

**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.**

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**501.1. PURPOSE.** The purpose of these Rules and Regulations is to establish minimum standards for the location, construction, alteration, decommissioning, water quality, and minimum water quantity of water wells and water well installation; to require a permit for the construction of any well, including water supply wells, production wells, test wells, test borings, and monitoring wells; the installation of pumping equipment and other appurtenances; the drilling of vertical boreholes used for the installation of ground source heat pump equipment; consistency for regulated establishments; to license all Well Contractors, Geothermal Well Installation Contractors, and Pump Installation Contractors. After the effective date of adoption of these Rules and Regulations, no well (individual, semi- public, public, monitoring, agricultural 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 Rules and Regulations.

**501.2. 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County Health Department (CCHD), and any regulation, ordinance, standard or procedure presently in existence shall be superseded to the extent that it is inconsistent with the rules, regulations, standard or procedures adopted by the CCHD.

**501.3. SCOPE.** Except where clearly noted in the text, the provisions of this Chapter 500, §501 shall apply to all wells serving individual, semi-public, or public water supply systems, monitoring wells, test wells, agricultural and wells and boreholes drilled for the use of/installation of ground source heat pump equipment. Nothing in this Chapter 500, §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.)

**501.4. DEFINITIONS.** For the purpose of these Rules and Regulations, the following definitions shall apply, unless the context clearly indicates otherwise:

**501.4.1. "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 ninety (90) days and the well has not been approved for use as a supply by the Department (for new construction the ninety (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.

**501.4.2. "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.

**501.4.3. "Alteration":** Any action which necessitates entering a well with drilling tools; altering the physical structure or depth of the well, including casing extensions.

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

**501.4.5. "ANSI":** American National Standards Institute.

**501.4.6. "API":** American Petroleum Institute.

**501.4.7. "Approval to Use":** Written approval to use the well obtained from the Department in accordance with §501.7.8 within ninety (90) days of the completion of the well drilling process or, if for an emergency well, within ten (10) days of the completion of the well drilling process and final approval of the sewage system.

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

**501.4.9. "Areas of Concern":** A confirmed area of contamination (plume) associated with, but not limited to, Superfund sites.

**501.4.10. "ASTM":** American Society for Testing Materials.

**501.4.11. "AWWA":** American Water Works Association.

**501.4.12. "Backfilling":** The addition of coarse materials during the process of sealing a borehole for the purpose of decommissioning a well.

**501.4.13. "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.

**501.4.14. "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.

**501.4.15. "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.

**501.4.16. "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 degrees Celsius (35°C).

**501.4.17. "Community Water System":** A water system which serves at least fifteen (15) service connections used by year-round residents or regularly serves at least twenty-five (25) year-round residents.

**501.4.18. "Construction of Wells":** All acts necessary to obtain groundwater, verify the availability of groundwater, monitor the quality of groundwater, artificially recharge groundwater, or to install geothermal appurtenances. Construction of wells includes the location and excavation or drilling of the well, or installation of geothermal appurtenances, but excludes the installation of pumps and pumping equipment. This definition 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.

**501.4.19. "Cross Connection":** An arrangement allowing either a direct or indirect connection through which backflow, including back siphonage, 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.

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

**501.4.21. "Department":** The Chester County Health Department, or its authorized representative(s).

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

**501.4.23. "Geothermal Well":** A vertical well or borehole constructed to facilitate the installation of, or connection to, equipment used 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.

**501.4.24. "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. This individual shall be licensed as a Well Contractor and a Geothermal Well Installation Contractor by the Department. This individual is responsible for construction, pipe loop installation and grouting of boreholes used for the installation of closed-loop ground source heat pump systems.

**501.4.25. "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.

**501.4.26. "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.

**501.4.27. "Grout":** A permanent water tight joint or connection made by filling with concrete, neat cement, bentonite, or other approved impervious material between the casing and the undisturbed formation surrounding the well or between two (2) strings of casing, or sealing a closed-loop geothermal borehole.

**501.4.28. "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".

**501.4.29. "International Ground Source Heat Pump Association (IGSHPA) ":** An international association that has established accepted standards for the installation of ground source heat pump equipment.

**501.4.30. "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.

**501.4.31. "Monitoring Well":** A well used to obtain samples of groundwater for the purpose of water quality analysis. These wells may also function as part of the remediation treatment process.

**501.4.32. "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.

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

**501.4.34. "NSF":** National Sanitation Foundation.

**501.4.35. "Pitless Adapter":** A device or assembly of parts which will permit water to pass through the wall of the well casing or extension, 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.

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

**501.4.37. "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.

**501.4.38. "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.

**501.4.39. "Public Water System":** A system which provides water to the public for human consumption which has at least fifteen (15) service connections or regularly serves an average of at least twenty-five (25) individuals daily at least sixty (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.

**501.4.40. "Regulated Establishment":** Any public facility, whether commercial or institutional, which requires License(s) and/or Certificate(s) issued by the Chester County Health Department to operate or any facility that requires inspection by the Chester County Health Department.

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

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

**501.4.43. "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.)

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

**501.4.45. "VOC":** Volatile Organic Compounds, as defined by the United States Environmental Protection Agency.

**501.4.46. "Well":** Any vertical 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.

**501.4.47. "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 Department.

**501.4.48. "Well Completion Form":** A form, available on the Department's web page, which includes the Department's permit number, the township in which the well was drilled, the owner's name and address, the specific site location, the type of material used for grouting, the number of bags 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 license number from the Department and the well driller's signature.

