one permit to drill well application. In this case, a separate well permit number shall be issued for each boring specified on the application, up to 10 well permit numbers per application; or

2. The driller or borer may request any number of borings on one permit to drill well application. In this case, a single site-wide well permit number shall be issued for all borings specified on the application; and

3. Geotechnical borings involving the use of direct-push technologies shall be installed so as to provide an effective means of decommissioning the borehole in accordance with N.J.A.C. 7:9D-3.]

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 [pumphouse] **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	Distri-bution box	Disposal field	Seepage pit*	Dry well	Cess-pool	Fuel Storage tank
Well	25	50	50	100	[150/100] **150**	50	150	25
Suction line	25	50	50	100	100	50	150	-
Water service line	5	10	10	10	10	-	25	-

*Note: [The 150 foot minimum distance between a well and a seepage pit system shall apply only in those instances where a new well is being installed in conjunction with a new seepage pit system pursuant to N.J.A.C. 7:9A-4.3] **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. -2. (No change.)

(c) (No change.)

(d) Additional minimum distance requirements for any well may be required by the Department as necessary to protect [ground water] **groundwater** supplies in areas of known contamination.

(e) (No change.)

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 [New Jersey licensed] well driller [shall] **may** request [that special standards be prescribed for the particular well] **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.-4. (No change.)

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. (No change.)

7. The proposed method of construction that the well [contractor] **driller** believes shall be adequate for each well; [and]

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 [provide]**:**

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 [with]

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;

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 National Sanitation Foundation (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 [of] **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**,** [below] **which is incorporated herein by reference**;

2. Portland Cement and [High Grade] **Sodium-based** Bentonite in accordance with **N.J.A.C. 7:9D Appendix A,** Table 2**,** [below] **which is incorporated herein by reference**;

3. [High-Grade] **Sodium-based** Bentonite in accordance with **N.J.A.C. 7:9D Appendix A,** Table 3**,** [below] **which is incorporated herein by reference**;

4. [Cementitious Thermally Enhanced Grout] **Cement-based geothermal grout** in accordance with **N.J.A.C. 7:9D Appendix A,** Table 4**,** [below] **which is incorporated herein by reference**;

5. [Thermal Grout 85] **Bentonite-based geothermal grout** or equal in accordance with **N.J.A.C. 7:9D Appendix A,** Table 5**,** [below.] **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.

[Table 1

Portland Cement

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

Table 2

Portland Cement and High Grade Bentonite; Use Portland Cement Types I or II Only

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

Table 3

High Grade 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 Grout

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

Table 5

Thermal Grout 85™ or equal -

(Figures based on 63.5 Percent solids by weight)

Pounds of Bentonite	Pounds of Thermal Enhancement Compound*	Target Gallons of Water	Acceptable Range of Water (gallons)	Target Density lb/gal
54	200	17.5	17 – 18	13.1

*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.]

(b) All materials **specified in (a)1 through 5 above** shall be accurately measured prior to mixing. [The] **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) (No change.)

(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 [listed in Table 3 and Table 5] shall not be used for sealing any annular space in consolidated formations**,** or in those instances where it will come in contact with [ground water] **groundwater** of a pH of less than 5.0 or a total dissolved solids content in excess of 1,000 ppm.

(e) Where the grout material extends through zones of salt water, a [salt-water resistant] **cement-based** grout [material] **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. -2. (No change.)

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; [or]

4. For the casing method ([Haliburton] **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 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 [be waived] **not be required**.

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

1. (No change.)

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 [10] **50** feet from the ground surface shall be regrouted and completed by the [gravity or] pressure method **or by using sodium-based bentonite chips and shaped pellets in accordance with (a)5 above**;

    ii. (No change.)

    iii. Any settlement of [10] **50** feet or greater shall be regrouted using the pressure method; and

    iv. (No change.)

4. (No change.)

7:9D-2.11 Well development and well redevelopment

(a)-(c) (No change.)

(d) Acceptable well development/redevelopment methods include:

1.-2. (No change.)

3. Air **or gas** surging**, including pulsing, bursting, or inert gas injection**;

4. (No change.)

