

**Lincoln County Health Department Rules Regulating
the Construction, Repair, and Abandonment of Private
Wells.**

Adopted _____ by the Lincoln County Board of Health
Effective Date of _____

SECTION I - GENERAL PROVISIONS

(a) Authorization - The Lincoln County Health Department is authorized under the provisions of Chapter 130A-39 and Chapter 87-96 of the General Statutes of North Carolina to adopt appropriate rules and regulations for the protection of the public health.

(b) Interim Applicability – These regulations will remain in effect until Ratified House Bill 2873 and technical corrections Senate Bill 1523 Sections 50.(a),(b) and (C) and Section 51 go into effect July 1, 2008. At that time these rules will be amended by the Lincoln County Board of Health to comply with the statutes and rules. Any existing local rule that is more stringent may be readopted in accordance with 130A-39 and G.S. 87-96.

(c) Purpose – It is the finding of the Lincoln County Board of Health that public health and groundwater resources within the entire geographical area of Lincoln County are vulnerable to groundwater pollution from improperly located, constructed, operated, altered, or abandoned private drinking water wells. Therefore, in order to insure reasonable protection of the groundwater resources and consistent with the responsibility to protect and advance the public health, it is declared to be the policy of the Lincoln County Board of Health to require that the location, construction, repair and abandonment of private drinking water wells conform to such reasonable standards and requirements as may be necessary to protect the public health and groundwater resources.

(d) Scope - No person shall construct, repair, or abandon, or cause to be constructed, repaired or abandoned any well contrary to the provisions of these rules and standards. Previously adopted procedures and requirements of the Lincoln County Health Department are superseded by these rules and standards. All wells constructed on or after _____ must have a valid well permit prior to construction.

(e) Conflict with Other Laws and Regulations - The provisions of any federal, state or municipal law or regulation establishing standards affording greater protection to the public welfare, safety, health, and the groundwater resources shall prevail within the jurisdiction of such agency or municipality over standards established by these rules as authorized under the provisions of Chapter 87, Section 96 of the General Statutes of North Carolina.

(f) Penalties - Any person who willfully violates any provision of these rules, or any order issued pursuant thereto, shall be guilty of a misdemeanor punishable by fine or imprisonment not to exceed thirty (30) days and/or \$5,000.00. As provided by G.S. 130A-18, the Health Director may also institute an action in a court of general

jurisdiction for injunctive relief. All other remedies provided by state law, including Part 2 of Article 1 of Chapter 130A of the North Carolina General Statutes shall be available to the Health Director. Remedies provided in these rules are cumulative and non-exclusive.

(g) Inspection - Before being used to supply water for human consumption, all newly constructed wells shall be inspected and found to comply with the provisions of these rules. Any repairs to a well, excluding pump maintenance or replacement, shall be inspected by the Health Director before use. The Health Director shall make these inspections as soon as practicable after he receives notice that an installation or repair has been made. Emergency repairs that are made outside normal working hours of the Health Director, i.e., nights, weekends, and holidays, shall be inspected on the next regular working day of the Health Department or as soon as practicable thereafter.

(h) Appeals - Any person aggrieved by any action of the Health Department representative with regard to wells shall first confer with the local Health Director within 30 days of the challenged action. The Health Director may affirm or reverse the original decision of the representative. Any person dissatisfied with the Health Director's decision may appeal to the Board of Health. The aggrieved person shall give written notice of appeals to the Health Director within thirty (30) days after the decision of the Health Director. The notice of appeal shall set forth the person's grievances. Upon receiving this notice the Health Director shall, within five (5) working days, transmit to the chairman of the Board of Health the notice and all other pertinent papers. The Board shall hold a hearing within fifteen (15) days after it receives the notice of appeal. The Board shall give the appellant no less than ten days notice of the date, time, and place of the hearing. Any party may appear in person or by agent or attorney. No person shall take any action prohibited by the Health Department until there is a final resolution of the grievance. On appeal the Board shall have authority to affirm, modify or reverse the challenged action. The Board of Health shall issue a concise written decision setting forth its finding and conclusions with all deliberate speed after the hearing. A person who wishes to contest a decision of the local board of health shall have a right of appeal to the district court having jurisdiction within 30 days after the date of the decision by the board.

SECTION II - DEFINITIONS

The definitions contained in 15A NCAC 020C.0102 are included as if fully set forth herein, which are hereby incorporated by reference including any subsequent amendments and editions. The following definitions are included to supplement the definitions in 15A NCAC 02C .0102:

(1) "**Abandoned Well**" means a well whose use or construction has been discontinued, or which is in such a state of disrepair that continued use for obtaining groundwater or other useful purpose is impracticable.

(a) "**Abandon**" means to discontinue the use of and seal the well according to the requirements of Section VII.

(2) "**Access port vent**" means an opening in the well casing or wellhead installed for the primary purpose of determining the water level in the well.

(3) **Addition** means any structure that is constructed, altered or placed on property that contains one or more wells. This would not include replacement of existing equipment within the existing footprint of a structure and addresses only those situations for which a building permit is required.

(4) "**Agent**" means any person who by mutual and legal agreement with a well owner has authority to act in his behalf in executing applications for permits. The agent authorized may be either a general agent or a limited agent to do one particular act.

(5) "**Aquifer**" means a geological formation, group of formations, or part of a formation that will yield usable quantities of water to wells.

(6) "**Authorization to Construct**" means a permit for the construction of an on-site ground absorption sewage disposal system.

(7) "**Artisan Well**" means a well tapping a confined or artisan aquifer.

(8) "**ASTM**" means the American Society for Testing and Materials.

(9) "**Board of Health**" and "the **Board**" means the Lincoln County Board of Health or its official representative.

(10) "**Casing**" means pipe or tubing constructed of specified materials and having specified dimensions and weight, that is installed in a borehole, during or after completion of the borehole, to support the side of the hole and thereby prevent caving, to allow completion of a well, to prevent formation material from entering the well, to prevent the loss of drilling fluids into permeable formations, and/or prevent entry of contamination.

(11) "**Clay**" means a substance comprised of natural, inorganic, finely ground crystalline mineral fragments which, when mixed with water, forms a pasty, moldable mass that preserves its shape when air dried.

(12) "**Consolidated Rock**" means rock that is firm and coherent, solidified or cemented and that has not been decomposed by weathering. Examples are granite, gneiss, limestone, slate, or sandstone.

