



CHAPTER 199, P. L. 1954  
AND  
STANDARDS FOR THE CONSTRUCTION  
OF WATER SUPPLY SYSTEMS FOR  
REALTY IMPROVEMENTS  
(REVISED—1966)

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New Jersey (State) Department of Health

**STANDARDS FOR THE CONSTRUCTION OF WATER  
SUPPLY SYSTEMS FOR REALTY IMPROVEMENTS**

*July 1, 1966*

Pursuant to the authority vested in the State Commissioner of Health under the provisions of Chapter 199, P. L. 1954, the following Standards for the Construction of Water Supply Systems for Realty Improvements are hereby promulgated to become effective August 1, 1966. All prior Standards promulgated by the State Commissioner of Health in these matters are hereby rescinded.

**NEW JERSEY STATE DEPARTMENT OF HEALTH**

**Roscoe P. Kandle, M. D.**  
State Commissioner of Health

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## CHAPTER 199, P. L. 1954

An Act to protect the public health by regulating the installation or erection of potable water supply and sewerage services upon certain realty improvements within this State and providing for the enforcement thereof.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

1. This act shall be known and may be cited as "The Realty Improvement Sewerage and Facilities Act (1954)."

2. As used in this act, unless the context clearly indicates otherwise, the following words shall have the following meaning:

(a) "Approved potable water supply" means water supply which has been approved by the State Department of Health, pursuant to Title 58 of the Revised Statutes, or any other law.

(b) "Approved sewer system" means a sanitary sewer system which has been approved by the State Department of Health pursuant to Title 58 of the Revised Statutes, or any other law.

(c) "Water supply system" means any installation or structure designed to provide domestic or potable water supply.

(d) "Sewerage facilities" means any installation or structure designed to provide for the collection and disposal of sewage.

(e) "Realty improvement" means any proposed new residence or other building the useful occupancy of which will require the installation or erection of a water supply system or sewerage facilities, other than one which is to be served by an approved water supply and an approved sewerage system.

(f) "Board" or "board of health" means the board of health of any municipality or the boards, bodies or officers in such municipality lawfully exercising any of the powers of a board of health under the laws governing such municipality, and includes any consolidated board of health or county board of health created and established pursuant to law.

(g) "State Department" means the State Department of Health.

(h) "Professional engineer" means a person licensed to practice professional engineering in this State.

3. No building permit for the construction of a realty improvement shall be issued by any municipal or other authority in this State nor shall the construction of any realty improvement be begun until the board of health having jurisdiction shall have certified that the proposed water supply system and sewerage facilities for the proposed realty improvements are in compliance with the provisions of this act and the standards for construction of such water supply and sewerage facilities promulgated by the State Department as herein provided and those established by local ordinances, where such local ordinances prescribe higher standards than those promulgated by the State Department.

4. Any board of health which has in its employ a licensed health officer or sanitary inspector of the first grade licensed by the State Department or a professional engineer shall issue certifications as provided in section 3 of this act if such health officer, sanitary inspector or professional engineer certifies to the board that the application and accompanying engineering data are in compliance with this act and the standards for construction hereinbefore referred to.

A board of health not having personnel as described above may issue such certification, if an applicant for certification files with the board a certificate made by a professional engineer stating that the proposed water supply system and sewerage facilities are in compliance with this act and said standards for construction.

5. Application for certification shall be in writing and shall be made on a formal application blank when such blanks are provided by the board, and such application shall include such engineering data as shall be prescribed by said standards for construction.

Copies of all applications and the accompanying engineering data for certifications to cover 50 or more realty improvements shall be filed with or mailed to the State Department on the date on which application is made to the board.

Copies of all certifications by boards of health covering 50 or more realty improvements shall be mailed to the State Department by the board issuing the same on the date of issue.

6. The board of health shall issue or deny certification within 15 days after receiving an application for certification except that, in the case the board finds the data submitted by an applicant incomplete, the time for acting thereon shall be extended by 15 days beyond the date of submission of adequate supplementary or amendatory data. Denial of certification shall be supported by a statement of the reasons for such action.

7. The State Department may revoke any certification covering 50 or more realty improvements; provided, that such action is taken within 15 days of the date of certification by the board of health; and provided, that such action is supported by a statement of the reasons therefor. If after revocation of any certification by the board, in any such case, such application is amended or supplemented, a copy thereof shall be filed with or mailed to the department on the date of its submission.

8. If any change in the physical conditions of any lands of a realty improvement, which will materially affect the operation of the water supply system or sewerage facilities covered by any certification issued under this act, shall be made after certification, the certification shall become null and void and a new certification shall be obtained before construction shall proceed. If 50 or more realty improvements are covered by such a valid certificate a copy of the application for a new certificate shall be mailed to the State Department on the date upon which it is submitted to the board.

9. In case any certification is denied by the board of health, or is revoked by the State Department, a hearing shall be held thereon before the board or the State Department, as the case may be, within 15 days after request therefor is made by the applicant and upon such hearing the board of health or the State Department, as the case may be, shall affirm, alter or rescind its previous determination and take action accordingly within 15 days after the date of such hearing.

10. A board of health shall have power to make, or cause to be made, such inspections and tests as may be necessary to carry out the purposes of this act and its authorized representatives shall at all times have the right to enter upon lands of realty improvements for said purposes.

