

**CHESTER COUNTY HEALTH DEPARTMENT
RULES AND REGULATIONS**

CHAPTER 500. WATER, WELLS, NUISANCES, SEWAGE AND LIQUID WASTE.

§501. WATER WELL CONSTRUCTION, MONITORING WELLS, AND INDIVIDUAL, SEMI-PUBLIC AND PUBLIC WATER SUPPLIES, AND GEOTHERMAL BOREHOLES.

501.1. PURPOSE. The purpose of these Rules and Regulations is to establish minimum standards for quality, quantity, location, construction, alteration, or decommissioning of water wells and water well installation; also, to require a permit for the construction of a water supply including production wells, test wells, test borings, and monitoring wells, the installation of pumping equipment and other appurtenances, and the drilling of boreholes used for the installation of ground source heat pump equipment, consistency for regulated establishments; also, to license all well contractors and pump installation contractors. After the effective date of adoption of these Rules and Regulations, no well (either individual, semi-public, public, or geothermal borehole) shall be constructed, repaired, modified, or maintained by any regulated establishment, or any pump installed, repaired or replaced, contrary to the provisions of these regulations.

501.2. SCOPE. Except where clearly noted in the text, the provisions of this Chapter 500, Section 501 shall apply to all wells serving individual, semi-public, or public water supply systems, monitoring and test wells, and wells and boreholes drilled for installation of ground source heat pump equipment. Nothing in this Chapter 500, Section 501, is construed to exempt a public water system from the requirements of the Pennsylvania Safe Drinking Water Act, (35 P.S. 721.1 et. seq.)

501.3. DEFINITIONS. The following words and terms when used in this Section, shall have the following meanings unless the context clearly indicates otherwise.

501.3.1. "Abandoned" Well: Any well that is no longer equipped in such a manner as to be able to draw groundwater. This shall include wells where the pump, piping and/or electrical components have been disconnected or removed. Or any well where the drilling process has been completed in excess of 90 days and the well has not been approved for use as a supply by the Department (for new construction the 90 day period begins on the final approval date of the sewage system); or, wells that have not been used as a supply on a continuous basis for a period of one year; or, wells which are in such a state of disrepair that continued use for the purpose of obtaining ground water is impracticable, (such impracticability shall be determined by the Department); or, any well which has been replaced by a new well or a public water supply. Test wells and monitoring wells shall be considered Abandoned Wells when their use on a regular or prescribed basis has been discontinued.

501.3.2. "Agricultural Water Supply": Any water supply used specifically for irrigation of crops, irrigation of recreational or institutional grasslands, the watering of farm animals or other livestock, where the use of such water supply shall not be intended for human consumption.

501.3.3. "Alteration": Any action which necessitates entering a well with drilling tools; treating a well to increase yield; altering the physical structure or depth of the well; blasting; removal or replacement of well casing; or modifications concerning grouting or curbing.

501.3.4. "Annular Space": The space between two (2) cylindrical objects, one of which surrounds the other, such as the space between a drill hole and a casing pipe and a liner pipe.

501.3.5. "ANSI": American National Standards Institute.

501.3.6. "API": American Petroleum Institute.

501.3.7. "Approval to Use": Written approval to use the well obtained from the Department in accordance with Section 501.13.9 within 90 days of the completion of the well drilling process or, if for an emergency well, within 10 days of the completion of the well drilling process and final approval of the sewage system.

501.3.8. "Aquifer": A geological formation that contains and transmits water.

501.3.9. "Areas of Concern": Areas of suspected ground water contamination adjacent to a confirmed area of contamination (Plume) associated with, but not limited to, Superfund sites.

501.3.10. "ASTM": American Society for Testing Materials.

501.3.11. "AWWA": American Water Works Association.

501.3.12. "Backfilling": The process of sealing a borehole for the purpose of decommissioning a well or enclosing the closed-loop of a ground source heat pump equipment system.

501.3.13. "Back Siphonage": The flowing back of used, contaminated, or polluted water from a plumbing fixture or vessel or other sources into a potable water supply pipe due to negative pressure in such pipe.

501.3.14. "Casing": An impervious durable pipe placed in a well to prevent the walls from caving in and to seal off surface drainage or undesirable water, gas or other fluids and prevent them from entering the well.

501.3.15. "Closed-Loop Geothermal Borehole": A boring drilled to facilitate the installation of a pipe loop or tubing for a ground source heat pump system whether circulating water, heat transfer fluid or refrigerant using direct exchange.

501.3.16. "Coliform": All of the aerobic and facultative anaerobic, gram negative, non-spore forming, rod-shaped bacteria which are capable of fermenting lactose with gas formation within forty-eight (48) hours at thirty-five (35°C) degrees Celsius.

501.3.17. "Community Water System": A water system which serves at least 15 service connections used by year round residents or regularly serves at least 25 year round residents.

501.3.18. "Construction of Wells": All acts necessary to obtain groundwater, artificially recharge groundwater or to install geothermal appurtenances. Provided however, such term does not include an excavation made for the purpose of obtaining or for prospecting for oil, natural gas, minerals, or products of mining or quarrying, or for inserting media to re-pressure oil or natural gas formations or for storing petroleum, natural gas, or other products and services. Construction of wells includes

the location and excavation or drilling of the well, installation of geothermal appurtenances, but excludes the installation of pumps and pumping equipment.

501.3.19. "Cross Connection": An arrangement allowing either a direct or indirect connection through which backflow, including backsiphonage, can occur between the drinking water in an individual water supply well or a public water system and a system containing a source or potential source of contamination, or allowing treated water to be removed from any public water system, used for any purpose or routed to any device or pipes outside the public water system, and returned to the public water system. The term does not include connections to devices totally within the control of one or more public water systems and connections between water mains.

501.3.20. "Decommissioning": The process of properly filling and sealing a well, in accordance with these Regulations.

501.3.21. "Flowing Well": A well that yields water by artesian pressure at the ground surface.

501.3.22. "Geothermal Well": A well installed for the purpose of heating or cooling a facility. These shall include wells drilled as supply and/or return wells for open-loop systems; or closed-loop geothermal boreholes.

501.3.23. "Geothermal Well Installation Contractor": Any individual in immediate supervision of and/or responsible for the drilling of boreholes used for the purpose of geothermal heating or cooling of a facility and is licensed as a Well Contractor and a Geothermal Well Installation Contractor by the Chester County Health Department. This individual is responsible for boring, pipe loop installation and backfilling of boreholes used for the installation of closed-loop ground source heat pump systems.

501.3.24. "Ground Source Heat Pump Equipment": Any components of a heating or cooling system installed in a well or borehole. This shall include pumps for supply wells used solely for heating or cooling and pipe loops for use in closed-loop applications using a heat transfer fluid or direct exchange systems.

501.3.25. "Groundwater": Water within the earth below the water table within the zone of saturation. Groundwater includes both water under water table conditions and confined within deep aquifers.

501.3.26. "Grout": A permanent water tight joint or connection made by filling with concrete, neat cement, or other approved impervious material between the casing and the undisturbed formation surrounding the well or between two (2) strings of casing.

501.3.27. "Individual Water Supply": A system including wells, pumps, and piping equipment, which supplies water to a private structure and does not meet the criteria of "Semi-Public Water Supply" or "Public Water Supply".

501.3.28. "Installation of Pumps and Pumping Equipment": The procedure employed in the placement and preparation for operation of pumps and pumping equipment, including all construction involved in making entrance to the well and establishing seals.

501.3.29. "Monitoring Well": A well used to obtain samples of groundwater for the purpose of water quality analysis.

501.3.30. "New Construction": Any new building or structure whether residential, commercial, agricultural, or industrial on a property. New construction also includes any change in the use of an existing structure.

501.3.31. "Non-Community Water System": A public water system, which is not a community water system.

501.3.32. "N.S.F.": National Sanitation Foundation.

501.3.33. "Pitless Adapter": A device or assembly of parts which will permit water to pass through the wall of the well casing or extension thereof, and which provides access to the well and to the parts of the water system within the well in a manner to prevent entrance of pollution into the well and the water produced.

501.3.34. "Plume": Area of identified, delineated groundwater or soil contamination associated with any property considered to be a threat to the environment or human health, such as, but not limited to a Superfund site.