(13) **Constructions Permit** means a well construction permit issued by the Lincoln County Health Department authorizing or allowing the construction of any private drinking water well as defined in these rules.

(14) "**Construction of Wells**" includes all acts necessary to construct wells for any intended use, including the location and excavation of the well, placement of casings, grouting, screens, fittings, development and testing.

(15) "**Contamination**" means the introduction of foreign materials of such nature, quality, and quantity into the groundwater as to exceed the groundwater quality standards specified.

(16) "**Designed Capacity**" shall mean that capacity that is equal to the yield that is specified prior to the construction of the well.

(17) "**Domestic Use**" means use of water for drinking, bathing (household purpose), livestock or gardens.

(18) "**Dry Well**" means a hole fifteen (15) feet or deeper that does not penetrate the water table, or aquifer, or that produces an inadequate flow of water to supply the intended use.

(19) "**Formation Material**" means naturally occurring material generated during the drilling process that is composed of sands, silts, clays or fragments of rock and which is not in a dissolved state.

(20) "**Grout**" shall mean and include the following:

(a) "**Neat cement grout**" means a mixture of not more than six gallons of clear, potable water to one 94-pound bag of Portland cement. Up to five percent, by weight, of bentonite clay may be used to improve flow and reduce shrinkage.

(b) "**Sand cement grout**" means a mixture of not more than two parts sand and one part cement and not more than six gallons of clear water per 94 pound bag of Portland cement.

(c) "**Concrete grout**" means a mixture of not more than two parts gravel to one part cement and not more than six gallons of clear, potable water per 94 pound bag of Portland cement. One hundred percent of the gravel must pass through a one-half inch mesh screen.

(d) "**Gravel cement grout, sand cement grout or rock cutting cement grout**" means a mixture of not more than two parts gravel and sand or rock cuttings to one part cement and not more than six gallons of clear, potable water per 94 pound bag of Portland cement.

(e) "**Bentonite grout**" means the mixture of no less than one and one-half pounds of commercial bentonite with sufficient clear, potable water to produce a grout weighing no less than 9.4 pounds per gallon of mixture. Non-organic, non-toxic substances may be added to improve particle distribution and pumpability and only be used in those instances where specifically approved in this Rule and only as recommended by the manufacturer.

(f) "**Specialty grout**" means a mixture of non-organic, non-toxic materials with characteristics of expansion, chemical-resistance, rate or heat of hydration, viscosity, density or temperature-sensitivity applicable to specific grouting requirements. Specialty grouts may not be used without prior approval by the Health Director. Approval of the use of specialty grouts shall be based on a demonstration that the mixture will not adversely impact human health or the environment.

(21) "**Health Department**" and "the **Department**" means the Lincoln County Health Department.

(22) "**Health Director**" and "the **Director**" means the Director of the Lincoln County Health Department or his authorized representative.

(23) "**Installing Pumps and Pumping Equipment**" means placing and preparing pumps and pumping equipment for operation, including all construction involved in making any entrance(s) to the well and establishing seals.

(24) "**Liner Pipe**" means pipe that is installed inside a completed and cased well for the purpose of preventing the entrance of contamination into the well or for repairing ruptured or punctured casing or screens.

(25) "**Monitoring well**" means any well constructed for the primary purpose of obtaining samples of groundwater or other liquids for examination or testing, or the observation or measurement of groundwater levels. This definition excludes lysimeters, tensiometers, and other devices used to investigate the characteristics of the unsaturated zone but includes piezometers, a type of monitor well constructed solely for the purpose of determining groundwater levels.

(26) "**Non-Potable water**" means groundwater that contains foreign materials that exceed the groundwater quality standards specified.

(27) "Owner" means any person who holds the fee or other property rights in the well being constructed. A well is real property and its construction on land creates a presumption that the owner of the land also owns the well, in the absence of contrary agreement in writing.

(28) "Permit" means a written permit issued by the Health Director permitting the construction or repair of any well as defined in these rules.

(29) "Person" means any and all persons; including individuals, firms, partnerships, associations, public or private institutions, municipalities or political subdivisions, governmental agencies, or private or public corporations organized or existing under the laws of this state or of any other state or country.

(30) "Pitless adapters" or "pitless units" are devices specifically manufactured to the standards specified under 15A NCAC 2C .0107(l)(5) for the purpose of allowing a subsurface lateral connection between a well and plumbing appurtenances.

(31) Plat means a property survey prepared by a registered land surveyor, drawn to a scale of one inch equals no more than 60 feet, that includes: the specific location of the proposed facility and appurtenances, the site for the proposed wastewater system, and the location of water supplies and surface waters. "Plat" also means, for subdivision lots approved by the local planning authority and recorded with the county register of deeds, a copy of the recorded subdivisions plat that is accompanied by a site plan that is drawn to scale.

(32) "Polluted water" means water containing organic or other contaminants of such type and quantity as to render it unsafe, harmful, or unsuitable for human consumption.

(33) Private Drinking Water Well means any excavation that is cored, bored, drilled, jetted, dug, or otherwise constructed to obtain groundwater for human consumption and that serves or is proposed to serve 14 or fewer service connections or that serves or is proposed to serve 24 or fewer individuals. The term "private drinking water well" includes a well that supplies drinking water to a transient noncommunity water system as defined in 40 Code of Federal Regulations 141.2 (1 July 2003 Edition).

(34) "Public Water System" means a system for the provision to the public of piped water for human consumption if the system serves 15 or more service connections or regularly serves 25 or more individuals. The term includes:

(a) Any collection, treatment, storage, and distribution facility under control of the operator of such system and used primarily in connection with such

system; and

(b) Any collection of pre-treatment storage facility not under the control of the operator of the system that is used primarily in connection with such system.

A public water system is either a "community water system" or a "non-community water system".

"Community Water System (CWS) " means a public water system that serves 15 or more service connections or regularly served at least 25 year-round residents.

"Non-Community Water System" means a public water system that is not a community water system.

"Non-transient non-community water system (NTNC)" means a public water system that is not a community water system and that regularly serves at least 25 of the same persons over 6 months per year. (i.e. schools, day cares, office buildings, etc.)

"Transient non-community water system (TNC)" means a non-community water system that does not regularly serve at least 25 of the same persons over six months per year. (ie. service stations, campgrounds, restaurants, motels, stores, recreation areas, churches, etc.)