**501.4.49. "Well Modification":** Changes made to an existing well that include casing extensions, pitless adapter installations, additional water supply lines, or other well or well system changes that may be required to facilitate continued use of the well as a supply of water.

**501.4.50. "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.

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

## **501.5. REGULATED ESTABLISHMENTS.**

**501.5.1.** When a well is used as the water supply for a Regulated Establishment, new wells shall conform to the location and construction standards of these Rules and Regulations. Existing wells shall meet the construction of §501.8.2, and the water quality requirements as addressed in Chapter 600, §605.

**501.5.1.1.** Existing wells intended to serve new Regulated Establishments must meet the location distance of 100 feet from any sewage absorption area (including cesspools) and 50 feet from any septic tank in accordance with Chapter 500, §501 and §503.

**501.5.1.2.** Regulated Establishments that are issued a license to operate by the FDA, USDA or the PDA may be exempt from the location and construction requirement of these Rules and Regulations, provided that the facility meets all other applicable standards of the Department and the State or Federal Government regulations.

**501.5.2.** All water supply wells servicing Regulated Establishments must continually meet all of the water quality standards under these Rules and Regulations (§501.13.2) as addressed in Chapter 600, §605.

## **501.6. LICENSES.**

**501.6.1.** 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 by Department as a well contractor. Each such applicant must demonstrate professional competence and an understanding of the Department 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.

**501.6.2.** 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.

**501.6.2.1.** Every company engaging in the business of well construction or pump installation shall employ at least one properly licensed well installation contractor and/or pump installation contractor.

**501.6.3.** 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.

**501.6.4.** Whenever the Department determines that the holder of any license issued pursuant to this Section has violated any provision of these Rules and 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.

## **501.7. PERMIT PROCEDURE.**

### **501.7.1. General.**

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

**501.7.1.1.1.** Permits issued for public water supply wells will be for “construction only”. Final approval for the use of public water supply wells will be granted by the Pennsylvania Department of Environmental Protection (PA DEP), in accordance with Title 25, PA Code, Chapter 109, Safe Drinking Water.

**501.7.1.2.** A permit is required prior to the installation, repair, or alteration of any well, casing, well water supply line for new construction, additional water supply line, or pitless adapter. A permit is required 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 Department for the installation of a water service line that is connected to a public water supply distribution system.

**501.7.1.3.** All individual, semi-public or public water supplies, 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 compliance with all isolation distances as set forth in these Rules and Regulations.

## **501.7.2. Permit Applications.**

**501.7.2.1** 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 Department, in the name of the real property owner or equitable owner with written documentation to the Department. No well permit can be issued for a property proposing new construction unless the property will be served by public sewerage, or there is a valid sewage permit in effect. All well permit applications for new construction must be issued in the same name as the issued sewage permit, except for those instances where the property is serviced by public sewerage, or when the sewage permit has received prior approval from the Department.

**501.7.2.2.** Either a Department licensed well contractor or a Department licensed pump installation contractor may make application in the name of the real property owner for a well modification permit when it is necessary to make such changes as the extension of the well casing, addition or replacement of a pitless adapter, add an additional water supply line, or any other changes necessary to facilitate continued use of the well or well system as a water supply.

**501.7.2.3.** The contractor shall sign applications in the Driller Declaration space provided on the application whether they are a well contractor or pump installation contractor. The name of the contractor shall also be printed here and the contractor Department license number is required.

**501.7.2.4.** The application shall contain such information as the Department deems necessary, including the information found in either the Well Permit Application Form or additional 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. Current forms must be used.

**501.7.2. 4.1.** The signature of the well driller on the application is verification by the driller that the well can physically be constructed in the selected location.

**501.7.2.5.** 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.

**501.7.2.6.** No well permit will be issued whenever a municipality or other government agency determines, and declares in writing, that the well is not consistent with local ordinances, that the existence of the well will interfere with remediation activities, or that public health may be endangered by the use of the well.

**501.7.3. Permit Conditions.**

**501.7.3.1.** If the well contractor hired to drill the well is not the contractor named on the issued permit application, the Department must be notified in writing by the new driller prior to the installation of the well.

**501.7.3.2.** The well must be drilled in the permitted location. Any deviation from the permitted location must be approved in writing by the 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.

**501.7.3.2.1.** The Department may require wells not drilled in the permitted location to be properly decommissioned if the location violates the isolation distances required in Section 501.8.1. Location of these Rules and Regulations.

**501.7.3.2.2.** Where a well was drilled in a location other than the permitted location, or as approved by the CCHD, a new permit application indicating the location of the well borehole and the appropriate fee for the well must be submitted for review.

**501.7.4. Permit Expiration.**

**501.7.4.1.** 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. Permits for well modifications shall also be subject to this condition.

**501.7.4.2.** Permits for monitoring wells and test wells shall expire one (1) year from the date of issuance if construction of the well has not commenced.