11. No septic tank, tile field, seepage pit or system or structure designed to provide sewerage facilities to any realty improvement shall be covered from view until the same has been inspected by an authorized

representative of the board of health and permission to cover the same has been given by the board or its authorized representative.

12. Copies of any ordinances, which have been or shall be adopted by any municipality, establishing requirements equivalent to those required by this act and minimum standards for construction equivalent to those promulgated or to be promulgated by the State Commissioner of Health under this act, shall be filed with the State Department within 10 days after the effective date of this act or within 10 days after the adoption thereof, whichever shall be later.

13. There shall be appointed biennially an advisory committee to draft and recommend standards for the construction of water supply systems and sewerage facilities for realty improvements in order to insure their safety, adequacy and propriety for the purposes for which they are to be installed. One member of such committee shall be appointed by the Commissioner of Conservation and Economic Development from his department, 1 member shall be appointed by the State Commissioner of Health from his department and 1 member shall be appointed by the State Commissioner of Health from each list of 3 persons submitted by each of the following associations, namely:

New Jersey Association of Real Estate Boards,  
New Jersey Health Officers Association,  
New Jersey Society of Professional Engineers,  
New Jersey State League of Municipalities,  
New Jersey Home Builders Association,  
New Jersey Institute of Municipal Attorneys, and  
New Jersey Title Insurance Association.

In event that any of said associations shall fail to submit a list of such names within 10 days after written request to it by the State Commissioner of Health, the State Commissioner of Health may make the appointment according to his own discretion.

14. Such draft of recommended standards shall be submitted to the State Commissioner of Health who, having given due consideration to the same, shall promulgate standards for the construction of water supply systems and sewerage facilities for realty improvements in order to insure their safety, adequacy and propriety for the purposes for which they are to be installed, which standards shall constitute the minimum requirements to be met by applicants for certifications under

this act. The standards shall specify the engineering data required to be submitted with applications for certification which shall include a plan of the land to be used for the realty improvement, elevations of existing and proposed physical features, reasonable details on surface and subsurface soil conditions, and, details of the type of construction and the physical features of the proposed water and sewerage facilities, and shall specify minimum requirements for the construction or erection of proposed water supply systems and sewerage facilities. Amendments of standards for construction shall be made in the manner prescribed for the establishment of the original standards and the advisory committee shall be consulted on all proposed amendments.

15. In case the State Commissioner of Health shall not concur in any of the advisory committee's recommendations as to the standards for construction or any amendments thereof or supplements thereto, and shall promulgate standards not in accord with the committee's recommendations, the committee may appeal to the State Public Health Council thereon and shall be entitled to a hearing before the Council. After such hearing the Council shall make appropriate recommendations to the State Commissioner of Health who shall in turn make such changes, if any, in the standards for construction promulgated by him, as he deems in the interest of the public health.

16. No person or corporation shall construct or install any water supply system or sewerage facilities for a realty improvement, which are not in accordance with the provisions of the application or any amendment thereof or supplement thereto, made for any certification on which a certification shall be issued as herein provided, and any person or corporation violating any provisions of this section shall be subject to the penalties and remedies hereinafter provided for, which may be recovered and enforced by the board of health having jurisdiction in the municipality in which such violation shall occur.

17. Any person or corporation violating any provision of this act shall be liable to a penalty of \$200.00 for each offense and an additional penalty of \$25.00 for each day of continuance of violation after notice of the violation shall have been given to such person or corporation by the board of health having jurisdiction in the municipality in which such violation occurs, to be collected and enforced by summary proceedings for the collection of penalties pursuant to the "Penalty Enforcement Law."

18. The board of health having jurisdiction in the municipality in which any violation of any provision of this act occurs shall have the

right to order all further work in and about any water supply system or sewerage facilities, which is being erected or installed in violation of this act, to be stopped forthwith, except such work as shall be necessary to remedy such violation, and, thereafter, to continue such work without any violation of any of the provisions of this act, and after the issuance of any such order and the service of a copy thereof upon any person connected with or working in and about the erection or installation of any such water supply system or sewerage facilities, or any part thereof, no further work shall be done thereon except as aforesaid and any person or corporation who, after having been served with a copy of such an order, shall do any work or cause or permit any work to be done in or about the same, except such as is hereinbefore provided, shall be liable to a penalty of \$200.00 to be collected and enforced by summary proceedings for the collection of penalties pursuant to the "Penalty Enforcement Law."

19. In case any water supply or sewerage facilities or any part thereof is about to be, or is, or has been, erected or installed after the effective date of this act in violation of any of the provisions of this act as aforesaid, such erection or installation is hereby declared to be a nuisance and the board having jurisdiction in the municipality in which the realty improvement is situate, may institute a civil action for an injunction to prohibit the further violations of this act in any court of competent jurisdiction, which court shall have power to order an abatement of such nuisance, and to prevent its further maintenance, and any further violation of this act, by injunction or otherwise according to the practice of said court.

20. This act shall take effect September 1, 1954.

Approved July 28, 1954.

# STANDARDS FOR THE CONSTRUCTION OF WATER SUPPLY SYSTEMS FOR REALTY IMPROVEMENTS PROMULGATED BY THE STATE COMMISSIONER OF HEALTH, JULY 1, 1966

## Section 1 DEFINITIONS

1.1 The words, terms or phrases listed below for the purposes of these Standards shall be defined and interpreted as follows:

**Abandoned Well**—A well not in operation for three or more years or improperly maintained to prevent contamination.

**Administrative Authority**—An Administrative Authority is the board of health.

**Alter**—Alter shall mean and include the replacing or repairing of any portion of an existing water supply system.

**Approved**—Approved shall mean accepted or acceptable under applicable specifications stated or cited in these standards, or accepted as suitable for the proposed use under procedures and powers of administration delegated in these standards.