(35) "Pumps and Pumping Equipment" means the well seal and any other equipment or materials used or intended to be used for withdrawing or obtaining groundwater.

(36) "Recovery well" means any well constructed for the purpose of removing contaminated groundwater or other liquids from the subsurface.

(37) "Repair" means work involved in deepening or changing depths, reaming, sealing, installing, perforating, screening or cleaning, acidizing, or redeveloping a well excavation. This shall not apply to pump maintenance or replacement, however, pump maintenance or replacement will be followed by disinfection of the water system and proper replacement of the seal.

(38) Repair Permit means a well repair permit issued by the Lincoln County Health Department authorizing or allowing the repair of any private drinking water well as defined in these rules.

(39) Saprolite means the body of porous material formed in place by weathering of igneous or metamorphic rocks. Saprolite has a massive, rock-controlled structure, and retains the fabric (arrangement of minerals) of its parent rock in at

least 50 percent of its volume. Saprolite can be dug with hand tools. The lower limit of saprolite is “rock” and its upper limit is “soil” or the land surface. The term “saprolite” does not include sedimentary parent materials.

(40) “Settleable Solids” means the volume of solid particles in a well mixed one-liter sample which will settle out of suspension, in the bottom of an Imhoff Cone after one hour.

(41) Site Plan means a drawing not necessarily drawn to scale that shows the existing and proposed property lines with dimensions, the location of the facility and appurtenances, the site for the proposed wastewater system, and the location of water supplies and surface waters.

(42) "Specific Capacity" means the yield of the well expressed in gallons per minute per foot of draw-down of the water level (gpm/ft.-dd) per unit of time.

(43) "Static Water Level" means the level at which the water stands in the well when the well is not being pumped and is expressed as the distance from a fixed reference point to the water level in the well.

(44) “Suspended Solids” means the weight of those solid particles in a sample, which are retained by a standard glass microfiber filter, with pore openings of one and one-half microns, when dried at a temperature of 103 – 105 °Fahrenheit.

(45) "Temporary Well" means a well, other than a water supply well that is constructed to determine aquifer characteristics, and which will be properly abandoned or converted to a permanent well within five days (120 hours) of the completion of drilling of the borehole.

(46) "Unconsolidated Rock" means those rock formations that are not solid i.e., sand, clay, shell, saprolite, or decaying rock.

(47) “Vent” means an opening in the well casing or wellhead, installed for the purpose of allowing changes in the water level in a well due to natural atmospheric changes or to pumping. A vent can also serve as an access port.

(48) "Water Supply" means any source *water utilized for potable purposes.*

(49) "Water Supply System" means pump and pipe used in connection with or pertaining to the operation of a water supply, including pumps, pipes, pressure tanks, and fittings.

(50) "Well" means any excavation that is cored, bored, drilled, jetted, dug, or otherwise constructed for the purpose of locating, testing, developing, draining or recharging any groundwater reservoirs or aquifer, or that may control, divert, or otherwise cause the movement of water from or into any aquifer.

(51) "Well Capacity" means the maximum quantity of water that a well will yield continuously as determined by methods outlines in 15A NCAC 2C .0110.

(52) Well Construction includes all acts necessary to construct wells for any intended use, including the location and excavation of the well, placement of casings, grouting, screens, and fittings, development and testing.

(53) Well Contractor means any person in trade or business who undertakes to perform a well contractor activity or who undertakes to personally supervise or personally manage the performance of a well contractor activity on the person's own behalf or for any person, firm, or corporation.

(54) Well Contractor Activity means the construction, installation, repair, alteration or abandonment of any well

(55)"Well Driller, Driller, or Water-Well Contractor" means any person, firm or corporation engaged in the business of constructing wells.

(56)"Well Head" means the upper terminal of the well including adapters, ports, valve seals, and other attachments.

(57) "Well Seal" means an approved arrangement or device used to cap a well or to establish and maintain a junction between the casing curbing of a well and the piping or equipment installed therein, the purpose or function of which is to prevent pollutants from entering the well at the upper terminal.

(58) "Well Site" means the permitted well location. Each individually attempted well is considered a separate well site.

(59) "Well System" means two or more cross-connected wells.

(60) "Yield" means the amount of water or other fluid that can be extracted from a well under a given set of conditions.

SECTION III – APPLICATIONS, PERMITS AND CONSTRUCTION

The provisions of 15A NCAC 02C.0105 are not adopted by reference, but as statewide regulations of The North Carolina Environmental Management Commission, they remain in effect in Lincoln County. The following requirements are adopted:

(a) Application for Construction Permit

An application for a well construction permit or a well repair permit shall be submitted to the Lincoln County Health Department by a property owner or the property owner's authorized agent who intends to construct, repair, alter or

abandon a private drinking water well.

The application shall include but not be limited to the following:

- (1) Name, address and phone number of the proposed well property owner and/or authorized agent.
- (2) Address and parcel identification number of the property where the proposed well is to be located.
- (3) A (plat) site plan as defined in these regulations. The (plat) site plan shall also include: all easements, including utility easements, all structures or proposed structures, including but not limited to a residence, decks, porches, pools, driveways, out buildings, existing or proposed wastewater systems, existing or proposed wells, springs, or water lines, any surface waters or designated wetlands, chemical or petroleum storage tanks above or below ground.
- (4) Other information deemed necessary by the Health Director.

(b) Permitting

No person shall commence with the construction of a private water drinking well without first obtaining a well construction permit from the Health Department. No person shall commence with the repair, alteration, or abandonment of a private drinking water well without first obtaining a well repair permit from the Health Department.

- (1) Prior to issuing a well construction permit, the Health Department shall conduct a field investigation to evaluate the site on which a private drinking water well is proposed to be located. A well construction permit shall be issued, after determining that a site can be permitted for a well, meeting the provisions of these rules.
- (2) A well construction permit or repair permit shall be valid for a period of five years except that the Health Department may revoke a permit at any time if it determines that there has been a material change in any fact or circumstance upon which the permit is issued. The validity of a construction permit or a repair permit shall not be affected by a change in ownership of the site on which a private drinking water well is proposed to be located. The Health Department may suspend or revoke any permits issued upon a determination that the provisions of these regulations have been violated. When a permit has become invalid, the installation shall not commence or be completed until a new permit has been obtained.
- (3) No residence, place of business or place of public assembly shall be occupied, nor shall any well be placed into use until the Health Department validates that the water supply well is in compliance with these rules and all conditions prescribed by the Well Permit have been met.
- (4) If there is an improperly abandoned well(s) on the site, the construction permit shall be conditioned upon permanent abandonment in accordance with 15A NCAC 2C .0113 of any improperly abandoned

well(s).