**501.7.5. Permit Revocation.**

**501.7.5.1.** 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:

**501.7.5.2.** 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.

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

**501.7.5.4.** When the decision of the Department fails to conform to the provisions of [this](#) Section.

**501.7.5.5.** When the permittee has violated the provisions of this Section.

**501.7.5.6.** When the sewage permit has been revoked by the Department.

**501.7.5.7.** When the sewage permit has expired.

#### **501.7.6. Permit Appeals.**

**501.7.6.1.** 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 Chapter 100, §108 of the Rules and Regulations of the Department.

#### **501.7.7. Reuse or Changes in Use of Existing Wells.**

**501.7.7.1.** Use of a water well constructed prior to March 21, 1983, may be considered for use as a water supply for new construction only if written documentation is submitted to this Department by a well driller licensed by the Department verifying that the well meets all of the construction standards as stated in these Rules and Regulations, except wells meeting the conditions of §501.5.1.1. A water quality analysis must be conducted and found to be in conformance with the standards as set forth in §501.13. 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".

**501.7.7.2.** Whenever there is a change in use of the water supply (e.g.: residential to commercial or vice versa) the well shall comply with §501.7.7.1, above.

#### **501.7.8. Well Permit Approval to Use.**

**501.7.8.1.** 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. For public water supply wells the "Approval to Use" will be for the construction of the well only (see §501.7.1.1.1) No geothermal well shall be used without being given "Approval to Use" by the Department. Well Modification permits also require an "Approval to Use" to be given by the Department.

**501.7.8.1.1.** The "Approval to Use" will be issued after submission of a properly completed: 1) Well Permit from the Department; 2) water quality report, for water supply and open-loop

geothermal wells, completed by a PA DEP approved laboratory which complies with all parameters outlined in §501.13 (Water Quality); 3) Well Completion Form (for all wells).

**501.7.8.1.2.** A site inspection may be conducted by the Department at any time during the construction process.

**501.7.8.1.3.** The Department must Global Positioning System (GPS) locate all monitoring wells before “Approval to Use” will be granted. A monitoring well or test well shall not be used until it has received written “Approval to Use” from the Department.

**501.7.8.1.4.** Any public water supply well or well system shall not be used until the owner receives approval from the PA DEP.

**501.7.8.1.45.** Second wells, deepened wells or altered wells intended for human consumption on existing properties must submit all required paperwork necessary to receive "Approval to Use" from the Department no more than thirty (30) days from the completion of the drilling process.

### **501.7.9. Emergency Well Construction.**

**501.7.9.1.** If an emergency condition exists where the lack of water poses an immediate and significant danger to the health and welfare of persons, livestock, 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.

**501.7.9.1.1.** 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 twenty-four (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.

**501.7.9.2.** The drilling process for an emergency well construction must begin within twenty-four (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.

**501.7.9.3.** The well contractor must have a copy of the well permit and plot plan or verbally approved well permit number in his possession at the specific job site during all aspects of the well drilling process.

**501.7.9.4.** Wells constructed to abate an emergency condition and permitted in accordance with §501.7.9.1 must submit the well completion information within ten (10) days after the issuance of the permit or verbal approval to drill. Water quality testing must be submitted for final “Approval

To Use” within thirty (30) calendar days of the issuance of the permit, or where applicable, verbal permission to construct the well has been given.

#### **501.7.10. Submission of Required Construction Information.**

**501.7.10.1.** Within ninety (90) days of the completion of the well drilling process of the first well to serve as a water supply on a property, the Well Completion Form information, including drilling and grouting information must be submitted to the Department. “Approval to Use” the well will not be granted until all of the requirements outlined in §501.8 and §501.11 have been satisfied.

**501.7.10.2.** If the pump is installed at the time of well construction the pump installation information should be submitted with the well completion information. If the pump is installed at a later date the pump information must be submitted within ten (10) days of the installation of the pump.

**501.7.10.3.** Within ninety (90) days of the completion of the pump installation for new well installations the water quality analysis, as required in §501.13 of these Rules and Regulations, must be submitted to the Department.

**501.7.10.4.** For Second wells or deepened wells on existing properties the Well Completion Form information and Water Quality Testing must be submitted to the Department no more than thirty (30) days from the completion of the drilling process. “Approval to Use” the well will not be given until all of the requirements of §501.8, §501.11, and §501.13 have been satisfied.

**501.7.10.5.** For Well Modification permits, the contractor must submit a detailed account of the exact changes made to the well or well system.

**501.7.10.6.** Neither the well contractor nor the pump installation contractor shall refuse to submit the information required above due to the nonpayment for his/her services.

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

### **501.8. DRILLED WATER SUPPLY WELLS**

#### **501.8.1. Location.**

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

**501.8.1.2.** 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 water supply well to the features listed below:

<b><u>Water Related</u></b>	<b><u>Minimum Distance</u></b>
1. Delineated wetlands or floodplains	25 feet
2. Lakes, ponds, streams, spring prone areas or other surface waters	25 feet
3. Rainwater pits, rain gardens	25 feet
4. Storm drains (piped or sealed collection systems)	10 feet
5. Surface drainageways	10 feet
6. Retention or detention basins from the high water level	25 feet

<b><u>Sewage Related</u></b>	<b><u>Minimum Distance</u></b>
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	100 feet
3. Subsurface or surface installed sewage absorption areas, cesspools, sewage seepage pits, the wetted perimeter of spray irrigation system absorption areas, the edge of drip irrigation absorption areas (two (2) feet from the drip tubing)	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 pressure (except welded steel pipe or solvent welded Schedule forty (40) or equivalent or better PVC pipe or concrete encased pipe)	50 feet (10 feet)

<b><u>Chemical Related</u></b>	<b><u>Minimum Distance</u></b>
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 1,000 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 1,000 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. Landfills	300 feet up gradient and ¼ mile down gradient

<b><u>Miscellaneous</u></b>	<b><u>Minimum Distance</u></b>
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" minimum) 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

**501.8.1.3.** Any proposed deviation from the distances prescribed in §501.8.1.2 above must be approved in writing by the Department, with reasons stated for such deviation.