5. Chemical treatment:

i. (No change.)

ii. All acids [must] **and other chemicals used for treatment shall** be specifically designed for use in water well rehabilitation, [and] 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. (No change.)

6.-7. (No change.)

(e) –(f) (No change.)

(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.

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

1. (No change.)

2. Has been constructed in violation of [N.J.S.A. 58:4A-4.1 et seq.] **the Act or this chapter**;

3. (No change.)

4. Is damaged **or destroyed**;

5. (No change.)

6. Is contaminated **or otherwise unfit for the intended purpose**;

7. Has salt water intrusion; [or]

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.

[(b)] **(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 [adherence] **compliance** with the standard [sealing] **decommissioning** requirements.

[(c)] **(f)** All wells **and boreholes** shall be decommissioned by, or **in the presence of and** under the [constant on-site] **onsite** supervision of, a [New Jersey licensed] 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.

[(d)] **(g) For all wells, other than hand dug or domestic wells that have a diameter of two inches or less,** [The] **the** well driller shall obtain all applicable well records prior to [sealing] **decommissioning** the well in order to verify the depth [and]**,** 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.**

[(e)] **(h)** [The Department may require] **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**,** [or] downhole televising**, or groundwater sampling**.

[(f)] **(i)** Any hazardous waste**,** [(that is] **including, but not limited to**, contaminated casing, cuttings, sediment, displaced water, or free product[)] generated during the [sealing] **decommissioning,** shall be handled in accordance with N.J.A.C. 7:26G.

[(g)] **(j)** The following types of wells shall not be decommissioned until the **well** driller proposing to [seal] **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 [salt water] **saltwater** intrusion;

4.-5. (No change.)

6. Multiple cased wells; [or]

7. [Elevator] **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

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.

[(h)] **(l)** All other wells shall be decommissioned as follows:

1. (No change.)

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 [sealed] **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 [sealing] **decommissioning** operation and when the driller is not at the [sealing] **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 [sealing] **decommissioning** process shall be of potable quality.

[(i)] **(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 [also] be used to [seal and] decommission wells[:]**.**

[1. Portland Cement in accordance with Table 1 below;

2. Portland Cement and High Grade Bentonite in accordance with Table 2 below;

3. High Grade Bentonite in accordance with Table 3 below;

4. Cementitious Thermally Enhanced Grout in accordance with Table 4 below;

5. Thermal Grout 85. or equal in accordance with Table 5 below.

6. The Department may approve alternate or additional sealing materials;]

[7.] **1.** Only those materials or additives specifically designed for well [sealing] **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;

[8.] **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 [below] **of N.J.A.C. 7:9D Appendix A** shall not be used as a [sealing] **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.

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.

[Table 1

Portland Cement

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

Table 2

Portland Cement and High Grade Bentonite; Use Portland Cement Types I or II Only

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

Table 3

High Grade 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 Grout

Pounds of Cement (Type I, II or V)	Amount of Superplasticizer (Sulfonated Napthalene)	Pounds of Dried Silica Sand Conforming to the Sieve Analysis*	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

Table 5

Thermal Grout 85™ or equal -

(Figures based on 63.5 Percent solids by weight)

Pounds of Bentonite	Pounds of Thermal Enhancement Compound*	Target Gallons of Water	Acceptable Range of Water (gallons)	Target Density lb/gal
54	200	17.5	17 – 18	13.1

*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.]

[(j)] **(n)** [Sealing] **Decommissioning** materials shall be [pumped] **installed using one of the following methods:**

1. **Pumped** into the well under pressure through a tremie pipe [which] **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 [sealing] **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.

[(k) The sealing material shall be pumped into the well until all water has been displaced from the well and until the sealing material overflowing the well has a density within the acceptable density range for that material.]

(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. [Any settlement of the sealing material less than 10 feet from the ground surface shall be resealed by] **By** the [gravity or] 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**

[2.] **3.** [The driller who seals the well shall return to the well no sooner than 24 hours nor later than 72 hours and fill all settling in the well with concrete. Additional] **After the completion of either (o)1 or 2 above,** concrete shall be poured to form a slab which shall [encompass the top] **extend beyond the perimeter** of the casing **after any settlement is filled in accordance with (o)1 and 2 above**. This slab shall be **a minimum of six-inches thick and** located at or below grade.