When permits pertaining to the property where the proposed well is to be located are issued by other agencies for any type of well not covered by these regulations, the property owner must file a copy of that permit with the Health Department within 30 days from the date of issuance.

(c) Registration

The provisions of 15A NCAC 02C.0103 are not adopted by reference, but as statewide regulations of the North Carolina Environmental Management Commission, they remain in effect in Lincoln County. The following requirements are adopted:

- (1) All persons engaging in well contractor activities, involving private drinking water wells in Lincoln County shall register annually with the Health Department.
- (2) Registrations shall be renewed from January 1 to January 31 of each year. The applicant shall submit at least the following information:
 - Name
 - Name of Business
 - Address
 - Telephone Numbers
 - Names of certified well contractors employed and certification number.
- (3) A person seeking registration shall complete and submit an application form provided by the Health Department.
- (4) All persons to be registered as a well contractor in Lincoln County must be certified in accordance with 15A NCAC 27, Well Contractor Certification Rules, Sections .0100 - .0900 (Criteria and Standards Applicable to Well Contractor Certification)

(d) Water Sampler Registration

- (1) With the exception of representatives of the Department of Environment and Natural Resources, every person collecting drinking water for the purpose of sampling and testing from newly constructed private drinking water wells shall register annually with the Lincoln County Health Department. Samplers will be limited to representatives of the Lincoln County Health Department, representatives of the Department of Environment and Natural Resources, authorized representatives of a certified laboratory, registered sanitarians, certified well operators or others as approved by the Lincoln County Health Department.
- (2) A person seeking registration shall complete and submit an application

form provided by the Health Department from January 1 to January 31 of each year. Upon submitting a properly completed application form, the applicant will be registered. The applicant shall submit at least the following information:

- Name
- Name of Business
- Address
- Telephone Numbers
- Names of employees collecting samples

SECTION IV - STANDARDS OF CONSTRUCTION

(a) Location

The provisions contained in 15A NCAC 02C . 0107 Standards of Construction: Water-Supply Wells, are hereby incorporated by reference.

- 1.** No well shall be located within the 50-year flood plain. Wells located within a 100-year flood plain, but beyond the 50-year flood plain shall be constructed in such a manner that the well head is completed 12 inches above the 100-year flood plain and the entire length of the casing shall be grouted with an approved grout material.
- 2.** Private well water supplies shall be located a minimum horizontal distance of 50 feet from any watertight sewer line (such as cast iron pipes with leaded joints) except where it is not feasible to obtain this distance. Because of lot size or other fixed conditions, the horizontal distance shall be the maximum feasible distance, but in no case shall be less than 25 feet. For all public water supplies, the well shall be located at least 100 feet from any sewer or other potential source of pollution unless the sewer is constructed of materials and joints that are equivalent to water main standards, in which case the sewer shall be at least 50 feet from the well.
- 3.** For Community Water Supplies, the well shall be located on a lot so that the area within 100 feet of the well shall be owned or controlled by the person supplying the water. Variances in the well lot area may be permitted only by a representative of the Division of Environmental Health, Public Water Supply Section where emergency conditions warrant.
- 4.** For all Public Water Systems, a minimum horizontal distance of 100 feet shall be maintained from any ground absorption sewage disposal system and any source of potential pollution or contamination.
- 5.** The minimum horizontal separation distance between a well and an existing septic tank, drainfield, repair area or area permitted for an on-site wastewater system that has not been installed and a designated repair area

for that system shall be 100 feet. For a well serving a single-family dwelling where lot size or other fixed conditions preclude the separation distances specified above, the required horizontal separation distances shall be the maximum possible but shall in no case be less than 50 feet between a well and a septic tank, drainfield, repair or area permitted for an on-site wastewater system that has not been installed and a designated repair area for that system.

(b) In addition to the standards incorporated by reference above, all minimum horizontal separation distances required in (a-5) above and shall apply to the following:

1. Any addition or expansion or replacement of existing structures, including but not limited to a residence, mobile home, decks, porches, pools, driveways and out buildings, and septic systems, drainfields and repair areas.
2. New or proposed structures, including but not limited to a residence, mobile home, decks, porches, pools, driveways and out buildings and septic systems, drainfield and repair areas.
3. The minimum horizontal separation distance shall be 100 feet between a well and an existing on-site wastewater system installed in saprolite and a proposed on-site wastewater system for which an improvement permit has been issued and which is to be installed in saprolite, including any repair area designated for that system that has been permitted to be installed in saprolite.
4. The minimum horizontal separation distance shall be 50 feet between a well and a chemical or petroleum underground storage tank regulated under 15A NCAC 02N, which provides secondary containment.
5. The minimum horizontal separation distance shall be 100 feet between a well and a chemical or petroleum underground storage tank regulated under 15A NCAC 02N, which does not provide secondary containment.
6. The minimum horizontal separation distance shall be 100 feet between a well and a spray or surface drip irrigation site or any other site as defined in 15A NCAC 02T.
7. For Private Well water supplies, a minimum horizontal distance of 25 feet shall be maintained from any building foundation.
8. All wells other than community wells shall be located a minimum

horizontal distance of 10 feet from a property boundary.

9. All wells meeting the definition of a "private well water supply" shall also meet the location rule for minimum horizontal separation distance as stated in "Section .0107 (a) Location" of the N.C. Department of Environment and Natural Resources, Division of Water Quality's Well construction Standards Title 15A Subchapter 2C.