**Aquifer**—The water-bearing stratum used as the source of water supply.

**Artesian Formations**—Artesian formations are water-bearing sand or gravel formations in which ground water is confined under hydrostatic pressure by tight clay or other sufficiently impermeable formations so as to restrict free hydraulic connection with other water-bearing formations and in which the supply is normally obtained from distant out-crop areas.

**Artesian Ground Water**—Artesian ground water is ground water confined under hydrostatic pressure by a more or less impermeable overlying formation which restricts free hydraulic connection with other water-bearing formations.

**Artesian Well**—An artesian well is one which derives its water from a confined water-bearing stratum in which the ground water is under hydrostatic pressure. An artesian well may or may not overflow at the surface.

**Authorized Agent**—An authorized agent is a licensed health officer, sanitary inspector, plumbing inspector or any other properly qualified and licensed person who is delegated to function within specified limits as agent of the Administrative Authority.

**Bored Well**—Bored well is one that is excavated by means of a hand or power soil auger.

**Catchment Area**—Catchment area is that area of the ground surface from which precipitation will recharge the source of water supply.

**Certification**—Certification by the board of health is a written statement, certifying that the proposed water supply system for the proposed realty improvement is in compliance with the provisions of Chapter 199, P.L. 1954 and these Standards.

**Cesspool**—A cesspool is a covered pit with open-jointed lining into which raw sewage is discharged, the liquid portion of which is disposed of by seepage or leaching into the surrounding porous soil, the solids or sludge being retained in the pit.

**Cistern**—A cistern is a covered tank in which rain water from a roof or roofs is stored for household or other purposes.

**Condemned Well**—Condemned well is one in which the water has been declared unsuitable for potable or domestic purposes by the Administrative Authority.

**Construct**—Construct shall mean and include building or installing a new water supply system or enlarging an existing water supply system.

**Disposal Area**—The disposal area is considered as the entire area used for underground dispersion of the liquid portion of sewage. It may consist of a seepage pit or a disposal field or a combination thereof.

**Disposal Bed**—A disposal bed consists of a shallow area from which the entire earth contents have been removed and the excavation partially filled with a satisfactory filtering material in which distribution lines have been laid and the entire area covered with top soil and a suitable vegetative growth.

**Disposal Field**—A disposal field is used for dispersion of the liquid portion of sewage into the ground as near the surface as possible. A disposal field may consist of disposal trenches, a disposal bed or a combination thereof.

**Disposal Trench**—Disposal trenches are shallow ditches with vertical sides and flat bottoms partially filled with a satisfactory filtering material in which a single distribution line has been laid, covered with top soil and a suitable vegetative cover.

**Diversion Permit**—A diversion permit is a permit which has been issued by the Division of Water Policy and Supply of the Department of Conservation and Economic Development pursuant to Chapter 375, Laws of 1947, for the private use or diversion of ground water in excess of 100,000 gallons daily from a well or other percolating sources in the areas which have been delineated under the provisions of the law.

**Drilled Well**—Drilled well is one that is excavated wholly or in part by means of a drill (either percussion or rotary) which operates by cutting or abrasion or by use of a water jet.

**Driven Well**—A driven well is one that is constructed by driving a casing, at the end of which is a drive point and screen, without the use of any drilling, boring or jetting device.

**Dug Well**—A dug well is a water table well that is excavated by means of picks, shovels, or other hand tools, or by means of power equipment.

**Free Ground Water**—Free ground water is unconfined ground water where the upper surface or water table is free to rise and fall with changes in volume of stored water.

**Ground Water**—Ground water is sub-surface water which has filled the voids in the earth and cracks or fractures in the rock in what is called the zone of saturation.

**Impermeable or Impervious Formations**—Formations which consist of material that does not permit perceptible vertical transmission of water to lower strata, including such as clay, unfractured granite, etc.

**Individual Sewage Disposal System**—An individual sewage disposal system is a sub-surface sewage disposal system designed and constructed to treat sewage in a manner that will retain most the settleable solids in a water-tight tank and to discharge the liquid portion to an adequate disposal area.

**Individual Water Supply**—A water supply used for potable or domestic purposes in a single family residence.

**Industrial Waste**—Industrial wastes are liquid or solid wastes resulting from the processes employed in industrial establishments.

**Licensed Well Driller**—A licensed well driller is one who has obtained either a Journeyman or Master well driller license under the provisions of N.J.S.A. 58:44-1 et seq.

**Locate**—Locate shall mean designating the site or place of the sources or other appurtenances of a water supply system.

**Outcrop Area**—Outcrop area is that portion of the ground surface where an artesian ground water formation is exposed to infiltration from precipitation.

**Person**—Person includes corporations, companies, associations, societies, firms, partnerships and joint stock companies as well as individuals.

**Pollution**—Pollution shall mean the existence of sewage, industrial waste, or other harmful or objectionable material in water. Sources of sewage pollution may be privies, septic tanks, cesspools, seepage pits, disposal fields such as disposal beds or disposal trenches, sink drains, storm drains, faulty sanitary sewers, barnyard and industrial wastes.