501.3.35. "Pumps and Pumping Equipment": Any equipment or materials utilized or intended for use in mechanically withdrawing or obtaining groundwater, including but not limited to, piping, seals and tanks, together with fittings and controls.

501.3.36. "Pump Installation Contractor": Any individual engaged in the business of installing or repairing pumps, pumping equipment, drop pipes, pitless adapters, and any other equipment used for the extraction and conveyance of water from the aquifer to the distribution, heating or cooling system of the structure to be served.

501.3.37. "Public Water System": A system which provides water to the public for human consumption which has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. The term includes collection, treatment, storage and distribution facilities under control of the operator of the system and used in connection with the system. The term includes collection or pretreatment storage facilities not under such control which are used in connection with the system. The term also includes a system, which provides water for bottling or bulk hauling for human consumption. Water for human consumption includes water that is used for drinking, bathing and showering, cooking, dishwashing or maintaining oral hygiene.

501.3.38. "Regulated Establishment": Any facility, whether commercial or institutional, which requires a license to operate issued by the Chester County Health Department or any facility that requires inspection by the Chester County Health Department.

501.3.39. "Relocation": Any change in location of a proposed well which deviates from the permitted location.

501.3.40. "Second Well": Any well drilled on a property where an existing water supply well already exists.

501.3.41. "Semi-Public Water Supply": A water system including wells, pumps and piping equipment which supplies water to one or several facilities such as industrial or commercial establishments, parks, camps, hotels, motels, schools, institutions, eating and drinking establishments or a water supply which services two (2) or more dwelling units and is not a public water system as defined by the Pennsylvania Safe Drinking Water Act (35 P.S. 721.1 et. seq.)

501.3.42. "Test Wells": Wells drilled for the sole purpose of measuring groundwater quantity and availability.

501.3.43. "Well": Any excavation that is drilled, cored, bored, washed, driven, dug, jetted, or otherwise constructed when the intended use of such excavation is for the location, acquisition or artificial recharge of groundwater or for the installation of ground source heat pump equipment. This includes but is not limited to test wells, test borings, geothermal and monitoring wells, in addition to wells to be utilized as individual or semi-public or public water supplies.

501.3.44. "Well Contractor": Any individual in immediate supervision of and/or responsible for the construction, test pumping or equipping or development of any well. Such individual shall have a minimum of three years "hands on" experience in the actual drilling, casing and grouting of water wells and be licensed by the Chester County Health Department.

501.3.45. "Well Completion Form": Form CCHD-WCF-01/02, which includes the CCHD permit number, the township in which the well was drilled, the owner's name and address, the specific site location, the type of cement used for grouting, the number of bags of cement used for grouting, the date the well was drilled, the depth of the well, the well distance to the house, the name of the well driller, the well driller's CCHD license number and the well driller's signature.

501.3.46. "Well Seal": An approved device or method used to protect a well casing or water system from the entrance of any external pollutant at the point of entrance into the casing of a pipe, electric conduit or water level measuring device.

501.3.47. "Well System": When there are two (2) or more wells being utilized in an individual, semi-public, or public water supply system.

501.4. LICENSES.

501.4.1. Any individual engaging or intending to engage in business as a well contractor or pump installation contractor shall first obtain from the Department a license to conduct such business. The Department shall license all well contractors, geothermal well installation contractors, or pump installation contractors. Geothermal well installation Contractors must also be licensed as a well contractor. Each such applicant must demonstrate professional competence and an understanding of the CCHD well regulations by passing an examination prepared by the Department in order to qualify for such license. This section shall not apply to any individuals who perform labor or services at the direction and under the direct supervision of a licensed well contractor or pump installation contractor.

501.4.2. A Well Contractor or Pump Installation Contractor shall place in a conspicuous location on each side of their well drilling machine or work vehicle, their Chester County Health Department

license number in letters not less than three (3) inches high and in contrasting colors preceded by the letters CCHD # (Chester County Health Department License Number).

501.4.3. Licenses issued pursuant to this Section are not transferable and shall be renewed annually. A license will be renewed without examination for an ensuing year by making application not later than thirty (30) days after the expiration date and paying the annual renewal fee, which shall accompany said application.

501.4.4. After thirty (30) days elapse from the date of expiration of the license, a license to engage in the business as a well contractor, geothermal well installation contractor or pump installation contractor will be issued only upon completion and submission of a license application, satisfactorily passing the appropriate contractor examination and submission of the appropriate fee.

501.4.5. Whenever the Department determines that the holder of any license issued pursuant to this Section has violated any provision of this Regulation, the Department is authorized to take legal action against the license holder and/or suspend or revoke any such license. Any individual aggrieved by the action of the Department shall be afforded the opportunity of a hearing as provided in Chapter 100 of these Rules and Regulations.

501.5. LOCAL REGULATION. No city, township, or borough located within Chester County, shall adopt any rule, regulation, standard or procedure not in conformity with the standards, rules and regulations or procedures of the Chester County Health Department, and any regulation, ordinance, standard or procedure presently in existence shall be superseded to the extent that it is inconsistent with the rules, regulations, standard or procedures adopted by the Department.

501.6. REGULATED ESTABLISHMENTS.

501.6.1. No regulated establishment shall maintain or use a water supply well that does not conform to the location or construction standards of these regulations. Any regulated establishment that currently utilizes a water supply well that does not conform to the construction standards of these regulations is required to drill a new water supply well that does comply with these standards by no later than January 1, 2010.

501.6.2. All water supply wells servicing regulated establishments must continually meet all of the water quality standards that require treatment under these regulations (501.14.2.2.2).

501.6.3. All water supply wells servicing regulated establishments must, at a minimum, meet the individual water supply system standards and the yield requirements for individual wells related to the quantity of water to be obtained from the well. Commercial and institutional wells may require larger quantities. Specific requirements should be based on the facility need.

501.7. DRILLED WATER SUPPLY WELLS.

501.7.1. Location.

501.7.1.1. The source of supply shall be from a water bearing formation drawn not less than twenty-five (25) feet from the ground surface.

501.7.1.2. Cap wells shall be located at a point free from flooding and at a higher elevation (wherever possible) and at the following minimum distances to existing or potential sources of pollution:

Sources of Pollution

Minimum isolation distances from the proposed well to the features listed below:

<u>WATER RELATED</u>	<u>Minimum Distance</u>
1. Delineated wetlands or floodplains	25 feet
2. Lakes, ponds, streams, spring prone areas or other surface waters	25 feet
3. Rainwater pits	25 feet
4. Storm drains, retention basins, storm water stabilization ponds	25 feet
 <u>SEWAGE RELATED</u>	
1. Bio-solids disposal areas and septage disposal sites	300 feet
2. Farm silos, barnyards, manure pits or tanks or other storage areas of animal manure, tilled or no-till cultivated agricultural farm fields (this excludes pasture and grazing lands)	100 feet
3. Subsurface sewage absorption areas, elevated sand mounds, cesspools, sewage seepage pits, Community and single-family spray irrigation systems, etc.	100 feet
4. Septic tanks, aerobic tanks, sewage pump tanks, holding tanks	50 feet
5. Gravity sewer lines and drains carrying domestic sewage or industrial waste (except when the sewer line is cast iron pipe with either watertight lead caulked joints or joints filled with neoprene gaskets, or if solvent welded Schedule 40 (or SDR equivalent) or better polyvinylchloride (PVC) pipe)	50 feet 10 feet)
6. Sewage drains carrying domestic sewage or industrial waste under (except welded steel pipe or solvent welded Schedule 40 or equivalent or better PVC pipe or concrete encased pipe.)	50 feet pressure (10 feet)

CHEMICAL RELATED

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| 1. Preparation area or storage area of hazardous spray materials, fertilizers, or chemicals; salt piles | 300 feet |
| 2. Surface or subsurface containers or tanks of over 1000 gallons used for the storage of materials that cannot be properly renovated by passage through the soil. This includes, but is not limited to, gasoline and all other petroleum products. (except where tank installation meets current PA DEP Under Ground Storage Tank Regulations. Documentation must be supplied). | 300 feet
(100 feet) |
| 3. Surface or subsurface containers or tanks of 1000 gallons tanks of 1000 gallons or less used for the storage of materials, which cannot be properly renovated by passage through the soil. This includes, but is not limited to, gasoline and all other petroleum products. For example, the type of tanks frequently found in homes using oil for heating purposes. | 30 feet |
| 4. Graveyards, cemeteries | 100 feet |
| 5. Identified NPL Sites (Superfund Sites) delineated plume areas ¼ mile | (1320 ft.) |
| 6. Landfills | 300 feet up gradient & ¼ mile down gradient |

MISCELLANEOUS

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|---|-------------|
| 1. Building foundations (except for buildings enclosing just water wells and/or water well pumps) | 30 feet |
| 2. Mobile Homes | 30 feet |
| 3. Wooden structures on concrete or dirt floors | 30 feet |
| 4. Driveways, parking lots or paved areas | 10 feet |
| 5. Curbed (6" min) driveways, parking lots or paved areas | 5 feet |
| 6. Property lines, all right-of-ways, easements | 10 feet |
| 7. Metal or masonry storage buildings on a cement slab | 10 feet |
| 8. Any other source of pollution | As approved |

501.7.1.3. Any proposed deviation from the distances prescribed in Paragraph 501.6.1.2. above must be approved in writing by the Director, or his designee, with reasons stated for such deviation.