[3. Any settlement of 10 feet or greater shall be resealed using pressure method, prior to placement of the concrete slabs pursuant to (k)2 above.]

[(l) The driller who decommissioned the well shall submit a complete, legible Well Abandonment Report on the form prescribed by the Department giving the location and date the

well was sealed, the permit number (if applicable) of the well sealed, the property owner name, address, lot and block, the total well depth, the well diameter and well casing materials, a cross-section of the sealed well and a description of the materials used to decommission the well, and the signature name and registration number of the driller who sealed the well. The Well Abandonment Report shall be submitted with a copy of all applicable well records to the Department within 90 days of the completion of sealing.]

[(m)] **(p)** The driller shall obtain **written approval of a decommissioning plan from the** [Departmental approval] **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**,** [or] journeyman **or journeyman (Class B)** well driller in accordance with N.J.A.C. 7:9D-3.1.

(b) (No change.)

(c) The well [sealer] **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) –(e) (No change.)

(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 [sealed by pumping grout through a tremie pipe] **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) (No change.)

7:9D-3.4 Specific requirements for the decommissioning of Category [5 wells-geotechnical] **4 uncased** borings

(a) All borings shall be decommissioned within [48] **72** hours of completion.

(b) – (c) (No change.)

(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:

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 [sealing] **decommissioning** material is pumped into the driven borehole;

2. - 4. (No change.)

(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, andtelephone 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 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; [INJUNCTIVE RELIEF;] 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 [on appeal from any contested case arising from the implementation of any provision of this chapter].

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**.** [and the] **The** Department may take one or more of the following actions**, including, but not limited to**:

1. [Suspend] **Suspension of** a well driller's license or pump installer's license for a period [not to exceed] **that is less than** one year;

2. [Revoke] **Revocation of** a **permit or a** well driller's license or pump installer's license;

3. [Issue] **Issuance of** an administrative order; [or] **and/or**

4. [Assess] **Assessment of** an administrative penalty.

(b) The Department or the Board [will] **may** also take action against any person who has aided or abetted a violation [as set forth in (a) above].

(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 calendar days 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

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 [against any person who has violated any provision of this chapter, or any provision of the Act pursuant to which this chapter has been promulgated, for one or more of the following purposes]:

[1. To direct any person to cease violation of any provision of this chapter;

2. To assess a civil administrative penalty pursuant to this subchapter; or

3. To suspend or revoke a permit pursuant to this subchapter.]

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 [per day] for each violation [of] **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) (No change.)

(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 [may] **shall** constitute an additional, separate**,** and distinct offense subjecting the violator to [the] **daily** penalties in accordance with this subchapter.

(d) The Department may assess a civil administrative penalty for [each violation of any provision of the Act, any provision of this chapter, or any provision of a license or an administrative order promulgated or issued pursuant thereto in an amount as follows] **the following non-construction related violations at the mid-point of the following stated ranges unless adjusted pursuant to (i) below**:

[1. For any violation not related to the construction of a well, the penalty shall be at the midpoint of the range as follows unless adjusted pursuant to (g) below:

		SERIOUSNESS		
		Major	Moderate	Minor
	Major	$800 - $1,000	$550 - $750	$400 - $500
CONDUCT	Moderate	$550 - $750	$400 - $500	$250 - $350
	Minor	$400 - $500	$250 - $350	$100 - $200

2. For any violation directly related to the construction of a well, the penalty shall be at the midpoint of the range as follows unless adjusted pursuant to (g) 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.

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**

[(e)] **(f)** The Department shall determine the seriousness of the violation as major, moderate**,** or minor as [set forth in (e)1 through 3 below.] **follows:**

[1. Major violations shall be determined as follows:

i. Major violations not related to well construction shall include engaging in any regulated activity pursuant to this chapter without obtaining a license or permit or with a revoked or suspended license.

ii. Major violations related to the construction of a well shall include drilling or installing a well in violation of the provisions of this chapter or in violation of a permit condition imposed pursuant to this chapter;

2. Moderate violations shall be determined as follows:

i. Moderate violations not related to well construction shall include engaging in any regulated activity pursuant to this chapter with an expired license or permit.

ii. Moderate violations related to well construction shall include the installation of any pump or appurtenance or the decommissioning of any well in a manner that violates the provisions of this chapter or a condition of a permit issued pursuant to this chapter.