**501.8.1.4.** The isolation distances above may require special consideration when the proposed well is to be located in a Ground Water Area of Concern, as noted in §501.15.

## **501.8.2. CONSTRUCTION.**

### **501.8.2.1. Casing.**

**501.8.2.1.1.** All wells serving as a water supply shall be equipped with a watertight and durable wrought iron or steel 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 glued plastic 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 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 the current version of AWWA Standard A100 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.

**501.8.2.1.2.** Ferrous casings shall be new pipe meeting ASTM or API specifications for water well construction and have full circumference welds or threaded pipe joints.

**501.8.2.1.3.** Non-ferrous casings shall meet appropriate ANSI/ASTM or NSF Standards for well casing applications as outlined in the current version of AWWA Standard A100. 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 five (5) feet into the consolidated formation with an annular opening of three (3) inches or larger so that the grout may be placed in accordance with the provisions of §501.

### **501.8.2.2. Casing Upgrades.**

**501.8.2.2.1.** 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 §501.8.2.1.1, in that the casing shall extend to a minimum of one (1) foot above the surrounding finished surface grade. Casings that terminate in well pits shall be extended a minimum of one (1) foot above the surrounding ground surface and the pit shall be eliminated.

**501.8.2.2.2.** Casings of existing wells that terminate at or below the surrounding finished grade may be extended by welding steel extensions to existing casings where practicable, utilizing full circumference welds; glued PVC coupling joints; or any other method specifically approved by the Department.

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

### **501.8.2.3. Grout Materials.**

**501.8.2.3.1.** 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 the current Well Completion Form (available on the Department's web site) to the Department by the well driller within ninety (90) days of completion of the well drilling process.

**501.8.2.3.2.** 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. 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.

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

1. Neat cement grout – API Class G (or Class B similar to ASTM C150 Type II). A maximum of 6% by weight bentonite and two percent by weight of calcium chloride may be added.
2. Bentonite grout – pure powdered sodium bentonite with at least 20% solids mixed with water. Hydration of the bentonite must be delayed until the bentonite mix has been placed down the well.

**501.8.2.3.4.** In all well installations if rapid loss of grout material occurs during placement, coarse fill material (e.g. sand, gravel, crushed stone) may be used in the zone(s) 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.

### **501.8.2.4. Grout Placement.**

**501.8.2.4.1.** The minimum annular space of 1½ inches around the entire outside of the casing shall be provided by drilling a borehole three (3) inches larger than the outside diameter of the casing to be inserted. All grout shall be placed by pumping through the tremie 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. The tremie pipe should extend from the surface to the bottom of the interval to be grouted. The tremie pipe may be raised slowly as the grout is placed provided that the discharge end of the tremie 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 tremie pipe shall be raised above the grout level and should not be re-submerged until the air and water have been displaced from the tremie pipe.

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

**501.8.2.4.3.** If the annular space cannot be grouted in accordance with these Rules and Regulations, the well shall be decommissioned and sealed in accordance with §501.17.

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

### **501.8.3. Pit Installations.**

**501.8.3.1.** Pit Installations for new well construction will only be allowed when specifically approved by the Department. 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.

#### **501.8.4. Pitless Installations.**

**501.8.4.1.** Pitless installations are those installations where the casing terminates above the ground surface.

**501.8.4.2.** 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.

**501.8.4.3.** 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.

**501.8.4.4.** Small hand pumps that are designed to be mounted as auxiliary pumps and factory designed to replace the well cap may be installed directly on the top of the casing, provided that they function as an insect resistant cap.

#### **501.8.5. Venting.**

**501.8.5.1.** Where an insect resistant cap cannot be used and venting is required, a pipe with the opening facing downward shall be required. Such venting shall be designed to effectively protect against the entrance of insects and rodents.

### **501.9. PUMPS AND OTHER EQUIPMENT.**

#### **501.9.1. Hand 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.** The well shall be chlorinated after the pump is installed in accordance with section 501.10.

**501.9.1.6.** All pump information must be submitted in writing by the pump installer on the Department's Well Completion Form.

### **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 501.8.2.4. 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.

**501.9.2.6.** The well shall be chlorinated after the pump is installed in accordance with section 501.10.

**501.9.2.7.** All pump information must be submitted in writing by the pump installer on the Department's Well Completion Form.

### **501.9.3. Submersible Pumps.**

**501.9.3.1.** Submersible pumps must be installed using a pitless adapter.

**501.9.3.2.** The pump shall be set off the bottom of the borehole a sufficient distance so that sediment will not be drawn into the pump.

**501.9.3.3.** Pumps shall be wired in accordance with the requirements of the pump manufacturer and local electrical codes.