501.7.2. CONSTRUCTION.

501.7.2.1. Casing.

501.7.2.1.1. All wells serving as a water supply shall be equipped with a watertight and durable wrought iron, steel, or other type of approved well casing having a minimum thickness of 0.1875 inches or PVC plastic casing having a minimum thickness of 0.175 inches. The sections of casing shall be joined together by threaded couplings or joints, by welding, or by any other watertight approved joint or coupling. The casing shall be carried to a minimum depth of twenty (20) feet and (then) extended an additional five (5) feet into firm bedrock or other impervious strata and grouted in place. Well casing material other than wrought iron or steel must be resistant to the corrosiveness of the water and to the stresses to which it will be subjected during installation, and the grouting operation. Casing and grouting materials must be compatible. The criteria established in AWWA Standard A100-84 must be followed. Casings shall terminate a minimum of one (1) foot above the surrounding, finished surface grade and shall not be cut shorter. All casings for water supply or geothermal return wells shall be fitted with an insect resistant well cap.

501.7.2.1.2. Ferrous Casings shall be new pipe meeting ASTM or API specifications for water well construction, have additional thickness and weight if minimum thickness is not considered sufficient to assure reasonable life expectancy of the well, be capable of withstanding forces to which it is subjected, and have full circumference welds or threaded pipe joints.

501.7.2.1.3. Non-ferrous casings shall meet appropriate ANSI/ASTM or NSF Standards for well casing applications as outlined in AWWA Standard A100-84. Non-ferrous casing materials shall not impart any taste, odor, or toxic substances to the well water. Non-ferrous casing, if used, shall not be driven. The casing shall be placed a minimum of 5 feet into the consolidated formation with a minimum annular opening of 3 inches or larger so that the grout may be placed in accordance with the provisions of this section 501.

501.7.2.1.4. Whenever maintenance such as pump, drop pipe, foot valve, or electrical wiring repair or replacement is done to an existing well where the casing terminates at or below the surrounding surface grade, the casing shall be extended so that it meets the requirement of 501.7.2.1.1, in that the casing shall extend to a minimum of one (1) foot above the surrounding finished surface grade. This shall apply to all casings that currently terminate in well pits. These casings shall be extended above the surrounding ground surface and the pit shall be eliminated.

501.7.2.1.5. Casings of existing wells that terminate below the surrounding finished grade may be extended by: welding steel extensions to existing casings where practicable; glued PVC coupling joints; or any other method specifically approved by this Department.

501.7.2.1.6. In all cases where a casing is extended, a pitless adapter and an insect resistant well cap must be installed.

501.7.2.2. Grout Materials and Placement.

501.7.2.2.1. All grout information (type of cement or bentonite and number of bags of cement or bentonite used for grouting) must be submitted in writing on CCHD Form CCHD-WCF-01/02 to the Department by the well driller within thirty (30) days of completion of the well drilling process.

501.7.2.2.2. In all well installations an annular space shall be provided between the well casing and the earth formation. The annular space shall be completely filled with approved grout materials, in one continuous operation, under pressure from the bottom to the natural land surface, within twenty-four (24) hours after completion of the drilling. In the event that grouting is done following the completion of all drilling operations, care must be taken to prevent the entrance of driller's mud into the annulus during the completion of the borehole by the use of a rubber packer or other acceptable method. The annular space shall be completely cleared of all obstructions prior to the placement of the grout material. Exterior grouting methods must be used in this instance. The casing shall be sealed effectively against entrance of water from water bearing zones that are subject to pollution, through which the casing may pass, by grouting a minimum of ten (10) feet above and ten (10) feet below the polluted or undesirable water-bearing zone. During the installation of the pitless adapter, grout material may be removed from the exterior of the casing in order to provide a watertight seal between the casing and the pitless adapter.

501.7.2.2.3. After the grout has been placed in the annular space, drilling of the borehole may proceed for a maximum of four (4) hours, and if not completed within that time period, a curing time of thirty-six (36) hours must be provided before drilling can resume. A curing time of twelve (12) hours for Type III Portland cement must be provided immediately following the placement of the grout. Drilling is not permitted during the curing period. If casings of smaller diameter are used in the lower portions of the well, effective watertight seals shall be provided between the casings where they telescope for a minimum distance of four (4) feet.

501.7.2.2.4. The annular space of all well installations must be filled with one of the following listed grout materials.

501.7.2.2.4.1. Neat cement grout shall consist of a mixture of API Class G (or Class B similar to ASTM C150 Type II) and water in the ratio of 0.67 cu. ft. of water per 94 lb. sack weighing approximately 228 lbs/cu ft³. A maximum of six percent by weight bentonite and two percent by weight of calcium chloride may be added.

501.7.2.2.4.2. Pozmix-cement grout shall consist of a mixture of fifty percent by volume of Pozzolan A (74 lbs./cu. ft³) and fifty percent by volume of API Spec. 10, Class G cement with 0.77 cu. ft. of water per 84 lbs. of mixture. To this mixture may be added a maximum of two percent by weight, bentonite and a maximum of two percent by weight of calcium chloride, at the discretion of the contractor.

501.7.2.2.4.3. Concrete grout shall contain 5.3 sacks of Portland cement (ASTM C150 Type II) per cubic yard of concrete and a maximum of 7 gal. of water per 94 lb. sack of cement. The maximum slump shall be 4 in. the aggregate shall consist of 47 percent sand and 53 percent coarse aggregate, conforming to ASTM Designation C-33. The maximum size aggregate should be 0.75 in. Concrete grout shall not be placed in an annulus of less than 3 in.

501.7.2.2.4.4. Sand cement grout shall consist of a mixture of Portland cement (ASTM C150 Type II), sand and water in the proportion of not more than two parts by weight of sand to one part of cement with not more than 6 gal. of water per 94 lb. sack of cement.

501.7.2.2.4.5. Bentonite grout shall be a pure bentonite with at least 20% solids by weight when mixed with water. Hydration of the bentonite must be delayed until the bentonite mix has been placed down the well. This can be done by using additives with the dry bentonite or in water; mixing calcium bentonite with sodium bentonite; or by using granular bentonite, which has less surface area.

501.7.2.2.5. In all well installations if rapid loss of grout material occurs during placement, coarse fill material (e.g. sand, gravel, crushed stone, dry cement) may be used in the zone or zones in which the rapid loss is occurring. The remainder of the annular space shall be grouted as provided below. In no case shall pouring, dumping or shoveling of grout material into the annular space be deemed an approved method of grout placement.

501.7.2.3. Grout Placement

501.7.2.3.1. Grout Pipe Outside Casing.

501.7.2.3.1.1. The minimum annular space of 1½ inches around the entire outside of the casing shall be provided by drilling a borehole 3 inches larger than the outside diameter of the casing to be inserted. All grout shall be placed by pumping through the grout pipe. The entire interval to be grouted shall be open and without obstructions. Washing or jetting with water is recommended for cleaning the borehole and may serve to remove obstructions caused by caving which otherwise would prevent a proper grout. It is recommended that the grout pipe extend from the surface to the bottom of the interval to be grouted. The grout pipe may remain extended to the bottom of the interval during and after grouting, or it may be raised slowly as the grout is placed provided that the discharge end of the grout pipe remains submerged in the emplaced grout at all times until grouting is completed. In the event of interruption in the grouting operations, the bottom of the grout pipe shall be raised above the grout level and should not be re-submerged until the air and water have been displaced from the grout pipe.