SUMMARY TABLE OF REQUIRED WELL SETBACKS

Septic tank, Septic Pump Tank, septic Drainfield, Septic Repair Area, or any other portion of a septic system.	100ft.
Other subsurface ground absorption waste disposal system	100ft.
Industrial or municipal sludge-spreading or wastewater-irrigation sites	100ft.
Water-tight sewage or liquid-waste collection or transfer facility	50ft.
Other sewage and liquid-waste collection or transfer facility	100ft.
Cesspools and privies	100ft.
Animal feedlots or manure piles	100ft.
Fertilizer, pesticide, herbicide or other chemical storage areas	100ft.
Non-hazardous waste storage, treatment or disposal lagoons	100ft.
Sanitary landfills	500ft.
Other non-hazardous solid waste landfills, such as Land Clearing and Inert Debris (LCID) landfills	100ft.
Animal barns	100ft.
Building foundations, excluding the foundation of a structure housing the well head	25ft.
Surface water bodies which act as sources of groundwater recharge, such as ponds, lakes and reservoirs	50ft.
All other surfaces water bodies, such as brooks, creeks, streams, rivers, springs, sounds, bays and tidal estuaries	25ft.
Chemical or petroleum fuel underground storage tanks regulated under 15A NCAC 2N: with secondary containment	50ft.

Chemical or petroleum fuel underground storage tanks regulated under 15A NCAC 2N: without secondary containment	100ft.
Existing wells	25 ft.
Grave dated before January 01,1975	100ft.
Grave dated after January 01,1975	50 ft.
Cemeteries	100ft.
Above ground or underground storage tanks which contain petroleum fuels used for heating equipment, boilers or furnaces	50ft.
All other potential sources of groundwater contamination	50ft.

For a well serving **one single-family dwelling** where lot size or other fixed conditions preclude the separation distances specified above, the required horizontal separation distances shall be the maximum possible but shall in no case be less than the following:

Septic tank, Septic Pump Tank, septic Drainfield, Septic Repair Area, or any other portion of a septic system.	50ft.
Water-tight sewage or liquid-waste collection or transfer facility	25ft.
Cesspool or privies	50ft.
Animal barns	50ft.

10. The property owner or his agent must notify the Health Department prior to well construction if any of the following occur:

- The separation criteria specified in 15A NCAC 02C .0107 cannot be met.
- The residence or business is relocated other than originally intended.
- The use of the building is changed from the use originally permitted.
- There is a need to install the septic system in an area other than indicated on the permit.
- Landscaping changes have been made that affect site drainage.
- There are current or pending restrictions regarding groundwater use.
- The water source for any well intended for domestic use is adjacent

to any water-bearing zone suspected or known to be contaminated.

11. All wells shall be located at a site that permits access for maintenance, repair, treatment, testing, and such other attention to the well as may be necessary.

12. The well site for Public water systems shall be graded or sloped so that surface water is diverted away from the well.

13. In the event that the dwelling, building, or any other structure is expanded, or added in the vicinity of the well, required setbacks shall be maintained from the well. This shall include septic systems and all other applications and portions of a dwelling, or structure as well.

14. The well contractor shall maintain a copy of the well construction permit on the job site at all times during the construction, repair or abandonment of the well. The well contractor shall be responsible for meeting all siting and construction standards assuring all required setbacks and separations are met.

15. The well contractor, owner or agent shall not commence any well construction within fifty (50) feet of a utility easement without the easement and utility clearly located and marked by the utility owner. The well contractor, owner or agent must contact North Carolina One Call Center, Inc. or other utility representatives designated to receive written or oral notice of intent to excavate in accordance with G.S. 87-110(a), to have the easement and utility clearly located and marked.

16. Upon completion of construction of a private drinking water well or repair of a private drinking water well for which a permit is required under this section, the Health Department shall inspect the well to determine whether it was constructed or repaired in compliance with the construction permit or repair permit. Prior to the issuance of a certificate of completion, the Health Department shall: verify that the well was constructed in the designated area according to the well construction permit, inspect the grout and the annulus before the grout is placed around the casing and observe as the grout is placed around the casing, inspect the well head after the well seal is in place and obtain a well construction record from the Certified Well Contractor. No person shall place a private drinking water well into service without first having obtained a certificate of completion. It shall be the duty of the builder, well contractor or the homeowner, as needed, to provide assistance when necessary for the completion of these requirements.

17. No person shall allow permanent electrical service to a residence, place of business or place of public assembly upon construction, location or

relocation until the official electrical inspector with jurisdiction as provided in General Statutes (GS) 143-143.2 certifies to the electrical supplier that the required well system Certification of Completion has been obtained. Replacement wells are exempt from the above provision. Replacement wells must meet all other provisions of these regulations.

(c) Source of Water

(1) The source of water for any well intended for domestic use shall not be from a water bearing zone or aquifer that is known to be contaminated.

(2) The source shall be at least 20 feet below land surface.

(d) Drilling Fluid and Additions

Drilling Fluids and Additives shall not contain organic or toxic substances or include water obtained from surface water bodies or water from a non-potable supply and may be comprised only of the formational material encountered during drilling or materials manufactured specifically for the purpose of borehole conditioning or water well construction.

(e) Casing

(1) If steel casing is used then:

(a) The casing shall be new, seamless or electric-resistance welded galvanized or black steel pipe. Galvanizing shall be done in accordance with requirement of ASTM A-120.

(b) The casing, threads, and couplings shall meet or exceed the specifications of ASTM A-53, A-120, or A589.

(c) The minimum wall thickness for a given diameter shall equal or exceed that specified in Table 1.

TABLE 1: MINIMUM WALL THICKNESS FOR STEEL CASING:

Nominal Diameter (inches)	Wall Thickness (inches)
3 ^{1/2} ", or smaller pipe	Schedule 40 is required
4"	0.142"
5"	0.156"
5 ^{1/2} "	0.164"

6"	0.185"
8"	0.250"
10"	0.279"
12"	0.330"
14" and larger	0.375"

(d) Stainless steel casing, threads, and couplings shall conform in specifications to the general requirements in ASTM A-530 and also shall conform to the specific requirements in the ASTM standard that best describes the chemical makeup of the stainless steel casing that is intended for use in the construction of the well;

(e) Stainless steel casing shall have a minimum wall thickness that is equivalent to standard schedule number 10S.

(f) Steel casing shall be equipped with a drive shoe if the casing is driven in a consolidated rock formation. The drive shoe shall be made of forged, high carbon, tempered seamless steel and shall have a beveled, hardened cutting edge. A drive shoe will not be required for wells in which a cement or concrete grout surrounds and extends the entire length of the casing.

(2) If Thermoplastic Casing is used then:

(a) The casing shall be new;

(b) The casing and joints shall meet or exceed all the specifications of ASTM F-480-81, except that the outside diameters will not be restricted to those listed in F-480;

(c) The maximum depth of installation for a given SDR or Schedule number shall not exceed that listed in Table 2 unless the well drilling contractor can provide the Department, upon request, with written documentation from the manufacturer of the casing stating that the casing may safely be used at the depth at which it is to be installed.