**501.9.3.4.** The well shall be chlorinated after the pump is installed in accordance with §501.10.

**501.9.3.5.** All pump information must be submitted in writing by the pump installer on the Department's Well Completion Form within ninety (90) days of completion of the drilling process.

**501.9.4. Well Cap and Well Cap Replacement.**

**501.9.4.1.** Well casings shall be finished with either a sanitary well seal or an insect resistant cap unless they are fitted with a power pump as noted above. 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. DISINFECTION.**

**501.10.1.** Following the completion of the construction of an individual, semi-public or public water 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 treated with a water solution containing a concentration of not less than 100 parts per million of free chlorine. Chlorine tablets may be put into the well before the pump or foot valve assembly is lowered into the borehole to ensure chlorination of the entire depth of the water column. 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 that 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.**

**501.10.2.** 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 tanks or absorption area. One ounce of dry calcium hypochlorite (70% available chlorine), dissolved in fifty-two and one-half (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:

<b>Diameter of The Well Casing</b>	<b>Water Standing In Well</b>	<b>Amount of Dry Powder (HTH or equivalent) to Make at least 110 ppm Chlorine Solution</b>
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

**501.11. Individual Water Supply System Volume Standard and Yield Requirements.**

**501.11.1. Volume Standard.**

**501.11.1.1.** Any individual water supply system must be capable of providing four-hundred and eighty (480) gallons of water in a 2-hour period, at least once each day.

**501.11.1.2.** If the sustained yield of the individual well or individual well system does not meet the total individual water supply system standard, sufficient storage shall be required. A combination of borehole capacity and/or a storage tank may be used to provide storage capacity.

**501.11.1.3** Volume information must be reported using the Well Completion Information form.

**501.11.2. Minimum Yield Requirements.**

**501.11.2.1.** 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 Department.

**501.11.2.2.** The criteria for approval shall be a minimum well yield of one (1) gallon per minute. If a new water supply well does not meet this requirement 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 Volume Standard in §501.11.1. The permittee may propose to construct additional wells in an attempt to meet the yield requirement.

**501.11.2.3.** For wells with yields of two (2) gallons per minute or less, a minimum of four hundred (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 two (2) and four (4) gallons per minute shall provide the storage capacity required to meet the individual Water Supply System Volume Standard described in §501.11.1.

**501.11.2.4.** Yield information must be reported using the Well Completion Information form.

**501.11.2.5.** 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.

## **501.12. CROSS CONNECTIONS.**

**501.12.1.** Every potable water distributing pipe shall be protected against cross connection with, or 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 practical to provide this minimum distance, the connection to the fixture, equipment, or appliance shall be equipped with a backflow prevention assembly.

**501.12.3.** For semi-public water supplies, the Department shall require a backflow prevention device be installed at any fixed potable water outlet to which a hose may be connected. The Department will note the presence of the device during the site inspection.

**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. WATER QUALITY.**

### **501.13.1. General.**

**501.13.1.1.** The water quality of all public water supplies shall be regulated by the Pennsylvania Safe Drinking Water Act, (35 P.S. 721.1 et seq.)

**501.13.1.2.** The water quality analysis for all individual and semi-public water supply wells shall be in compliance with this Section.

**501.13.1.3.** The water quality analysis for all second or additional wells or deepened wells shall be completed by the well contractor immediately after well construction and completion of the chlorination process.

**501.13.1.4.** Wells that have been modified must submit, at a minimum, water quality analysis for bacteria. However, additional water quality analysis may be required at the discretion of the Department.

**501.13.1.5.** All water samples to be tested must be drawn by a trained PA DEP certified laboratory employee or a well driller contractor or pump installation contractor licensed by the Department.

**501.13.1.6.** All water test results to be submitted to the Department must contain the following information: 1) permittee's name; 2) address of origin of sample; 3) township of origin of sample; 4) Well Permit number issued by the Department; 5) the name of the person who took the water sample; 6) statement indicating if the sample was treated or untreated.

**501.13.1.7.** An original laboratory analysis report of the water quality of a supply well will be accepted for final approval to use. Copies of the test results may be accepted if electronically transmitted from the lab directly to the Department.

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

**501.13.2. Water Quality for Individual and Semi-Public Water Supplies.**

**501.13.2.1. 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 Department verifying that the tests have been conducted by a laboratory approved by the PA DEP.

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

<u>Parameter</u>	<u>Limits</u>	<u>Units</u>
Total Coliform	<1 cfu/100	ml
Residual Chlorine	0	mg/LPpm*
Turbidity	5	NTU
Nitrate	10	mg/L as N
pH	5.5 to 8.5	-----
Arsenic	0.01	mg/L
Iron	0.3	mg/L
Manganese	0.05	mg/L
Chloride	250.0	mg/L
Total Dissolved Solids (TDS)	500	mg/L
MBAS	0.5	mg/L

\*All Microbiological samples must include a check for Residual Chlorine. The presence of Residual Chlorine will invalidate the Total Coliform results.