501.7.2.3.1.2. Grouting Depths Greater than 30 feet. The minimum length of grout pipe that shall be inserted into the annular space is 30 feet.

501.7.2.3.1.3. Grouting Depths of 30 feet and less. Grout may be placed by a tremie pipe inserted only a short distance (approximately 5 feet) into the annular space provided that the entire interval to be grouted is clearly visible from the surface and is dry. An annular space larger than the minimum 1½ inches may be required to assure visibility from the surface.

501.7.2.3.2. Grout Pipe Inside Casing. The bottom of the casing is fitted with a packer arrangement, also referred to as a cementing shoe or float shoe, and the casing is placed in the borehole a short distance off the bottom. The float shoe allows grout to be pumped through the grout pipe and upward into the annular space, while preventing grout leakage into the casing during grouting and after removal of the grout pipe. Grouting is continued until cement appears at the surface at which time the grout pipe is disconnected from the float shoe. The float shoe is drilled out after the grout sets and hardens sufficiently.

501.7.2.3.3. Interior Method Two Plug. The first plug separates the grout from the fluid in the casing, and the other separates the grout from water pumped in above it. First, the casing is placed a short distance off the bottom. After pumping water through the casing to circulate fluid in the annular space and clear any obstructions from the hole, the first plug is inserted, and the casing is capped. A measured volume of grout is pumped in, which is sufficient to fill the annular space. The casing then is opened, and the second plug inserted. A measured volume of water is pumped in above the second plug until it is pushed to the bottom of the casing and most of the grout is expelled up and into the annular space. The water in the casing is held under pressure to prevent the backflow of grout until it has set and hardened.

501.7.2.3.4. Interior Method Upper Plug. The casing is placed a short distance off the bottom, and the water is pumped into the casing to circulate fluid through the annular space to clear any obstructions from the hole. A measured quantity of grout slightly greater than that needed to fill the annular space is pumped into the capped casing. Because this grout is in direct contact with the drilling fluid, there will be a narrow zone of weak grout between the drilling fluid and good grout; however, this zone should remain inside the casing and not be forced into the annular space. The casing is opened, and a drillable plug is inserted. A measured volume of water is pumped in above the plug until it is pushed to the bottom of the casing and most of the grout is expelled up and into the annular space. The water in the casing is held under pressure until the grout sets and hardens.

501.7.2.3.5. Interior Method Capped Casing. The casing is placed a short distance off the bottom, and water is pumped into the casing to circulate fluid in the annular space and clear any obstructions from the hole. The grout pipe passes through an airtight cap at the top of the casing and is positioned 3 to 4 feet above the bottom of the casing. The grout pipe is assembled so that it can be pulled through the cap a distance of about 20 feet after the injection of grout is completed. A bleeder valve is provided to release air from inside the casing as it is filled with water. The first step is to fill the casing and annular space with water. With the upper end of the casing closed, grouting is started by forcing the cement through the grout pipe upward into the annular space. Grouting is continued until the cement overflows around the casing at ground surface. Just enough water is pumped to clear the cement from the grout pipe, and the grout pipe is lifted free of the grout. Both the casing and grout pipe shall be kept tightly closed under pressure until the cement sets and hardens.

501.7.2.3.6. Grout Displacement Method. The hole is filled with the estimated volume of grout required to fill the annular space, and the casing is lowered into the hole. The bottom of the casing is closed in a tight, drillable plug. Guides often are used to keep the casing centered in the hole. As the casing is lowered, the grout is forced upward around it to fill the annular space. If the pipe does not sink to the bottom under its own weight, it is filled with water.

501.7.2.3.7. Unconsolidated Formations. When drilling through an unconsolidated formation, a steel drive shoe shall be required. Grouting shall be done in accordance with the following:

501.7.2.3.7.1. If caving conditions are experienced on wells deeper than 30 feet, the annular space shall be grouted from the point where caving occurred or from a depth of 30 feet, whichever is greater, to land surface.

501.7.2.3.7.2. If the annular space cannot be grouted in accordance with these regulations, the well shall be decommissioned and sealed in accordance with paragraph 501.9. of this section.

501.7.2.3.8. Other grouting methods and materials may be used subject to prior written approval of the Department.

501.7.2.4. Packers. Packers, when used, shall be of materials that will not impart taste, odor, toxic substances or bacterial contamination to the well water.

501.7.2.5. Well screens. Well screens, when used, shall:

501.7.2.5.1. Provide the maximum amount of open area while still maintaining structural strength,

501.7.2.5.2. Have the size of openings in the screen based on a sieve analysis of the material contained in the surrounding geological formation or gravel pack,

501.7.2.5.3. Be constructed of materials resistant to damage by chemical action of ground water or cleaning operations,

501.7.2.5.4. Have sufficient diameter to provide adequate specific capacity and low aperture velocity. Usually, the entrance velocity should not exceed 0.1 feet per second,

501.7.2.5.5. Be installed so that the pumping water level remains above the screen under all operating conditions,

501.7.2.5.6. Be designed and installed to permit removal or replacement without adversely affecting water-tight construction of the well, and

501.7.2.5.7. Be provided with a bottom plate or washdown bottom fitting of the same material as the screen.

501.7.2.6. Gravel packs. Gravel packs when used:

501.7.2.6.1. shall be well rounded particles, 95 percent siliceous material, that are smooth and uniform, free of foreign material, properly sized, washed and disinfected immediately prior to or during placement,

501.7.2.6.2. Shall be placed in one uniform continuous operation.

501.7.2.6.3. Gravel refill pipes, when used, shall be Schedule 40 steel pipe incorporated within the pump foundation and terminated with screwed or welded caps at least 12 inches above the pump house floor or concrete apron,

501.7.2.6.4. Gravel refill pipes located in the grouted annular opening shall be surrounded by a minimum of 1½ inches of grout.

501.7.2.6.5. Protection from leakage of grout into the gravel pack or screen shall be provided.

501.7.2.7. Pit Installations. Pit Installations for new well construction will only be allowed when specifically approved by the Director, or his designee. Pit installations are where the casing terminates in an open space, constructed below the ground surface. If the installation of a well pit is permitted it shall comply with the following requirements: Well pits shall be maintained free of water at all times. The floor of the pit shall be a watertight reinforced concrete platform at least four (4) inches thick poured around the casing and shall be provided with a watertight seal. The floor of the pit shall extend at least two (2) feet from the center of the casing in all directions. In all cases, the pit shall be sized to allow adequate working space. The casing shall extend above the floor for at least twelve (12) inches. An insect resistant well cap shall be installed. The surface of the floor shall be pitched toward a drain that has a minimum diameter of four (4) inches and discharged by gravity to the surface of the ground in an area not subject to flooding or to a basement that is effectively protected against flooding. Drain openings shall be effectively screened to prevent the entrance of insects and rodents. The drain shall not be connected to any sewer or other drain. The pit shall have watertight reinforced concrete walls four (4) inches thick or equivalent, which provide for an effective watertight seal against the floor. The top of the pit shall be a watertight reinforced monolithic concrete slab at least four (4) inches thick, which shall be sealed with the wall so as to effectively prevent the entrance of water. The top of the pit shall not be more than six (6) inches below the ground surface. A durable watertight manhole shall be installed in the top of the pit centered over the casing and effectively sealed with the top to prevent the entrance of water. This manhole shall be at least twenty-four (24) inches in diameter. It shall extend at least three (3) inches above the surrounding ground surface and be covered by an impervious durable cover of concrete, steel, or equivalent material that overlaps the manhole vertically by at least two (2) inches. The manhole cover shall be effectively secured to the manhole by bolting, locking or equivalent means, and shall be kept secured. Pit installations shall not be used in areas subject to flooding by ground or surface water or where the ground water level rises to within one (1) foot of the bottom of the proposed pit. When pipes enter the pit, the annular space between the pipes and the wall shall be effectively sealed by a watertight permanent seal.