**Potable Water**—Any water used for drinking or culinary purposes meeting the "Potable Water Standards" adopted by the New Jersey Department of Health.

**Privy**—A privy is an earth or water-tight pit or receptacle for receiving non-water-carried human body wastes over which is placed a privy house containing a seat or seats.

**Public Potable Water Supply**—A municipally or privately owned water supply, approved by the New Jersey State Department of Health, under the provisions of Article 1, Chapter 10 of Title 58 and Article 1, Chapter 11 of Title 58 of the Revised Statutes, which is distributed to consumers through a public water supply system.

**Public Water Supply System**—A municipally or privately owned system comprising structures which operating alone or with other structures result in the derivation, conveyance (or transmission) or distribution of water for potable or domestic purposes to consumers in twenty or more dwellings or properties; this definition does not include a public water treatment plant.

**Realty Improvement**—Any proposed new residence or other building the useful occupancy of which will require the installation or erection of a water supply system or sewerage facilities, other than one which is to be served by an approved water supply and an approved sewerage system.

**Rock Well**—Rock well is one which derives water only from cracks and fissures in the rock.

**Sanitary Sewage**—Sanitary sewage is any liquid waste containing animal or vegetable matter in suspension or solution or the water-carried wastes resulting from the discharge of water-closets, laundry tubs, washing machines, sinks, dishwashers or any other source of water-carried waste of human origin or containing putrescible material.

**Sanitary Sewer**—A sanitary sewer is a pipe which carries sewage and to which storm, surface and ground waters are not intentionally admitted.

**Seepage Pit**—A seepage pit is a covered pit with open jointed lining through which septic tank effluent or laundry waste may seep or leach into the surrounding soil.

**Semipublic Water Supply System**—A semipublic water supply system is a water supply system from which water is supplied for potable or domestic purposes to consumers in more than one but less than twenty dwellings or properties OR from which water from other than a public potable water supply as defined in these standards is used or made available for potable or domestic purposes to employees, tenants, members, guests, or the public at large in commercial offices, industrial, multiple dwellings or semipublic buildings, such as: rooming and boarding houses, hotels, motels, tourist cabins, mobile home parks, restaurants, camps of all types, day and boarding schools, club houses, hospitals and other institutions, or is used in connection with the manufacture or handling of ice, dairy products, food or drinks.

**Septic Tank**—A septic tank is a water-tight receptacle which receives the discharge from a building sewer or part thereof, and is designed and constructed so as to permit settling of settleable solids from the liquid, digestion of the organic matter by detention and discharge of the liquid portion into a disposal area.

**Spring**—A spring is a natural surface feature where ground water issues from the rock or soil onto the land or into a body of water.

**Subsurface Water**—See Ground Water.

**Sunk Well**—Sunk well is one in which the casing is lowered primarily by removing the soil by a water jet.

**Surface Water**—Surface water includes water found on the ground surface, or contained in a stream, pond or lake or any other natural water course.

**Water Bearing Stratum**—Shall mean and include the same definition as given for aquifer.

**Water Table**—Water table is the upper surface of the free ground water in an unconfined zone of saturation. In an artesian formation, the water table corresponds to the top of the pressure surface.

**Water Table Well**—A water table well is one which derives its water from an unconfined zone of saturation which has no protective impermeable formation over the water-bearing stratum.

**Well**—A well is an artificial excavation that derives water from the interstices of the rocks or soil which it penetrates.

**Well Drilling Permit**—A well drilling permit is a permit issued by the Division of Water Policy and Supply of the Department of Conservation and Economic Development for construction of a well in accordance with the provisions of N.J.S.A. 58:4A-14.

**Zone of Saturation**—Zone of saturation is that portion of the earth and underlying rock in which all voids, interstices, fissures and cracks are completely filled with ground water.

## Section 2

### GENERAL REQUIREMENTS

**2.1 Design**—The following criteria shall be considered in designing a water supply system for a realty improvement:

- a. Availability of water from a public potable water supply within an economic distance from the realty improvement.
- b. Advisability of establishing a public potable water supply.
- c. A dependable source of water supply.
- d. Geology.
- e. Potential and known sources of pollution.
- f. A balanced system of supply, pumping, treatment, distribution and storage facilities to meet the peak demand.

**2.2 Alternate Design or Construction Features**—Proposed design or construction features of a water supply differing from the provisions of these standards may be approved upon submission of evidence to the satisfaction of the Administrative Authority that public health or safety would not be affected adversely by such design or construction and such proposed design or construction features did not permit lower standards than those required herein.

**2.3 Water Consumption**—Water supply systems shall be designed to provide a minimum quantity of potable water as determined from the following table with a 50% increase in the quantity indicated by an asterisk (\*) where laundry facilities are provided.