<u>Parameter</u>	<u>Limits</u>	<u>Units</u>
Volatile Organic Compound		mg/L
Benzene	0.005	mg/L
Carbon Tetrachloride	0.005	mg/L
O-Dichlorobenzene	0.6	mg/L
Para-Dichlorobenzene	0.075	mg/L
1,2-Dichloroethane	0.005	mg/L
1,1-Dichloroethylene	0.007	mg/L
cis-1,2-Dichloroethylene	0.07	mg/L
trans-1,2-Dichloroethylene	0.1	mg/L
Dichloromethane	0.005	mg/L
1,2-Dichloropropane	0.005	mg/L
Ethylbenzene	0.7	mg/L
Monochlorobenzene	0.1	mg/L
Styrene	0.1	mg/L
Tetrachloroethylene	0.005	mg/L
Toluene	1.0	mg/L
1,2,4-Trichlorobenzene	0.07	mg/L
1,1,1-Trichloroethane	0.2	mg/L
1,1,2-Trichloroethane	0.005	mg/L
Trichloroethylene	0.005	mg/L
Vinyl Chloride	0.002	mg/L
Xylenes (total)	10.0	mg/L

**501.13.2.2.1.** All water quality tests must be conducted for each category listed in §501.13.2.2 by a laboratory approved by the PA DEP.

**501.13.2.2.2.** The water supply should be run and purged sufficiently to clear the effects of the construction process and chlorination performed after the pump was installed. Failure to perform this step may result in unsatisfactory water quality analysis results.

**501.13.2.2.3.** Treatment of the water supply is required if Total Coliform, Turbidity, Nitrates + Nitrites, Arsenic or VOC exceed the limits in §501.13.2.2.

**501.13.2.2.4.** When the pH value is above 8.5, or below 5.5, treatment is required. If the pH value is between 6.5 and 5.5 treatment will be recommended.

**501.13.2.2.5.** If Iron, Manganese, pH, Chloride, or MBAS levels are in excess of the above listed standards in §501.13.2.2, treatment is recommended.

**501.13.2.2.6.** When a treatment unit has been installed to correct a condition requiring treatment (§501.13.2.2.3, or §501.13.2.2.4) the Department must conduct an inspection to verify the installation of the treatment unit(s), and note the function, make and model number of any installed treatment unit(s). Treatment units must be installed according to the manufacturer specifications.

**501.13.2.3.** 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. SPECIALIZED WELL CONSTRUCTION.**

### **501.14.1. Test Wells.**

**501.14.1.1.** Test wells require a permit and must meet the isolation distances and construction standards of §501.8 of these Rules and Regulations for water supply wells.

**501.14.1.2.** 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 §501.17 of these Rules and Regulations.

**501.14.1.3.** 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 §501.8 and §501.13 of these Rules and Regulations.

**501.14.1.4.** 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, a water quality analysis showing that the water meets the requirements of §501.13, and documentation that the supply well meets the individual supply system standard in §501.11.1 and the minimum yield requirements in §501.11.2.

**501.14.1.5.** Failure to comply with these Rules and Regulations regarding test wells may result in the initiation of legal action against the property owner by the Department.

### **501.14.2. MONITORING WELLS.**

#### **501.14.2.1. Permitting.**

**501.14.2.1.1.** 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 §501.8.1, of these Rules and Regulations. However, the construction of each monitoring well requires a construction permit issued by the Department. Each monitoring well must be designed to

minimize potential contamination of the aquifer and to maximize the information obtained from each installation.

**501.14.2.1.2.** Small diameter, direct push coring holes (sometimes referred to as “Geo-Probe holes”), intended to be open for a very short time are considered to be monitoring wells and do require a permit.

#### **501.14.2.2. Permit Applications.**

**501.14.2.2.1.** The Monitoring Well Application Required Information form must be submitted as part of the application for every monitoring well that will be permitted.

**501.14.2.2.2.** Every application for a monitoring well permit shall include a plot plan that accurately shows 1) the location of the proposed borehole; 2) a master plan showing all other existing monitoring wells on the parcel, with the permit number issued by the Department and project ID (e.g.: OW2, MW2 or RW2, etc.).

**501.14.2.2.3.** Small diameter, push core hole projects proposing single or multiple holes may combine all such coring holes on a specific, single parcel onto a single application and provide a master plan diagram showing the location of all coring holes created on that parcel. Holes on adjoining parcels will require a separate application and master plan diagram.

#### **501.14.2.3. Completion Paperwork.**

**501.14.2.3.1.** Completion information shall be submitted to the Department by the well driller within five (5) working days following the construction of each monitoring well or push core series on a single property. This will include applicable sections of the Well Completion Form. No yield information is required for these wells.

**501.14.2.3.2.** The Department must be alerted that a monitoring well has been constructed, and an appointment made so that they may GPS locate the borehole.

#### **501.14.2.4. Up-Keep, Reporting and Decommissioning.**

**501.14.2.4.1.** Continued up-keep, safe operation and maintenance, and eventual decommissioning of all monitoring wells or push core holes shall be the ultimate responsibility of the property owner.

**501.14.2.4.2.** If the monitoring well is owned by a permittee who is not the property owner, the property owner must be provided with an enforceable, written agreement acknowledging the responsibility of the permittee or his successors.

**501.14.2.4.3.** The permittee or assigned agent, as listed on the Monitoring Well Application Required Information form, shall be responsible to respond to the Department’s Annual Status Report of the operational status of the well. The response is required within ninety (90) days from receipt of the Monitoring Well Status Report letter from the Department.

**501.14.2.4.4.** When any monitoring well is no longer actively used, or it is determined that it will no longer be used or is no longer necessary, it must be decommissioned by the permittee or legal successors within thirty (30) days of that determination, and the Department must be provided with a report on the Well Decommissioning form, according to §501.17 of these Rules and Regulations.