501.7.2.8. Pitless Installations. Pitless installations are those installations where the casing terminates above the ground or surrounding finished grade surface.

501.7.2.8.1. Where pitless installations are used, they shall be of a design that provides an effective seal against the entrance of ground or surface water into the well, access casing, and into the piping leading to the pump. All buried suction lines shall be effectively encased, or otherwise protected to prevent external damage or contamination. Pitless installations must be so designed as to be structurally sound and to provide for ready removal of drop piping without excavation. Pitless adapters shall be installed at a minimum depth of thirty (30) inches so that it will be safely below the frost line, but no deeper than forty-eight (48) inches. The access casing shall be effectively protected against corrosion and shall extend at least twelve (12) inches above the natural ground or surrounding finished grade surface. The ground level or surrounding finished grade surface at this point shall be elevated above the adjacent ground level and graded to drain away in all directions. The top of the access shall be effectively sealed against the entrance of water, insects, and rodents. An insect resistant cap shall be installed. The pitless adapter shall not be submerged in water or used in areas used by automobiles and other vehicles.

501.7.2.8.2. Where surface installations (i.e., hand pumps, pump rooms, etc.) are used, a watertight reinforced concrete platform at least four (4) inches thick and extending for at least two (2) feet in all directions from the center of the casing shall be poured around the casing to provide an effective

watertight seal with the casing, or shall be made watertight with an effective permanent seal. The surface of the platform shall slope to the edges. The casing shall extend above the slab at least twelve (12) inches and shall be effectively sealed against the entrance of contamination. An insect resistant well cap shall be installed where appropriate. All pumping equipment shall be protected against freezing. If a pump room is proposed, it shall be so sized to allow adequate working space.

501.7.2.9. Venting. Where venting is required, an overlapping cover or pipe with the opening facing downward shall be required. Such venting shall be effectively protected against the entrance of insects and rodents. An insect resistant well cap shall be installed. In no case shall openings be less than twelve (12) inches from the ground, or, in the case of pit installations, the floor.

501.7.2.10. Individual Water Supply System Standard.

501.7.2.10.1. An individual water supply system shall produce not less than 480 gallons of water in a 2-hour period, at least once each day.

501.7.2.10.2. If the sustained yield of the individual well or individual well system is not capable of meeting the total individual water supply system standard, sufficient storage shall be required. Borehole capacity and/or a storage tank shall provide storage capacity.

501.7.2.11. Minimum Yield for Individual Wells.

501.7.2.11.1. All potable water supply wells intended to serve as an individual water supply shall be approved for yield in accordance with this section. Replacement wells servicing existing improved properties may be exempt from this requirement or wells servicing new construction may be released from this requirement at the discretion of the Director or his authorized representative.

501.7.2.11.2. The criteria for approval shall be a minimum well yield of 1 gallon per minute.

501.7.2.11.3. For wells with yields of 2 gallons per minute or less, a minimum of 400 gallons of storage capacity shall be provided. Borehole storage shall be measured from the pump level to the top of the static water column. Wells with yields between 2 and 4 gallons per minute shall provide the storage capacity required to meet the individual water supply standard described in 501.7.2.10.

501.7.2.11.4. If the well does not meet the yield requirement of 501.7.2.11.2 a second well shall be required. If the combined yield of this well system does not provide the required yield, the Department will allow the use of this well system, utilizing the appropriate release agreement, provided the well system meets the individual water supply system standard in 501.7.2.10. The permittee may propose to construct additional wells in an attempt to meet the yield requirement.

501.7.2.11.5. The minimum well yield requirements set forth in this section are deemed sufficient to supply an adequate quantity of water for normal indoor household or equivalent usage. A supplemental source of water may be needed to support outdoor or other non-consumptive uses.

501.8. GROUND WATER MONITORING WELLS AND TEST WELLS.

501.8.1. Monitoring Wells

501.8.1.1. Due to the variability in the information to be obtained, ground water monitoring wells shall not be subject to strict compliance with the isolation distances given in Section 501.7.1. of these Regulations. The construction of each monitoring well must first receive written approval of the Director or his authorized representative in the form of a permit. Each monitoring well must be designed to minimize potential contamination of the aquifer and to maximize the information obtained from each installation.

501.8.1.2. Continued up-keep, safe operation and maintenance of all monitoring wells shall be the ultimate responsibility of the property owner.

501.8.1.3. The property owner shall be responsible to respond to the Chester County Health Department audit of the operational status of the well. The response is required within 90 days from receipt of the Monitoring Well Audit letter from the Chester County Health Department.

501.8.1.4. When a monitoring well is no longer actively used it must be decommissioned according to Section 501.10 of these Regulations.

501.8.1.5. Failure to comply with the above requirements relating to ownership, reporting, and the operation, maintenance, or decommissioning of any monitoring well may result in legal action being initiated against the property owner by this Department.

501.8.2. Test Wells

501.8.2.1. Test wells require a permit and must meet the isolation distances and construction standards of Section 501.7. of these Regulations for water supply wells.

501.8.2.2. Test wells are temporary and therefore are not permitted as permanent supply wells. Once the intended use of the well has been completed, the well must be decommissioned according to Section 501.10 of these Regulations.

501.8.2.3. Test wells may be converted for use as a permanent supply well. To be converted for use as a supply well, the owner must submit a new application and the applicable fee for a new well permit to this Department and meet the requirements of Section 501.13 and 501.14 of these Regulations..

501.8.2.4. The converted test well will not be granted approval for use until the following is submitted to the Department: a copy of the Well Completion Form (#CCHD-WCF-01/02), a water quality analysis showing that the water meets the requirements of 501.14, and documentation that the supply well meets the individual supply system standard in 501.7.2.10 and the minimum yield requirements in 501.7.2.11.

501.8.2.5. Failure to comply with these Regulations regarding Test Wells may result in the initiation of legal action against the property owner by this Department

501.9. PUMPS AND OTHER EQUIPMENT.

501.9.1. Head Pump Installations.

501.9.1.1. The pump head shall be designed and constructed to prevent contamination from reaching the water chamber and other interior surfaces of the pump.

501.9.1.2. The pump shall be designed and constructed to provide an effective watertight seal with the well casing or stored water reservoir.

501.9.1.3. The pump cylinder or foot valve shall be installed below the pumping level of the well.

501.9.1.4. The pump shall be designed where necessary for protection against freezing.

501.9.1.5. All pump information must be submitted in writing on Chester County Health Department Form CCHD-WCF-01/02 within ninety (90) days of completion of the drilling process.

501.9.2. Power Pump Installations.

501.9.2.1. The base of a power pump installed directly over a well casing or pipe sleeve shall be designed to provide an effective watertight seal with the casing or pipe sleeve.

501.9.2.2. All power pumps shall be installed on a firm base in an area free from flooding.

501.9.2.3. Where power pumps are installed in pits, the pits shall meet the requirements of Section 501.7.2.7. In addition, the pit shall be ventilated with a pipe of a diameter of at least one and one-half (1½) inches.

501.9.2.4. Location and installations of the pump and all related equipment shall permit convenient access, removal, maintenance and repair.

501.9.2.5. The pump suction opening shall be placed at least two (2) feet below the maximum drawdown of the water in the well. However, the pump suction opening shall be placed at a sufficient distance from the bottom of the well so as to prevent agitation of accumulated sediment.

501.9.3. Well Cap Replacement

501.9.3.1. Whenever a pump is repaired or replaced, the pump installer shall insure that an insect resistant well cap is installed on the well. Caps other than insect resistant caps shall be replaced with insect resistant caps. If an existing insect resistant cap is to be reinstalled on a well, the pump installer shall inspect the condition of the cap and either clean or replace the cap as necessary to insure that the integrity and operation of the well is maintained.

501.10. DECOMMISSIONING OF WELLS

501.10.1. This Department must be notified in writing within 30 days by the well contractor and/or property owner when a well meets the criteria of an abandoned well under Section 501.3.1. of these Regulations. All wells considered to be abandoned shall be filled and sealed by a Chester County Health Department licensed well contractor in accordance with the procedures for decommissioning listed in this section. Written notification and proper documentation of decommissioning shall be submitted to the Department within 30 days from the point that the subject well has met the criteria

of, or otherwise been determined to be an abandoned well according to Section 501.3.1. One (1) of the following methods of decommissioning described below must be used in accordance with the geological formations penetrated, and in such a manner as to prevent the borehole being sealed from acting as a channel for pollution, or the escape of subterranean gases. A report, as required above, of the method of sealing shall be filed with the Department.