3. Minor violations shall be determined as follows:

i. Minor violations not related to well construction shall include violations of any provisions of this chapter or a condition of a permit issued pursuant to this chapter involving record keeping, failure to submit information to the Department or the submission of inaccurate or incomplete information, failure to notify the Department prior to drilling.

ii. Minor violations related to well construction shall include anything not included in (e)1ii or 2ii, above.]

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

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.

[(f)] **(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 [(f)1] **(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 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.

[(g)] **(i)** The [Department shall increase or reduce the amount determined pursuant to] **civil administrative penalty shall be established at the mid-point of the ranges set forth at** (d) **and (e)** above, [and in accordance with applicable law,] **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. (No change.)

2. The type, number, frequency, extent, and severity of the violations;

[2.] **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;

[3.] **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;

[i. Implementation of measures that can reasonably be expected to prevent a recurrence of the same type of violation will result in a reduction equal to the bottom of the range;]

[4.] **5.** Any unusual or extraordinary costs or impacts directly or indirectly imposed on the public or the environment as a result of the violation; [and/or]

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

[5.] **10.** (No change in text.)

[(h)] **(j)** (No change in text.)

7:9D-4.5 Basis for denial of license

(a) [The] **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. (No change.)

2. The applicant has provided false or inaccurate information in the application; [or]

3. The applicant has [one or more outstanding violations of any provision of the Subsurface and Percolating Waters Act] **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) [The] **Upon recommendation from the Board, the** Department may [take or the Board may recommend to the Commissioner that the Department take action to] suspend or revoke, on an individual case basis, any license**,** [when any of the following circumstances are evident] **upon a determination that**:

1. [That a] **A** licensee has [been found guilty of] **committed** fraud**, error,** or deceit in obtaining his or her license;

2. [That a] **A** licensee has [been found guilty of] **committed** one or more [construction related] **construction-related** violation(s);

3. [That a] **A** licensee has [been found guilty of repeated non-construction related] **committed one or more non-construction-related** violations;

4. [That a] **A** licensee has [been found guilty of] **demonstrated** gross neglect, incompetence**,** or misconduct in the [business] **practice** of well drilling or pump installation or repair in the State of New Jersey;

5. [That a] **A** licensee has **willfully** violated any provision of the [Subsurface and Percolating Waters] Act or any other State [Act] **statute** relating to the installation or repair of wells and well pumping equipment;

6. [That the] **A** licensee has failed to [respond to efforts by the Department to resolve or] 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**; [or]

7. [That the] **A** licensee has [been found guilty of] **committed** a violation [determined to cause] **which causes**, or [tend] **has the potential** to cause, substantial harm to public health, safety**,** [and] **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 [returned] **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 [claimed by the Department to have committed the violation described in] **subject to** the order or notice;

[3. Describe the activity or activities which are in violation;]

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. -6. (No change.)

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. [7:10A-2.8 and] 7:9D-4.8;

8.-10. (No change.)

(b) (No change.)

(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 [of civil administrative penalty assessment] 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 [a] final [order] 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 [a] final [order] 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**,** [or] 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. (No change.)

2. Submit a copy of the request to the offices indicated in the [enforcement] document **being contested**.

(b) (No change.)

(c) Any written request for an adjudicatory hearing shall include the following:

1. (No change.)

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;

Recodify existing 2.-3. as **5.-6.** (No change in text.)

[4.] **7.** Information **and documentation** supporting the hearing request and specific reference to, or copies of, other written documents relied upon to support the request;

Recodify existing 5.-6. as **8.-9.** (No change in text.)

(d) –(e) (No change.)

(f) No permit or license which is the subject of [an] **a final** order of suspension [or]**,** 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 Cement[1]

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 Only[2]

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

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 Grout[3]

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.

Geo Energy Alternatives[5]

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
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**

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**

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

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**

[6]All 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.