TABLE 2: Maximum allowable depths (in feet) of Installation of Thermoplastic Water Well Casing

Nominal Diameter (inches)	2	2.5	3	3.5	4	5	6	8	10	12	14	16
Schedule 40	485	635	415	315	253	180	130	85	65	65	50	50
Schedule 80	1460	1685	1170	920	755	550	495	340	290	270	265	255

SDR Number	All Diameters (inches)
SDR 41	20
SDR 32.5	50
SDR 27.5	100
SDR 26	95
SDR 21	185
SDR 17	355
SDR 13.5	735

(d) The top of the casing shall be terminated by the drilling contractor at least twelve inches above land surface.

(e) For wells in which the casing will extend into consolidated rock, thermoplastic casing shall be equipped with a coupling, or other device approved by the manufacturer of the casing, that is sufficient to protect the physical integrity of the thermoplastic casing during the processes of seating and grouting the casing and subsequent drilling operations.

(f) Thermoplastic casing shall not be driven into consolidated rock.

(3) In constructing any well, all water-bearing zones that are known to contain polluted, saline, or other non-potable water shall be adequately cased and cemented off so that pollution of overlaying and underlying groundwater zones will not occur.

feet. (4) Wells shall be cased from land surface to a depth of at least 20

(5) The top of the casing shall be terminated by the drilling contractor at least twelve inches above land surface.

(6) The casing in wells constructed to obtain water from a consolidated rock formation shall be:

(a) Adequate to prevent any formational material from entering the well in excess of the levels specified in Paragraph (l) of this Rule; and

(b) Firmly seated at least five feet into the rock.

(7) The casing in wells constructed to obtain water from an unconsolidated rock formation (such as gravel, sand or shells) shall extend at least one foot into the top of the water-bearing formation.

(8) Upon completion of the well, the well shall be sufficiently free of obstacles including formation material as necessary to allow for the installation and proper operation of pumps and associated equipment.

(f) Grouting

(1) Casing shall be grouted to a minimum depth of twenty feet below land surface. The casing shall be grouted as necessary to seal off from the potable water producing zone(s), all aquifers or zones with water containing organic or other contaminants of such type and quantity as to render water from those aquifers or zones unsafe or harmful or unsuitable for human consumption and general use.

(2) For large diameter wells cased with concrete pipe or ceramic tile, the following shall apply:

(a) The diameter of the bore hole shall be at least six inches larger than the outside diameter of the casing;

(b) The annular space around the casing shall be filled with a cement-type grout to a depth of at least 20 feet. The grout shall be placed in accordance with the requirements of this Paragraph.

(3) Bentonite grout may be used in that portion of the borehole that is

at least
three feet below land surface. That portion of the borehole above the bentonite grout, up to land surface, shall be filled with a concrete or cement-type grout.

(4) Grout shall be placed around the casing by one of the following methods:

(a) Pressure. Grout shall be pumped or forced under pressure through the bottom of the casing until it fills the annular area around the casing and overflows at the surface.

(b) Pumping. Grout shall be pumped into place through a hose or pipe extended to the bottom of the annular space that can be raised as the grout is applied. The grout hose or pipe should remain submerged in grout during the entire application.

(c) Other. Grout may be emplaced in the annular space by gravity flow. The annular space shall be completely filled with grout to a maximum depth of 20 feet below land surface.

(5) If an outer casing is installed, it shall be grouted by either the pumping or pressure method.

(6) The liquid and solid components of all grout mixtures shall be thoroughly blended prior to emplacement below land surface.

(7) The well shall be grouted within five working days after the casing is set.

(8) No additives that will accelerate the process of hydration shall be used in grout for thermoplastic well casing.

(9) Where grouting is required by the provisions of this Section, the grout shall extend outward from the casing wall to a minimum thickness equal to either one-third of the diameter of the outside dimension of the casing or two inches, whichever is greater; excepting, however, the large diameter bored wells shall meet the requirements of Section V (e) (2), and shall completely fill the annular space leaving no voids that may be penetrated.

(10) The contractor will give oral notice to the Health Director of any grouting to be done. The notice shall be given in sufficient time to

allow the Health Director to inspect the well before grout is **emplaced**.

(g) Well Screens

(1) The well, if constructed to obtain water from an unconsolidated rock formation, shall be equipped with a screen that will adequately prevent the entrance of formation material into the well after the well has been developed and completed by the well contractor.

(2) The well screen shall be of a design to permit the optimum development of the aquifer with minimum head loss consistent with the intended use of the well. The openings shall be designed to prevent clogging and shall be free of rough edges, irregularities or other defects that may accelerate or contribute to corrosion or clogging.

(3) Multi-screen wells shall not connect aquifers or zones that have differences:

(a) In water quality which would result in contamination of any aquifer or zone;

(b) In water levels that would result in depletion of water from any aquifer or zone or significant change in head in any aquifer or zone.

(h) Gravel-Packed and Sand-Packed Wells

(1) In constructing a gravel-or sand-packed well:

(a) The packing material shall be composed of quartz, granite, or similar mineral or rock material and shall be clean, of uniform size, water-washed and free from clay, silt, or other deleterious material.

(b) The size of the packing material shall be determined from a grain size analysis of the formation material and shall be of a size sufficient to prohibit the entrance of formation material into the well in concentrations above those permitted by Paragraph (l) of this Rule.

(c) The packing material shall be placed in the annular space around the

screens and casing by a fluid circulation method, preferably through a conductor pipe to ensure accurate placement and avoid bridging.

(d) The packing material shall be adequately disinfected.

(e) Centering guides must be installed within five feet of the top packing material to ensure even distribution of the packing material in the borehole.

(2) The packing material shall not connect aquifers or zones that have differences:

(a) In water quality that would result in deterioration of the water quality in any aquifer or zone;

(b) In water levels that would result in depletion of water from any aquifer or zone or significant change in head in any aquifer or zone.

(i) Large Diameter Wells

(1) A large diameter well cased with concrete pipe and commonly referred to as a "bored" well, may be constructed.

(2) If the casing joints are not sealed, the construction shall be as follows:

(a) The bore hole shall have a minimum diameter of six inches larger than the outside diameter of the casing.