501.10.2. A well in unconsolidated deposits shall be filled with neat cement grout or concrete grout.

501.10.3. The section of a well in a cavernous or creviced rock (such as cavernous limestone or basalt lava rock, creviced granite, etc.) shall be filled with concrete or neat cement grout or alternate layers of concrete or neat cement grout, gravel or stone aggregate. The filling shall be completed at the top by a layer of neat cement grout, concrete grout or Bentonite extending at least 20 feet above the top of the cavernous rock or to the ground surface.

501.10.4. The section of a well in sandstone strata shall be filled with neat cement grout, concrete grout or sand. The filling shall be completed at the top of the formation by a layer of neat cement grout, concrete grout or Bentonite extending at least 20 feet above the top of the sandstone or to the ground surface.

501.10.5. The flow in a flowing well shall be confined and the well filled in accordance with preceding paragraphs or the well shall be sealed by pressure grouting.

501.10.6. Decommissioning of wells containing subterranean gases requires special precautions and a casing in such a well shall be sealed with neat cement grout, concrete grout or Bentonite.

501.10.7. Debris or obstructions that may interfere with sealing operations shall be removed from the well.

501.11. DISINFECTION.

501.11.1. Following the completion of the construction of an individual, semi- public water or public supply and installation of the pumping equipment, or alterations, repair or maintenance work, the well shall be pumped continuously until the water discharged is clear. The well, pump, piping system, and other fixtures, shall be filled with water containing a concentration of not less than 100 parts per million of free chlorine. A portion of the chlorine solution shall be recirculated directly to the well in order to insure proper agitation. The water shall not be used for a minimum of six (6) hours, but overnight is recommended due to this being a minimal water use period. Other combinations of concentration and time intervals may be used as are demonstrated to be equally effective.

NOTE: The well owner or users should be informed of the disinfection process because some users may be sensitive to chlorine. Additionally, the possible reaction between chlorine and high iron concentrations should be discussed.

501.11.2. Disposal of the purged water shall be at a point so as to minimize adverse effects to aquatic life and, further, the purged water shall not be discharged into or over any sewage disposal system. One ounce of dry calcium hypochlorite (70% available chlorine), dissolved in 52.5 gallons of water, makes a 100-ppm strength disinfectant solution. Various proportions can be worked out using the approximate quantities shown in the following table:

Diameter of the Well Casing	Water Standing in Well	Amount of dry powder (HTH or equivalent) to make at least 110 ppm chlorine solution
4 inches	100 feet (65.5 gallons)	3 tablespoonful or ¼ cup
6 inches	100 feet (147 gallons)	7 tablespoonful or ½ cup
8 inches	100 feet (261 gallons)	12 tablespoonful or ¾ cup
10 inches	100 feet (408 gallons)	1 ¼ cups
12 inches	100 feet (587 gallons)	1 ¾ cups

501.12. CROSS CONNECTIONS.

501.12.1. Every potable water distributing pipe shall be protected against cross connection with, and backflow from, any plumbing fixture or other piece of equipment or appliance capable of affecting the quality of the potable water by having the outlet end from which the water flows spaced a minimum distance of twice the diameter of the water supply pipe above the flood level rim of the receptacle into which the potable water flows, except:

501.12.2. Where it is not practicable to provide this minimum distance, the connection to the fixture, equipment, or appliance shall be equipped with a cross connection prevention assembly of a type and location approved by the Department.

501.12.3. For semi-public water supplies, the Department shall require a cross connection prevention device of a type and location approved by the Department be installed at any fixed potable water outlet to which a hose may be connected. This section shall apply to all semi-public water supplies constructed after the effective date of this section. Existing semi-public water supplies shall be subject to this requirement within one (1) year from the effective date of this section.

501.12.4. Public water systems shall comply with the requirements of the Pennsylvania Safe Drinking Water Act (35 P.S. 721.1 et. seq.)

501.13. PERMIT PROCEDURE.

501.13.1. All individual, semi-public or public water supplies and geothermal wells, monitoring wells and test wells shall be constructed in strict compliance with the specifications set forth in this Section of these Rules and Regulations.

501.13.2. All individual, semi-public or public water supplies and geothermal wells, monitoring wells and test wells constructed pursuant to these Rules and Regulations shall be constructed or altered by a duly licensed well contractor, geothermal well installation contractor, or pump installation contractor who is licensed as set forth in this Section of the Rules and Regulations. The licensed well or geothermal well installation contractor is responsible for taking all reasonable precautions to insure the maintenance of all isolation distances as set forth in these regulations. This includes, but is not limited to, visual site inspections, drilling the well in the location specified on the well permit and confirmation of these distances by the property owner.

501.13.3. The installation, repair, or alteration of any well, casing, well water supply line for new construction, or pitless adapter, constitutes the installation of a water supply or well and requires a permit prior to the beginning of the installation of a water supply system or of any building(s) for which such a system is to be installed. Geothermal wells are required to be permitted. No Permit will be required by the Chester County Health Department for the installation of a water service line that is connected to a public source; or for treatment processes in a public water system, provided, however, that the disinfection procedures outlined in paragraph 501.11. of this section shall be strictly adhered to.

501.13.4. The application for a permit for the installation of an individual, semi-public or public water supply, geothermal well, monitoring well, test well must be made by a contractor, appropriately licensed by the Chester County Health Department, in the name of the real property owner or equitable owner with written documentation to the Department. All well permit applications for new construction must be issued in the same name as the issued sewage permit, except for those instances when the sewage permit has received prior approval from the Department. No well permit can be issued for a property proposing new construction unless there is a valid sewage permit in effect at the time of application.

501.13.4.1. The application shall contain such information as the Department deems necessary including the information found in either the Chester County Health Department Well Permit Application Form (CCHD-EHS-15) and information as may be required by the Department to insure that the proposed construction or installation complies with this section. Applications for geothermal wells shall be made on the Well Permit Application Form (CCHD-EHS-15). Current forms must be used.

501.13.5. Permits for well construction shall be issued or denied within seven (7) working days after receipt of a completed well application. When the Department has found a well construction permit application to be incomplete, or the Department is unable to verify the information submitted, the applicant shall be notified in writing that additional information or clarification is required. The Department's time for acting upon a permit shall be extended fifteen (15) days beyond the date of receipt of the supplementary or amendatory information.

501.13.5.1. A permit shall be denied and/or approval to use the water supply shall be withheld in those areas of the County where the Chester County Health Department has been notified by State or Federal agencies or other sources that the area is unsuitable for the installation of on-site water wells due to known groundwater contamination unless the following conditions are met:

501.13.5.1.1. The water well must be tested prior to use and on a yearly basis for all known and suspected contaminants in the area.

501.13.5.1.2. When the water quality analysis shows that the contaminant level exceeds the maximum contaminate levels allowed by the Safe Drinking Water Act, the water must be treated by the appropriate treatment unit before approval to use can be granted.

501.13.6. When the Department is satisfied that the application is complete and the proposed design meets the requirements found in this section, a permit will be issued.

501.13.6.1. If the well contractor hired to drill the well is not the contractor named on the issued permit application, the Chester County Health Department must be notified in writing prior to the installation of the well.

501.13.6.2. The well must be drilled in the permitted location. Any deviation from the permitted location must be approved in writing by the Chester County Health Department prior to the start of the drilling process. Failure to comply with this requirement will result in legal action being taken against the property owner and / or the well drilling contractor.

501.13.6.3. If construction or installation of an individual, semi-public or public water supply, geothermal well and any building or structure for which such water supply system or ground source heat pump equipment is to be installed has not commenced within three (3) years from the date of issuance of the permit, the well construction permit shall expire. A new well construction permit shall be obtained prior to the commencement of said construction or installation.

501.13.6.4. Permits for monitoring wells shall expire one (1) year from the date of issuance if construction of the well has not commenced. Permits for test wells shall expire three (3) years from the date of issuance if construction of the permitted well has not commenced.