<u>Type of Establishment</u>	<u>Gallons per Person per Day</u>
Cottages, seasonal occupancy	75
Single family dwellings	75
Multiple family dwellings (apartments)	50-75
Rooming houses	40
Boarding houses	50*
a. For each nonresident boarder	10

<u>Type of Establishment</u>	<u>Gallons per Person per Day</u>
Hotels	
a. Without private baths	50*
b. With private baths	60*
Motels and tourist cabins	25
Mobile Home Parks	
a. Dependent units	50*
b. Independent units	75
Restaurants	10
Camps	
a. Barracks type	50*
b. Cottage type	40*
c. Day Camps (no meals served)	15
Day Schools	
a. No cafeteria or showers	8
b. With cafeteria and no showers	15
c. With cafeteria and showers	20
d. Cafeteria, showers and laboratories	25
Boarding Schools	75*
Day workers: Office, Industrial, etc.	15
Hospitals (depending on type)	150-250
Institutions other than hospitals	75-125
Picnic Grounds	
a. Toilet only	5
b. Toilet and showers	10
Swimming pools and bathhouses	10
Clubhouses	
a. With resident members	60*
b. For each non-resident member	25
Selfservice laundries	50 gals./wash

When more than one use will occur, the multiple use shall be considered in determining water quantity. Small industrial plants maintaining a cafeteria and/or showers; club houses or hotels maintaining swimming pools and/or laundries are typical examples of multiple uses.

At private camp grounds, not less than fifty (50) gallons per campsite per day shall be provided if privies are used. Where water-flushed toilets are used, at least one hundred (100) gallons per campsite per day shall be provided.

**2.4 Sources of Water**—The source of water shall preferably be from wells. However, the use of springs, rainfall cisterns, and surface water may be permitted by the Administrative Authority.

**2.5 Grading**—Final grading shall provide adequate drainage of surface water away from the well and be of sufficient height to protect the sources of water supply from flooding.

**2.6 Freezing**—All parts of the water supply system shall be designed, located and constructed to protect against freezing.

**2.7 Cross Connection**—No (physical) cross connection shall be established between a water supply system serving a realty improvement and an approved public potable water supply unless approved in accordance with the provisions of N.J.S.A. 58:11-9.1 et seq.

**2.8 Priming**—A pump which requires priming, other than the initial priming following installation, shall not be employed for any water supply system serving a realty improvement.

**2.9 Disinfection**—Upon completion of the installation of a water supply system or following repairs to its pumping equipment, it shall be flushed, disinfected with a chlorine solution, and thoroughly reflushed to remove all traces of chlorine in a manner acceptable to the Administrative Authority.

**2.10 Protection**—All necessary measures shall be taken to prevent the contamination of the water-bearing stratum during the well construction.

### Section 3 LOCATION

**3.1 General**—A water supply system located and installed under these standards shall be such that with reasonable maintenance, it will function in a satisfactory manner and will not be subject to pollution.

Surface supplies subject to direct pollution from sewage or industrial waste shall not be used for potable purposes.

**3.2 Distances**—The approximate minimum distances for the location of the various component parts of a water supply system shall comply with those in the following table:

MINIMUM DISTANCE - FEET						
Component	Building Sewer	Septic Tank	Distribution Box	Disposal Field	Seepage Pit	Cesspool
Well (a)	50	50	50	100 (b)	100 (b)	150
Suction Line	50	50	50	50	50	150
Water Supply Line	10	10	10	10	10	25

- (a) Where gravel, limestone, or fractured, creviced or fissured rock formations are encountered, the distance from a subsurface sewage disposal system may be increased by the Administrative Authority.
- (b) Distances from disposal fields and seepage pits may be reduced to a minimum of 50 feet when the well is provided with an outside water-tight casing to a depth of 50 feet or more, or said casing extends and is sealed into an impervious formation separating the aquifer from the stratum of soil used for sewage disposal.

**3.3 Well Room**—A well shall not be installed within the cellar or basement of any realty improvement. A well may be installed in an offset basement pump and well room, provided the well casing extends at least eight inches above the floor of the adjoining basement, and the offset room is constructed with a water-tight roof or cover with access so as to permit the removal of any part of the well construction or pumping equipment for maintenance and repair.

**3.4 Pump Pits**—Pump pits will be permitted if water-tight and provided with either a 4-inch gravity drain to the ground surface or a sump pump of adequate capacity. There shall be no direct connection with a sanitary or storm sewer. In no case shall a pump pit be located in or over a dug well. A ventilating arrangement suitable to the Administrative Authority shall be provided.

**Section 4**  
**WELL CONSTRUCTION**

**4.1 General**—The design, selection, location and construction shall conform to the provisions of Sections 2 and 3 and as prescribed herein for specific types of wells.

**4.2 Methods of Construction**

**4.2.1 Drilled Wells** may be constructed at any location or in any type of geologic formation, and shall be equipped with casings conforming to the requirements of Section 4.3.1.

**4.2.2. Driven Wells**

a. Driven wells shall consist of casings conforming to the provisions of Section 4.3.1 and shall be equipped with standard drive points and perforated sections in lieu of screening.

b. No driving shall be done with the assistance of a water jet without prior specific approval of the Administrative Authority, and if granted, the water shall be of acceptable bacteriological quality and from a source approved by the Authority.

**4.2.3 Bored Wells**

a. May not be used in any locality where seepage pits or cesspools are used as a means of sewage disposal.

b. May not be constructed to an aquifer below the first impervious formation unless special provisions, satisfactory to the Administrative Authority, are made for sealing the casing into the impermeable formation above the water-bearing stratum.

c. Water jets or similar devices, or procedures may not be used in construction except as indicated in 4.2.2.

d. Minimum bore hole diameter shall be 4 inches greater than maximum outside diameter of the casing or couplings, and said diameter shall prevail for the full depth of casing, except where exterior watertight metal casing is provided for a minimum of 10 feet below the surface, when the diameter of the bore hole below said exterior casing shall provide for a close fit.

e. Casings shall conform to provisions of Section 4.3.