(b) The annular space around the casing shall be filled with neat-cement, sand cement or concrete grout to a depth of at least 20 feet below land surface. The grout shall be placed in accordance with requirements of Section IV (f). Bentonite grout may be used accordance to Section IV (f)

(c) The annular space around the casing below the grout shall be filled with sand or gravel.

(d) The gravel-pack material shall be composed of quartz, granite, or similar rock material and shall be clean, rounded, uniform, water-washed and free from clay, silt, or other deleterious material.

(e) The gravel shall be adequately disinfected.

(3) If the casing joints are sealed, the bore hole shall have a minimum diameter of six inches larger than the outside diameter of the casing to a depth of at least 20 feet below the land surface. The annular space around the casing shall be filled with neat or sand-cement grout to a depth of at least 20 feet below land surface.

(4) The well head shall be completed in the same manner as required for other water-supply wells.

(j) Well Development

(1) All water supply wells shall be properly developed by the well driller. Development shall include removal of formation materials, mud, drilling fluids, and additives such that the water contains no more than:

(a) Five milliliters per liter of settleable solids; and

(b) Ten NTU's of turbidity as suspended solids.

(2) Development shall not require efforts or eliminate the presence of dissolved constituents that are indigenous to the ground water quality in that area. Typical dissolved constituents include, but are not limited to, aluminum, calcium, chloride, iron, magnesium, manganese, sodium and sulphate.

(k) Well Test for Yield. Every water supply well shall be tested for capacity by a method and for a period of time as specified in 15A NCAC 2C .0110 (N.C. Department of Environment and Natural Resources, Division of Water Quality's Well Construction Standards).

(l) Well Contractor Identification Plate

(1) An identification plate, showing the drilling contractor and his certification number and the information specified in Section IV (j) (5)

shall be installed on the well within 72 hours after the drilling is complete.

(2) The identification plate shall be constructed of a durable, weatherproof, rustproof metal or equivalent material.

(3) The identification plate shall be securely attached to either the aboveground portion of the well casing, surface grout pad, or enclosure floor around the casing where it is readily visible.

(4) The identification plate shall not be removed by any person.

(5) The identification tag shall be stamped or otherwise imprinted with permanent, legible markings to show the:

(a) Total depth of well;

(b) Casing depth (ft) and inside diameter (in);

(b) Screened interval of screened wells;

(d) Gravel interval of gravel-or sand-packed wells;

(e) Yield, in gallons per minute (gpm), or specific capacity in gallons per minute per foot of draw down (gpm/ft-dd);

(f) Static water level and date measured;

(g) Date well completed.

(m) Well-head Completion and Equipment

(1) The top of the casing shall be cut off smooth and level, be free of dents and cracks, and shall terminate at least twelve (12) inches above the surface of the ground, or 12" above the 100 year flood level, whichever is greater. Every public, .1700, and water system well shall have a continuous bond concrete slab or well house concrete floor with a minimum thickness of four inches and extending a minimum of three feet outward from the outer well casing. The top of the slab shall be two inches minimum above grade and shall slope away from the well casing in all directions.

(2) The well contractor identification plate, if removed or obscured during pump installation shall be relocated and securely attached to either the aboveground portion of the well casing, surface grout pad, or enclosure floor around the casing by the person installing the pump

and pumping equipment within 72 hours after completion. A pump installer identification plate showing the name and registration number of the pump installation contractor shall be securely attached to either the aboveground portion of the well casing, surface grout pad, or the enclosure floor if present, within 72 hours after completion of the pump installation. The pump installer identification plate shall be stamped or otherwise imprinted with permanent, legible, markings to show the:

- (a)** Date the pump was installed;
- (b)** The depth of the pump intake; and
- (c)** The horsepower rating of the pump.

(3) All piping, wiring, and vents shall enter the well at least twelve inches above land surface, except where pitless adapters or pitless units are used, and shall be adequately sealed to preclude the entrance of contaminants into the well.

(4) Every well shall be equipped by the person completing the wellhead with a usable access port or airline.

(a) The access port shall be located directly on top of the well if the pump is offset from the well.

(b) For wells on which the pump is installed directly over the well, an access port pipe shall be installed through the pump base or outside of the well casing, and terminate inside the well casing at some point below the base of the pump.

(c) The access port shall have a minimum inside diameter of one-half inch, so that the position of the water level may be determined at any time.

(d) The access port shall be installed and maintained in such a manner as to prevent the entrance of water, dust, insects, or other foreign material, and to permit ready access for water-level measurements.

(5) Every artisan well that flows under natural artisan pressure shall be equipped with a valve so that the flow can be completely stopped.

Well owners shall be responsible for the installation, operation, and maintenance of the valve.

(n) Any suction line installed underground between the well and pump and shall be surrounded by six inches of cement, or encased in a larger pipe that is sealed at each end.

(o) The well shall be properly vented and screened at the well head to allow for the pressure changes within the well except when a suction-lift-type pump is used.

(p) A priming tee shall be installed at the well head in conjunction with offset jet pump installations.

(q) The contractor will notify the Health Director when well head completion occurs. Consideration by the contractor should be given to allow sufficient time for the Health Director to make a final inspection of the well and to validate its completion.

(r) Contaminated water shall not be used for priming the pump.

(s) The pumping capacity of the pump shall be consistent with the intended use and yield characteristics of the well.

(t) The drop piping and electrical wiring used in connection with the pump shall meet Underwriter's specifications, acceptable to the Health Department.

(u) Pitless adapters or pitless units shall be allowed as a method of well head completion under the following conditions:

(1) The pitless device shall be manufactured specifically for the purpose of water well construction;

(2) Design, installation and performance standards shall be those specified in PAS-97(04) as adopted by the Water System Council's Pitless Adapter Division;

(3) The pitless device will be compatible with the well casing;

(4) The top of the pitless device shall extend at least eight inches above land surface;

- (5) The pitless device shall have an access port.