501.13.7. A well construction permit shall be revoked by the Department at any time for any one or more of the following reasons, which shall be incorporated into a written revocation:

501.13.7.1. When any change has occurred in the physical conditions of any lands which will materially affect the operation of an individual, semi-public or public water supply.

501.13.7.2. When information material to the issuance or approval of the well construction permit has been falsified.

501.13.7.3. When the decision of the Department fails to conform to the provisions of the section, or:

501.13.7.4. When the permittee has violated the provisions of this section.

501.13.7.5. When the sewage permit has been revoked by the Chester County Health Department.

501.13.8. Upon receipt by the applicant of a notice of denial or revocation of a well construction permit, the applicant may request a hearing in accordance with the provisions of Subsection 108, Chapter 100 of the Rules and Regulations of the Chester County Health Department.

501.13.8.1. Use of a water well drilled or otherwise constructed prior to March 21, 1983, shall be considered for use as a water supply for new construction or regulated establishments only if written documentation is submitted to this Department by a Chester County Health Department licensed well driller verifying that the well meets all of the construction standards as stated in these regulations and a water quality analysis is conducted and found to be in conformance with the standards as set forth in Section 501.14. Wells drilled after March 21, 1983, shall be considered for use as a supply for new construction or regulated establishments only if this Department has granted prior written "Approval to Use".

501.13.9. No individual, semi-public or public water supply shall be used and no structure served by an individual, semi-public or public water supply shall be occupied unless the individual, semi-public or public water supply receives an "Approval to Use" from the Department. No geothermal well, whether open or closed loop, shall be used without being given "Approval to Use" by the Department. The "Approval to Use" will only be issued after submission of properly completed: 1) the Chester County Health Department Well Permit; 2) a water quality report, for water supply and open-loop geothermal wells, completed by a Pennsylvania Department of Environmental Protection (PA DEP) approved laboratory which complies with all parameters outlined in Subsection 501.14. (Water Quality); 3) Well Completion Form (CCHD-WCF-01/02). A site inspection of the completed well will be conducted by the Chester County Health Department representative.

501.13.9.1. A community public water system shall not be used until the owner receives approval from the Pennsylvania Department of Environmental Protection.

501.13.9.2. A monitoring well or test well shall not be used until it has received written approval for use from the Department.

501.13.10. If an emergency condition exists, that is, if the lack of water poses an immediate and significant danger to the health and welfare of persons, livestock or domestic fowl or crops, then the Department shall issue a well construction permit within twenty four (24) hours of receipt of the completed permit application. It is the responsibility of the well contractor and/or property owner or tenant to substantiate that an emergency condition exists by submission of a signed statement to the Department. Emergency well construction permits will not be issued over the telephone except in such instances when the Department is closed for a period of time in excess of 24 hours, and then only to replace an existing water supply where the lack of water poses an immediate and significant threat to human health or when the Department determines that other exceptional circumstances exist. When permits are issued over the telephone the well contractor must submit the required signed statement and the completed well application to the Department by 9:00 a.m. on the next regularly scheduled Department workday.

501.13.10.1. The drilling process for an emergency well construction must begin within 24 hours of receipt of the permit or verbal approval or said permit/verbal approval is void except when inclement weather conditions or other abnormal circumstances occur.

501.13.10.2. The well contractor must have the well permit and/or verbally approved well permit number in his possession at the specific job site during all aspects of the well drilling process.

501.13.10.3. Wells constructed to abate an emergency condition and permitted in accordance with 501.13.10. must be completed, tested and the required information submitted for final "Approval To Use" within 10 calendar days of the issuance of the permit, or where applicable, verbal permission to construct the well has been given.

501.13.11. Within ninety (90) days of the completion of the well drilling process the well contractor must submit written drilling and grouting information to the Department utilizing Form CCHD-WCF-01/02. Approval to use the well will not be granted until all of the requirements outlined in 501.7.2 and 501.13.9 have been satisfied.

501.13.11.1. Within ninety (90) days after completion of the well drilling process the pump installation process must be completed for new supply wells. The pump installation contractor must submit written information to the Department as described in 501.9.

501.13.11.2. Within ninety (90) days of the completion of the well drilling process for new well installations the water quality analysis, as required in section 501.14. of these regulations, must be submitted to the Department.

501.13.11.3. Second wells on existing properties or Agricultural/Irrigation wells on farm/commercial properties must receive "Approval to Use" from the Department no more than 90 days from the completion of the drilling process.

501.13.11.4. Failure to comply with these regulations will result in legal action being taken against the property owner/equitable owner and/or well contractor and/or pump installation contractor.

501.13.11.5. Neither the well contractor nor the pump installation contractor shall refuse to submit the information required in 501.13.11, 501.13.11.1 and 501.13.11.3 due to the non-payment for his or her services.

501.14. WATER QUALITY.

501.14.1. Water quality for public water supplies shall be regulated by the Pennsylvania Safe Drinking Water Act, (35 P.S. 721.1 et seq.)

501.14.1.1. All water samples to be tested must be drawn by a trained PA DEP-certified laboratory employee or a Chester County licensed Well Driller Contractor or Pump Installation Contractor.

501.14.1.2. All water test results to be submitted to the Chester County Health Department must contain the following information: (1) Permittee's name; (2) Address of origin of sample; (3) Township of origin of sample; (4) CCHD Well Permit #; (5) The name of the person who took the water sample; (6) Statement indicating if the sample was treated or untreated.

501.14.1.3. Only an original laboratory analysis report of the water quality of a supply well will be accepted for final approval to use.

501.14.1.4. Falsification of any document submitted to this Department may result in the initiation of legal action against the property owner and/or the responsible party.

501.14.2. Water quality for individual and semi-public water supplies shall conform to the following requirements:

501.14.2.1. Microbiological Water Quality Requirements. Procedures for testing for microbiological contaminants shall be approved by and conducted by a laboratory certified by the Commonwealth of Pennsylvania for the technique used. Evidence of such tests shall be given to the Chester County Health Department verifying that the tests have been conducted by a laboratory approved by the Pennsylvania Department of Environmental Protection (PA DEP).

501.14.2.2. Microbiological, Physical and Chemical Water Quality Requirements. Individual and semi-public water supplies must meet the following standards:

Total coliform	<1 col/100 mL
Turbidity	5 NTU
Nitrates+nitrites	10 mg/L as N
pH	6.5 to 8.5
Iron	0.3 mg/L
Manganese	0.05 mg/L
Chloride	250.0 mg/L
Color	15 units
MBAS	0.5 mg/L
Odor	3 units

501.14.2.2.1. All water quality tests must be conducted for each category listed in 501.14.2.2 by a laboratory approved by the Pennsylvania Department of Environmental Protection.

501.14.2.2.2. If Total Coliform, Turbidity, or Nitrates + Nitrites are in excess of the maximum specified standards noted in 501.14.2.2, treatment of the water supply is required to achieve compliance with the standards.

501.14.2.2.3. If Iron, Manganese, pH, Chloride, Color, MBAS or Odor levels are in excess of the above listed standards in 501.14.2.2, or the pH value is less than 6.5, treatment is recommended.

501.14.2.2.4. When a treatment unit has been installed to correct a condition requiring treatment (501.14.2.2.2) this Department must conduct an inspection to verify the installation of the treatment unit(s), as well as, receive written information including the make and model number of any installed treatment unit(s). Treatment units must be installed according to the manufacturer specifications.

501.14.2.2.5. When the parameters listed in 501.14.2.2 are not within the specified limits in the initial water testing process, this Department requires subsequent testing with passing results

without treatment (other than disinfection as per Section 501.11 of these regulations) to be submitted; or, passing results accompanied by a written description of the treatment unit (when a treatment unit has been installed.)

501.14.2.3. For either individual or semi-public water supplies, additional analyses and treatment of the water shall be required if the Department has reason to suspect that harmful substances are present in the water in amounts that are significantly adverse to human health, safety, or comfort.

501.14.2.4. GROUND WATER AREAS OF CONCERN

501.14.2.4.1. No new individual or public water supply well, test well or agricultural water supply well may be permitted, and no new individual or public water supply well, test well or agricultural water supply well may be constructed, within the delineated Plume Area of a contaminated site or within the ¼ mile Area of Concern around the boundary of the delineated plume unless hydrologic evidence is provided to the CCHD, and accepted as satisfactory by US EPA or Pa DEP, which verifies that installation of the well will not have any impact on the Plume or remediation effort.