#### **4.2.4 Sunk Wells**

a. May be used only for an individual water supply, and only in localities where seepage pits or cesspools are not employed as the means of sewage disposal, and only with special prior approval by the Administrative Authority.

b. May not be constructed to an aquifer below the first impervious formation unless special provisions, satisfactory to the Administrative Authority, are made for sealing the casing into the impermeable formation above the water-bearing stratum.

c. Water used for jetting shall be confined within the casing at all times by maintaining the bottom of the casing below the jetting nozzle, and liquid material shall be carried away from the well site. Evidence of substantial erosion outside of the casing shall be construed as sufficient cause for specification by the Administrative Authority of the use of a larger diameter casing.

d. All water used during construction shall be approved quality satisfactory to the Administrative Authority.

e. Casings shall conform to the provisions of Section 4.3.

#### **4.2.5. Dug Wells**

a. May be used only for individual water supply, and only in localities where seepage pits or cesspools are not employed as a means of sewage disposal, and only with special prior approval by the Administrative Authority.

b. May not be constructed to an aquifer below the first impervious formation unless special provisions, satisfactory to the Administrative Authority, are made for sealing the casing or lining into the impermeable formation above the water bearing stratum.

c. Water jets or similar devices or procedures may not be used in construction.

d. The excavation shall provide a smooth vertical shaft, and the face shall be shored and braced as necessary to maintain the natural stability of the soil, and shall be not less than 4 inches or more than 12 inches larger in diameter than the outside of any prefabricated water-tight casing used as an open caisson.

e. Casings and linings shall conform to the provisions of Section 4.3.2 or 4.3.3. Other materials shall not be used except with specific prior approval of the material and the method of construction by the Administrative Authority.

#### 4.3 Casings

4.3.1 **Metallic**—All casings shall be water-tight and of new, undamaged pipe of standard wrought iron, steel or other equivalent suitable metal. Casing sizes 6 inches or larger in diameter shall have a minimum wall thickness of one-quarter inch. For the purposes of this section, pipe withdrawn from a well of new construction shall not be deemed to be used or reclaimed.

a. **Couplings**—Sections of casing shall be joined with couplings with ample full-threaded joints, drive-pipe couplings, or by welding, so that all joints shall be closed and made water-tight.

b. **Minimum Diameter**—No well casing shall be smaller than three inches inside diameter, except for driven wells.

c. **Maximum Diameter**—A well casing extending into rock shall have an outside diameter at least four inches smaller than that of the drill hole.

#### 4.3.2 Non-Metallic

a. If reinforced concrete, asbestos-cement pipe or other material is to be used, it shall comply with the specific requirements of the Administrative Authority.

b. Bell and spigot type, glazed or unglazed tile, or terra cotta pipe shall not be used for well casings.

4.3.3 **Linings**—Reinforced water-tight concrete may be poured directly against the walls of dug wells, and interior forms may be incorporated in said lining if constructed of reinforced concrete pipe placed not closer than 4 inches to the outer wall, or of stone, brick, concrete, cinder or terra cotta block placed not closer than 6 inches to the outer wall. Other materials for lining construction may be used only after specific approval by the Administrative Authority.

## **4.4 Casing Depths**

### **4.4.1. Water Table Wells**

a. In unconsolidated formations the casing shall extend to at least 10 feet below the level of the ground water table, or ten feet below the pumping level if drawdown exceeds five feet, making due allowance for seasonal fluctuation and the probability of increased draft on the water-bearing stratum. Where rock is encountered within 20 feet of the surface, the casing shall extend at least 10 feet into said rock, and where rock is encountered at greater depths, the casing shall penetrate the rock by means of a drive shoe.

b. Where installed in bored or dug wells, casing shall extend to a minimum of 10 feet below the lowest minimum seasonal stage of the static ground water table, but not less than 20 feet below the surface of the ground.

c. In limestone or other creviced or fractured rock formations the casing shall extend to a depth of at least 50 feet and shall be sealed into the rock in such a manner as to minimize the entrance of unsuitable water from crevices above the approved sources.

**4.4.2 Artesian Wells**—All casings shall extend through and be sealed into the impermeable formation above the water-bearing stratum.

## **4.5 Screens**

### **4.5.1 Materials**

a. Metallic screens shall be constructed of suitable noncorrosive material providing openings of a length and size satisfactory to develop the desired yield and to confine sand or other unconsolidated material against entry into the well. Joints of perforated pipe incorporated in the casings of driven wells shall be of sufficient length to develop the desired yield and shall be securely fastened to a standard drive-point.

b. Nonmetallic porous linings may be provided in lieu of metallic screens subject to prior specific approval by the Administrative Authority, and shall be placed from the bottom of the hole to the bottom of the water-tight casing. In dug wells, they may be constructed of stone, brick, concrete, cinder or terra cotta block, either new or clean and

undamaged, and of sufficient strength and durability to maintain the opening and withstand the loads imposed, including that of water-tight casings.

**4.6 Sealing**—The annular space outside of metallic or nonmetallic casings shall be filled with a neat Portland cement grout or 1:1 ratio cement-sand grout of approved consistency extending from the bottom of the casing to the surface slab and shall be placed in one continuous operation from the bottom upward to keep voids to a minimum.