**501.14.2.5. Non-Compliance.**

**501.14.2.5.1.** Failure to comply with the above Rules and Regulations relating to ownership, reporting, the operation and maintenance, or decommissioning of any monitoring well may result in legal action being initiated against the permittee and/or property owner by the Department.

**501.14.3. GEOTHERMAL WELLS.**

**501.14.3.1. Open-loop Geothermal Systems.**

**501.14.3.1.1.** Open-loop geothermal delivery wells and return each require a separate permit.

**501.14.3.1.2.** Open-loop geothermal delivery and return wells that depend on groundwater supplies for heating and cooling must meet all Rules and Regulations in §501.8.

**501.14.3.1.3.** Open-loop geothermal delivery well must be tested for all specified water quality standards listed in §501.13.2.2.

**501.14.3.1.4.** Open-loop geothermal delivery well will also be used as a drinking water supply, all water quality requirements in §501.13.2.2, must be met.

**501.14.3.1.5.** Open-loop geothermal wells systems must include a return well and may not discharge directly or indirectly into surface waters.

**501.14.3.1.6.** Open-loop geothermal return wells do not require water quality analysis.

**501.14.3.2. Closed-loop Geothermal Boreholes.**

**501.14.3.2.1. Permitting.**

**501.14.3.2.1.1.** Closed-loop geothermal boreholes shall be permitted in accordance with §501.7.

**501.14.3.2.1.2.** All Closed-loop geothermal boreholes that are part of the project may be included on a single application, and a single permit for the project will be issued. A master plot plan showing the numbered location of each borehole must be included. Fees are calculated based on the current fee schedule.

**501.14.3.2.1.3.** If a casing is intended to be left in the borehole as a permanent part of the final construction configuration the Department must be notified at the time the application is submitted.

**501.14.3.2.2. Location.**

**501.14.3.2.2.1.** 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:

<b><u>Water Related</u></b>	<b><u>Minimum Distance</u></b>
1. Delineated wetlands, flood plains lakes, ponds or other surface waters	10 feet
2. Rainwater pits and rain gardens	10 feet
3. Storm drains, retention basins storm water stabilization ponds	10 feet

  

<b><u>Sewage Related</u></b>	<b><u>Minimum Distance</u></b>
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

  

<b><u>Chemical Related</u></b>	<b><u>Minimum Distance</u></b>
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 greater than 1,000 gallons 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.	300 feet
3. Surface or subsurface containers or tanks of 1,000 gallons 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	As per US EPA

  

<b><u>Miscellaneous</u></b>	<b><u>Minimum Distance</u></b>
1. Property lines, all right-of-ways, easements	10 feet
2. Any other source of pollution	As approved

**501.14.3.2.2.2.** Any proposed deviation from the isolation distances prescribed in §501.14.3.2.2.1, above must be approved in writing by the Department, with reasons stated for such deviation.

**501.14.3.2.3. Construction.**

**501.14.3.2.3.1.** Casings are not required for closed-loop geothermal boreholes that are grouted from bottom to top with bentonite grouting material. Casings are required for any installation that does not include bentonite grout from bottom to top of the borehole. There are specific conditions required for each method of construction.

**501.14.3.2.3.2.** 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 cannot be affected.

**501.14.3.2.3.2.1.** Boreholes must be vertical and may not be drilled at any angle. Only vertical closed-loop geothermal boreholes require a permit. Horizontal geothermal loop installations do not require a permit.

**501.14.3.2.3.3.** The well contractor shall be responsible for insuring that the borehole is drilled in the permitted location. The well contractor shall be responsible for the final grouting after the pipe loop has been installed.

**501.14.3.2.3.4. Casings Included in the Finished Borehole.**

**501.14.3.2.3.4.1.** Casings may be necessary to hold the borehole open during the drilling process.

**501.14.3.2.3.4.2.** When a casing is left in the borehole as a permanent part of the final construction configuration, then the casing shall be extended into bedrock as if constructing a water supply well. Grouting the annular space with a grout as specified in §501.8.2.3.3 is required.

**501.14.3.2.3.4.3.** 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 and the pipe manufacturer, and that the finished borehole is properly grouted or backfilled.

**501.14.3.2.3.4.4.** Whenever material other than bentonite grout is used as the backfill material, the borehole must meet the isolation distances required for water supply wells in §501.8.1.2.

**501.14.3.2.3.4.5.** Whenever material other than bentonite grout is the backfill material, the contractor must grout the borehole with bentonite from fifteen (15) feet below the bottom of the casing to the surface.

**501.14.3.2.3.4.6.** The required grouting material for these boreholes shall be sodium bentonite. The bentonite shall conform to the grouting standard specified in §501.8.2.3.3. The use of thermally enhanced bentonite grout is allowed.

#### **501.14.3.2.3.5. Casings Not Included in the finished Borehole.**

**501.14.3.2.3.5.1.** Closed-loop geothermal boreholes that do not include a casing as part of the final construction configuration shall be grouted from bottom to top. Sands and gravels may not be used as backfill material.

**501.14.3.2.3.5.2.** 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 and the pipe manufacturer, and that the finished borehole is properly grouted.