501.14.2.4.2. In those areas identified as Plume Areas or “Areas of Concern” adjacent to plume areas, if a new well is permitted, the Department will require testing of new wells for the contaminants known to be associated with the specific site. In the event analyses indicate contaminants to be above drinking water standards set forth by the Department of Environmental Protection (PA DEP), treatment of the water supply will be required until such time as analyses indicate contaminants to be below standards set forth by PA DEP. A PA DEP approved laboratory must conduct all water tests. All test results must be submitted to the Chester County Health Department.

501.14.2.4.3. Whenever a new water supply well is drilled within a Plume area or Area of Concern, well owners shall be responsible for testing their well water on an annual basis for the contaminants known to be associated with the specific site.

501.14.2.4.4. In instances when the US Environmental Protection Agency (US EPA) and/or the Department of Environmental Protection (PA DEP) have determined, and provided written documentation, that the permitting of a well may interfere with clean-up efforts of a nearby groundwater contamination, Chester County Health Department may rely upon said documentation to deny the well permit.

501.14.2.4.5. Water supply or agricultural wells drilled in areas adjacent to active or inactive permitted landfills sites shall meet the isolation distance requirements in 501.7.1.2, Chemical Related.

501.15. WATER SOURCE REPLACEMENTS

501.15.1. Whenever a public water supply or another well replaces an existing well, it shall be the responsibility of the property owner to have the existing well properly decommissioned by a licensed well contractor in accordance with Section 501.10, Decommissioning of Wells, of these Regulations. No well shall exist in an abandoned state.

501.15.2. All wells that are to be decommissioned, or wells that are removed from use or a useable status such as abandoned wells or any well that meets the definition of an abandoned well according to Section 501.3.1. shall be decommissioned according to the requirements of Section 501.10, Decommissioning of Wells.

501.15.3. A well that has been replaced by another well shall not be required to be decommissioned if the property owner has made written request to the Department to maintain the well for purposes that will not endanger groundwater, the environment or public health and has received written approval to maintain the well from the Director or his authorized representative. Wells maintained for landscaping use must be fitted with a backflow prevention device.

501.15.4. A well that has been replaced by a public water supply shall not be required to be decommissioned if the property owner has submitted a written request to this Department for approval to continue to maintain the well, and has received written approval to maintain the well from the Director or his authorized representative. The well must be physically disconnected from the domestic water supply plumbing as a means of preventing cross-connection contamination of the public water supply. Wells maintained for landscaping use must be fitted with a backflow prevention device.

501.15.5. Wells that have been replaced by public water supplies shall not be used or maintained when any Federal, State or Local Agency has determined that the continued use or maintenance of the well could interfere with the cleanup of contaminated groundwater or a contaminated site.

501.16. AGRICULTURAL WATER SUPPLIES.

501.16.1. Agricultural water wells must meet all Chester County Health Department isolation requirements as noted in Sections 501.7.1.2.

501.16.2. Wells used specifically for irrigation of crops, irrigation of recreational or institutional grasslands, or other non-consumptive use are not required to have water quality analyses.

501.16.3. Wells used for watering dairy livestock should comply with all Pa. Dept. of Ag. requirements and best management practices.

501.17. GEOTHERMAL WELLS.

501.17.1. OPEN-LOOP GEOTHERMAL SYSTEMS

501.17.1.1. The geothermal delivery and return wells that depend on groundwater supplies for heating and cooling must meet all Chester County Health Department isolation distance requirements listed in 501.7.1.2.

501.17.1.2. The geothermal delivery well must be tested for all specified water quality standards listed in 501.14.2.2.

501.17.1.3. If the geothermal delivery well will also be used as a drinking water supply, all Chester County Health Department water quality requirements listed in 501.14.2.2. must be met.

501.17.2. CLOSED-LOOP GEOTHERMAL BOREHOLES

501.17.2.1. LOCATION.

501.17.2.1.1. The following minimum isolation distances to existing or potential sources of pollution shall be maintained:

Source of Pollution

Minimum isolation distances from the proposed Closed-Loop Borehole to the facilities listed below:

WATER RELATED	MINIMUM DISTANCE
1. Delineated wetlands, flood plains lakes, ponds or other surface waters	10 feet
2. Rainwater pits	10 feet
3. Storm drains, retention basins storm water stabilization ponds	10 feet
SEWAGE RELATED	
1. Subsurface sewage absorption areas elevated sand mounds, cesspools, sewage seepage pits	50 feet
2. Spray irrigation site perimeter, sewage sludge and septage disposal sites	50 feet
3. Septic tanks, aerobic tanks, sewage pump tanks, holding tanks	25 feet
4. Sewer drains, public sewer laterals	5 feet
CHEMICAL RELATED	
1. Preparation area or storage area of hazardous spray materials, fertilizers or chemicals, salt piles. (If borehole is cased and grouted inside and out)	300 feet (150 feet)
2. Surface or subsurface containers or tanks of greater than 1000 gal. used for storage of materials that cannot be properly renovated by passage through soil. This includes, but is not limited to, gasoline and all other petroleum products. (If borehole is cased and grouted inside and out.)	300 feet (150 feet)

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|--|----------|
| 3. Surface or subsurface containers or tanks of 1000 gal. or less used for storage of materials which cannot be properly renovated by passage through soil. This includes, but is not limited to, gasoline and all other petroleum products. For example, the type of tanks frequently used in homes using oil for heating purposes. | 30 feet |
| 4. Identified NPL Site (Superfund Sites) plume area (If borehole is cased and grouted inside and out.) | 300 feet |

MISCELLANEOUS

- | | |
|---|-------------|
| 1. Property lines, all right-of-ways, easements | 10 feet |
| 2. Any other source of pollution | As approved |

501.17.2.1.2. Any proposed deviation from the isolation distances prescribed in paragraph 501.17.2.1.1. above must be approved in writing by the Director, or his designee, with reasons stated for such deviation.

501.17.2.2. CONSTRUCTION

501.17.2.2.1. Closed-Loop Geothermal Boreholes shall be located, drilled and finished in a manner that will protect the borehole structure from damage from surface activities or other natural occurrences so that the quality of the local groundwater can not be affected.

501.17.2.2.2. The well contractor shall be responsible for insuring that the borehole is drilled in the permitted location. Deviation from the permitted location must receive prior written approval from this Department. The well contractor shall be responsible for drilling the borehole and the final backfilling after the pipe loop has been installed.

501.17.2.2.3. Casings are not required. Casings may be necessary to hold the borehole open during the drilling process. Casings may be left in the borehole at the discretion of the well contractor. When a casing is used grouting the annular space is required.

501.17.2.2.4. The pipe loop is to be installed by a contractor who is certified in the proper method of heat fusion specified by the pipe manufacturer. The well contractor shall be responsible for insuring that the pipe loop is installed in accordance with the specifications of the ground source heat pump system manufacturer, the pipe manufacturer and that the borehole is properly backfilled.

501.17.2.2.5. Backfilling shall be according to the specifications of the ground source heat pump equipment manufacturer. When sand is the specified backfill material, the borehole shall be constructed in the same manner as a water supply well. A casing is required to be used and the annular space is required to be grouted.

501.17.2.2.6. If the closed-loop borehole penetrates bedrock it must be grouted from a depth of fifteen feet (15') into the bedrock to the top of the borehole.

501.17.2.2.7. The recommended backfilling material for these boreholes shall be bentonite. The bentonite shall conform to the grouting standard specified in 501.7.2.2.4.5

501.17.2.3. PERMITTING

501.17.2.3.1. Closed-Loop Geothermal Boreholes shall be permitted in accordance with 501.13. Each borehole must be permitted using a single application. A fee will be charged for each borehole.

**COMMONWEALTH OF PENNSYLVANIA
COUNTY OF CHESTER ss**

I, John P. Maher, M.D., Secretary of the Chester County Board of Health, hereby do certify the within to be true and correct. In witness whereof I have hereunto set my hand this day of .

SEAL

John P. Maher, M.D., M.P.H.

Effective close of business February 1, 2008.