**4.6.1 Water Table Wells**—The annular space between the casing and the drill hole shall be at least 2 inches wide to a minimum depth of 10 feet below the surface slab and may be filled with puddled clay in lieu of cement if desired.

#### **4.6.2 Dug Wells**

a. When the water-tight casing is capped below the surface of the ground the joint between the slab and the well casing shall be sealed and made water-tight by a metal strip or plastic compound.

b. Where poured concrete linings are used any remaining space left after removal of outside forms shall be filled with concrete or grout for the first 10 feet above the bottom of said lining and the remainder with puddled clay in lieu of cement, if desired.

**4.6.3 Well Head**—The seal between the pump base and concrete pedestal shall be water-tight and all openings between the casing and the drop pipe shall be closed with an approved type of water-tight sanitary seal. The well head shall be at least eight inches above floor level.

**4.6.4 Closed Casings**—All closed casings shall be sealed and covered with an approved standard type of well seal and all openings through the casing for the pump discharge or drop line shall be made with an approved type of seal.

**4.6.5. Well Vent**—A well vent shall be provided and shall be properly located and protected.

**4.7 Treatment**—Treatment of water derived from a well shall comply with the requirements of the Administrative Authority.

## Section 5

### SPRINGS, CISTERNS AND SURFACE SUPPLIES

#### 5.1 SPRINGS

**5.1.1 Construction**—Springs shall be enclosed by walls and covers constructed of impervious concrete or other relatively water-tight material installed so as not to restrict the flow of water into the basin, and extended to discharge in such a way as to prevent erosion of the fill surrounding the structure.

a. The walls of the spring encasement shall be extended above the elevation of the surrounding ground to prevent the entrance of surface water. Diversion ditches on the uphill side shall be installed if necessary. An overflow drain shall be placed near the top of the casement.

b. The discharge or pump intake pipe shall be installed so that the lowering of the water level within the casement will not permit the entrance of surface water.

c. The cover shall be movable or in case of a large encasement, a water-tight covered manhole shall be provided so that the interior can be serviced.

**5.1.2 Disinfection**—Disinfection of spring water may be required by the Administrative Authority to control bacteriological quality.

#### 5.2 CISTERNS.

**5.2.1 Limitation**—Cisterns may be permitted where ground water is unavailable.

**5.2.2 Construction**—Cisterns shall be enclosed by walls and covers constructed of metal or impervious brick, stone or concrete, and may be constructed above or below ground level, depending upon local conditions governing such a decision. Manholes shall be provided for all cisterns to permit cleaning.

**5.2.3 Supply Line**—The supply line to the cistern shall contain a switch so that the first washings of the roof can be wasted.

**5.2.4 Overflows**—The overflow pipe shall be screened with 16-mesh copper cloth. The inside end of the overflow pipe shall extend to the bottom of the cistern.

**5.2.5 Filters**—Filters employing coarse gravel shall be provided between the supply line and the cistern to prevent the entrance of insects and other matter, not removed from the roof and gutters by the first washing, from entering the cistern.

**5.2.6 Discharge Line**—The discharge or pump suction line shall be installed so that the opening through which it passes is provided with a water-tight seal.

**5.2.7 Disinfection**—Disinfection of cistern water may be required by the Administrative Authority if in their opinion the catchment area can not be washed and wasted properly.

### **5.3 SURFACE WATER SUPPLY**

**5.3.1 Limitations**—A surface water supply for a realty improvement is not recommended and may only be permitted when the supply is not subject to direct pollution from sewage, industrial waste or other sources of contamination and when adequate continuous operating treatment facilities are to be employed.

**5.3.2 Treatment**—Treatment of surface water shall consist of filtration and chlorination as a minimum.

**5.3.3 Treatment Plant Design**—The treatment plant shall be designed to provide the quantity of water as determined in the table in Section 2.2 of these standards. The plant shall be capable of providing a water which complies with the Potable Water Standards established by the New Jersey State Department of Health.

## Section 6

### PUMPS AND EQUIPMENT

**6.1 Type and Capacity**—Type and capacity of the pump and equipment (motor, drop pipes, foot valve, cylinder, storage tank, etc.) used shall be selected to meet applicable conditions and the requirements of the property served.

- a. The equipment used with the pump shall be in accordance with the pump manufacturer's recommendations as to type, size and kind.
- b. Suction or shallow-well pumps shall not be used where the maximum suction head exceeds 22 feet.

**6.2 Location**—Location of the pump and all equipment shall be such as will permit convenient access and removal for maintenance and repair.

- a. Where a pump is in an offset-basement pump room, the pumping equipment and the top of the well casing shall be located not less than 8 inches above the basement floor.
- b. When possible the pump shall be so located and designed as to make the use of a pump pit unnecessary; however, if used the pit shall be provided with either a 4-inch gravity drain to the ground surface or a sump pump.

**6.3 Installation**—Installation of the pump and equipment shall be satisfactory to the Administrative Authority and shall conform with the following:

- a. The pump and equipment shall be designed and installed to assure a pollution-proof and, where necessary, a frost-proof installation.
- b. The pump base shall be constructed so as to permit installation of a water-tight mounting.

#### 6.4 Seal.

**6.4.1 Below Grade**—When the top of well casing is below grade the seal shall be so constructed and installed as to maintain its water-tight feature.