**501.14.3.2.3.5.3.** Pipe loops used in closed-loop geothermal boreholes shall be made of materials acceptable to the International Ground Source Heat Pump Association.

**501.14.3.2.3.5.4.** Grouting shall be placed using a tremie pipe.

**501.14.3.2.3.5.5.** The required grouting material for these boreholes shall be sodium bentonite. The bentonite shall conform to the grouting standard specified in §501.8.2.3.3. The use of thermally enhanced bentonite grout is allowed.

#### **501.14.4. AGRICULTURAL WATER SUPPLIES.**

**501.14.4.1.** Agricultural water wells must meet all isolation requirements as noted in §501.8.1.2.

**501.14.4.2.** 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.

**501.14.4.3.** Wells used for watering dairy livestock should comply with all Pennsylvania Department of Agriculture requirements and best management practices.

**501.14.4.4.** Agricultural wells may not have dual use providing water for human consumption unless the well has been approved for human consumption.

**501.14.4.5.** An agricultural water supply well may be converted to use as a potable supply for human consumption by following the requirements of §501.14.1, (relating to the conversion of Test Wells) only if it meets all of the isolation distance requirements of §501.8.1.2, and §501.8.2.3, (relating to proper grouting).

#### **501.15. GROUND WATER AREAS OF CONCERN.**

**501.15.1.** No new individual or public water supply well, test well, geothermal well or agricultural water supply well may be permitted, and no new individual or public water supply well, test well, geothermal well or agricultural water supply well may be constructed, within the delineated Plume Area of a contaminated site unless the United States Environmental Protection Agency (US EPA) or

the PA DEP agree and provide written documentation that installation of the well will not have any impact on the Plume or remediation effort.

**501.15.2.** If no other source of water can be supplied where there is a documented need within an identified plume area, the Department will work directly with US EPA or PA DEP to evaluate the options available and the potential risks.

**501.15.3.** If a well is acceptable to US EPA or PA DEP within an identified plume area, the Department will require testing of the new well 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 US EPA or PA DEP, treatment of the water supply will be required until such time as analyses indicate contaminants to be below standards set forth by US EPA or PA DEP. A PA DEP approved laboratory must conduct all water tests. All test results must be submitted to the Department.

**501.15.4..** Whenever a new water supply well is drilled within a plume area the well owner(s) shall be responsible for testing their well water on an annual basis for the contaminants known to be associated with the specific site.

**501.15.5.** In instances when the US EPA and/or the 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, the Department may rely upon said documentation to deny the well permit.

**501.15.6.** Water supply or agricultural wells drilled in areas adjacent to active or inactive permitted landfills sites shall meet the isolation distance requirements in §501.8.1.2, Chemical Related.

## **501.16. WATER SOURCE REPLACEMENTS**

**501.16.1.** 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 §501.17, Decommissioning of Wells, of these Rules and Regulations. No well shall exist in an abandoned state.

**501.16.2.** 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 §501.4.1, shall be decommissioned according to the requirements of §501.17, Decommissioning of Wells.

**501.16.3.** 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 Department. Wells maintained for landscaping use must be fitted with a backflow prevention device.

**501.16.4.** 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 the Department for approval to continue to maintain the well, and has received written approval to maintain the well from the Department. 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.

**501.16.5.** 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.

## **501.17. DECOMMISSIONING OF WELLS**

**501.17.1.** The Department must be notified in writing within thirty (30) days by a well contractor and/or property owner when a well meets the criteria of an abandoned well under §501.4.1, of these Rules and Regulations. All wells considered to be abandoned shall be filled and sealed by licensed well contractor licensed by the Department in accordance with the procedures for decommissioning listed in this section. Written notification and proper documentation of decommissioning shall be submitted to the Department on the Well Decommissioning Form within thirty (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 §501.4.1, 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 and the materials used shall be filed with the Department.

**501.17.2.** Decommissioning shall be completed in accordance with the applicable standards of the American Water Works Association, as periodically revised. These standards currently include the following:

**501.17.3. Sealing Requirements.** Before sealing operations are initiated, the borehole or well shall be measured for depth and checked and cleared of obstruction.

**501.17.4. Casing Removal.** Removal of the casing from some boreholes may be necessary to ensure placement of an effective seal.

**501.17.5. Exception to Removing Casing.** If a casing cannot be readily removed, it may need to be perforated to ensure the proper sealing required.

**501.17.6. Sealing Material and Placement.** Concrete, cement grout, bentonite or sealing clay shall be used as primary sealing materials and shall be placed from bottom to top by a method that will prevent segregation or dilution of materials.

**501.17.7. Records of Decommissioning Procedures.** Complete, accurate records shall be kept of the entire decommissioning procedure.

**501.17.8. Quantity of Materials Used.** The quantity of sealing material used shall be recorded.

**501.17.9. Changes Recorded.** Any changes in the well made during the sealing, such as perforating the casing, or removal of casings, shall be recorded.

**CERTIFICATION**

COMMONWEALTH OF PENNSYLVANIA  
COUNTY OF CHESTER    ss

I, Jeanne E. Casner, MPH, PMP, Secretary of the Chester County Board of Health, hereby do certify the within to be a true and correct copy. In witness whereof I have hereunto set my hand this twenty-fourth day of September, 2014.

Jeanne E. Casner, M.P.H., P.M.P.

SEAL

Effective Close of Business: Wednesday, November 12, 2014