**6.4.2 Air Vent**—An air vent shall not be permitted in a below grade installation, and only in an above grade installation where required by the Administrative Authority.

**6.4.3 Suction Lines**—Suction lines installed into the well casings or where otherwise required shall be constructed in such fashion as to preclude the entrance of pollution. The casing of a well which is greater than two inches in diameter shall not be used as the pump suction line. In such cases, a separate pump suction line shall be installed.

## Section 7

### REQUIREMENTS FOR CERTIFICATION

#### 7.1 Individual Water Supply and System.

**7.1.1 Basic Information Required**—Applications for certifications of individual water supplies and systems for one to ten realty improvements fronting on an existing “street” as defined in Section 2 of the Municipal Planning Enabling Act (1953), shall be the responsibility of the property owners and shall be made in writing, and upon a formal application form when provided by the Administrative Authority, and contain the following information:

- a. A description of the proposed water supply system covering the following items:
  1. Type of well or source of water supply (drilled, driven, spring, surface, etc.).
  2. Estimated depth of well.
  3. Diameter of well.
  4. Type and capacity of pumping equipment.
- b. A sketch of the property to be served by the individual water supply showing the following:
  1. Size of lot.
  2. Location of all buildings within 150 feet of water source.
  3. Location of the proposed source of water supply.
  4. Location of sewerage facilities or other possible sources of pollution within 150 feet of water source.
- c. Data pertinent to:
  1. Storage facilities.
  2. Treatment facilities, if required.

d. For a well source, the following additional information:

1. Method of sealing.
2. Evidence that a Well Drilling Permit has been obtained from the New Jersey State Department of Conservation and Economic Development (Division of Water Policy and Supply), except in the case of a drive-point or dug well.
3. Evidence that a Diversion Permit has been obtained from the New Jersey State Department of Conservation and Economic Development, (Division of Water Policy and Supply), in each case where ground water in excess of 100,000 gallons daily is to be diverted.

**7.1.2 Additional Information Required.** Applications for certification of individual water supplies and systems for realty improvements not covered in 7.1.1 and 7.2.1 shall submit the following information in addition to that required in 7.1.1:

a. A plan of the subdivision showing the following:\*

1. Lots with their dimensions.
2. Contours of original grades.
3. Proposed elevations of the final grading shown at lot corners or any contemplated change of slope.
4. Location of all test wells drilled to investigate water supply potentialities.
5. Location of all natural streams, and storm water drainage channels on or abutting the subdivision and of any contemplated relocation of same.
6. Location when less than  $\frac{1}{2}$  mile from the high water line along the coast and all salt water estuaries and elevation of maximum high water where available.
7. Location of storm and sanitary sewers.

\*The plan of the subdivision to be submitted for certification of sewerage facilities may be used for this purpose.

8. Location of all private and public water supplies within 1,000 feet of the subdivision.

## 7.2 Semipublic Water Supply and System.

**7.2.1 Information Required**—An application for certification of a water supply and system to serve less than 20 realty improvements and for any other realty improvements included under the definition of a Semipublic Water Supply System shall be made in writing and upon a formal application form when provided by the Administrative Authority, and contain the following information:

- A. For a semipublic water supply and system to serve less than 20 realty improvements:
  1. A description of the proposed water supply system covering the following items:
    - a. Type of well or source of water supply (drilled, driven, spring, surface, etc.).
    - b. Estimated depth of well.
    - c. Diameter of well.
    - d. Type and capacity of pumping equipment.
  2. A sketch of the property upon which the water supply is located showing:
    - a. Location of proposed water supply.
    - b. Location of sewerage facilities or other possible sources of pollution within 150 feet of the water supply.
    - c. Location of all buildings within 150 feet of water source.
  3. Data pertinent to:
    - a. Storage facilities
    - b. Treatment facilities, if required.
    - c. Number of realty improvements to be served.
    - d. Size of water main proposed.
    - e. Estimated water demand in gallons per day and basis for estimate.

4. For a well source, method of sealing.

B. For a semipublic water supply and system to serve all other realty improvements in this classification:

1. A description of the proposed water supply and system covering the following items:

a. Type of well or source of water supply (drilled, driven, spring, surface, etc.).

b. Estimated depth of well.

c. Diameter of well.

d. Type and capacity of pumping equipment.

2. A sketch of property to be served by the water supply and system showing the following:

a. Size of lot.

b. Location of all buildings within 150 feet of water source.

c. Location of proposed water supply.

d. Location of sewerage facilities or other possible sources of pollution within 150 feet of water source.

3. Data pertinent to:

a. Type of realty improvement to be served.

b. Storage facilities.

c. Treatment facilities, if required.

d. Estimated water demand in gallons per day and basis for estimate.

4. For a well source, method of sealing.

C. For either A or B above:

1. Evidence that a Well Drilling Permit has been obtained from the New Jersey State Department of Conservation and Economic Development (Division of Water Policy and Supply).

2. Evidence that a Diversion Permit has been obtained from the New Jersey State Department of Conservation and Economic

Development (Division of Water Policy and Supply) in each case where ground water in excess of 100,000 gallons daily is to be diverted.

### **7.3 Fifty or More Realty Improvements.**

7.3.1 Copies of all applications and accompanying engineering and other information herein required for certification of water supply systems for 50 or more realty improvements shall be filed with or mailed to the District State Health Office serving the county in which the subdivision and realty improvements are located, by the applicant on the date the application is made to the board of health.