SECTION V - DISINFECTION OF WATER SUPPLIES, SAMPLING AND WATER QUALITY STANDARDS

All water supply wells shall be disinfected upon completion of construction, maintenance, repairs, pump installation, and testing as follows:

- (1) Chlorine shall be placed in the well in sufficient quantities to produce a chlorine residual of at least 100 parts per million (ppm) in the well. A chlorine solution may be prepared by dissolving high test calcium hypochlorite (trade names include HTH, Chlor-Tabs, etc.) in water. Do not use stabilized chlorine tablets or hypochlorite products containing fungicides, algacides, or other disinfectants. Follow manufactures directions when storing, transporting, and using calcium hypochlorite products
- (2) The chlorine shall be placed in the well by one of the following or equivalent methods:
 - (a) Chlorine tablets may be dropped in the top of the well and allowed to settle to the bottom.
 - (b) Chlorine solutions shall be placed in the bottom of the well by using a bailer or by pouring the solution through the drill rod, hose, or pipe placed in the bottom of the well. The solution shall be flushed out of the drill rod, hose, or pipe by using water or air.
- (3) Agitate the water in the well to ensure thorough dispersion of the chlorine.
- (4) The well casing, pump column, and any other equipment above the water level in the well shall be thoroughly rinsed with the chlorine solution as a part of the disinfecting process.
- (5) The chlorine shall stand in the well for a period of at least 24 hours.
- (6) The well shall be pumped until the system is clear of the chlorine before the system is placed in use.

(7) Water supply wells, which repeatedly fail to test, absent for coliform bacteria and upon inspection are constructed properly shall be equipped with a continuous disinfection device that meets the conditions listed below:

- (a)** Ultraviolet Disinfecting Units must be constructed and installed to meet or exceed National Sanitation Foundation Standard 55 Class A.
- (b)** Chlorinator – Continuous chlorination systems must provide continuous chlorination with a minimum chlorine residual of 0.2 mg/l and a chlorine contact time of at least twenty (20) minutes.
- (c)** Other materials and methods of disinfection may be used upon prior approval by the Health Department, however, continuous disinfection may not be applied directly to or within the well.

(8) All newly constructed private drinking water wells shall be tested within 30 days after the Health Department has issued a certificate of completion for the following parameters: arsenic, barium, cadmium, chromium, copper, fluoride, lead, iron, magnesium, manganese, mercury, nitrates, nitrites, selenium, sodium, zinc, pH, and bacterial indicators. A compliance sample, testing absent for coliform bacteria shall serve as confirmation that a well water supply complies with the water quality standards of this section.

(9) For all new private drinking water supplies a compliance sample shall be collected not less than 24 hours after the chlorine or other disinfecting agent has been purged from the well and water supply system. Prior to collecting a sample, the Health Department or the registered water sampler shall test the water for residual chlorine. Compliance samples will not be collected from:

- (a)** Water supply systems that contain residual chlorine
- (b)** New systems that have not been properly chlorinated.
- (c)** Wells that appear to be improperly protected or constructed.
- (d)** Incomplete systems, i.e., wells without a functioning pump or completed well. It is the responsibility of the well owner to provide a source of power for the purpose of collecting the compliance sample.

(10) Compliance samples will be collected only by persons approved per Section III (d) (WATER SAMPLER REGISTRATION) of these regulations. Compliance samples shall be collected from the hose bibb at or closest to the wellhead. A chain of custody will be maintained between the person authorized to collect the compliance sample and the certified laboratory.

(11) Compliance samples must be analyzed in the North Carolina State Laboratory of Public Health, the Lincoln County Health Department Laboratory or in a contract laboratory certified by the Certification Unit of

the Division of Public Health or a contract laboratory certified by the Division of Water Quality.

(12) The provisions contained in 15A NCAC 02C. 0112 WELL MAINTENANCE: REPAIR: GROUNDWATER RESOURCES are hereby incorporated by reference including any subsequent amendments and editions. The following provisions are included to supplement the provisions in 15A NCAC 02C.0112:

The Health Department or the Department may inspect any well by video before repairs are made. The Health Department may inspect the liner and packer materials before they are installed, as they are installed in the well and/or after they are installed.

SECTION VI - WELL MAINTENANCE AND REPAIR

The provisions contained in 15A NCAC 020C.0113 ABANDONMENT OF WELLS are hereby incorporated by reference including any subsequent amendments and editions. The following provisions are included to supplement the provisions in 15A NCAC 020C .0113:

- Any well which acts as a source or channel of contamination shall be repaired or permanently abandoned within 30 days of receipt of notice from the Health Department or within thirty (30) days of commencement of the construction.
- The person or firm abandoning any well will provide a minimum twenty-four (24) hour notice to the Health Department prior to the commencement of permanent abandonment procedures.
- A field investigation shall be conducted to determine whether there is any improperly abandoned well(s) located on the site. The construction permit shall be conditioned upon the permanent abandonment in accordance with 15A NCAC 2C.0113 of any improperly abandoned wells on the site.

(a) Every well shall be maintained by the owner in a condition whereby it will conserve and protect the groundwater resources, and whereby it will not be a source or channel of contamination or pollution to the water supply or any aquifer.

(b) All materials used in the maintenance, replacement, or repair of any

well shall meet the requirements for new installation. "Construction involved in the repair of any well shall meet the requirements for new installations."

(c) Broken, punctured, or otherwise defective or unserviceable casing, screens, fixtures, seals, or any part of the well head shall be repaired or replaced within 30 days of notification by the Health Department unless the notification otherwise specifies in writing, or the well shall be permanently abandoned.

(d) Repairs to wells completed with the wellhead terminating below ground (buried seal) shall include extending the well casing above land surface. The Health Director shall not approve any well having an entry below land surface. The extension shall be made as follows:

(1) A tapered sleeve shall be inserted inside of the casing and shall extend at least six inches down into the existing casing. The extension casing shall be welded or bonded to the existing casing around the outside of the joint; or

(2) A sleeve shall be heated and wedged over the existing casing with at least six inches of overlap. Cement grout shall be placed around the joint formed by the casings, but in no case less than 10 feet. The grout thickness shall comply with Section IV (f), III (a), (b), (c), or

(3) Other acceptable methods as approved by the director.

(e) NSF approved PVC pipe rated at 160 PSI may be used for liner casing. The liner casing shall be installed with centering guides to insure proper centering in the well. The annular space around the liner casing shall be at least five-eighths inches and shall be completely filled with neat-cement grout. The well liner shall be completely grouted within 10 working days after the liner has been installed.

SECTION VII - ABANDONMENT OF WELLS

(A) Any well that has been abandoned either temporarily or permanently including dry wells, shall be abandoned in accordance with one of the following procedures:

(1) Procedures for **abandonment** of wells, other than bored and hand dug wells:

(a) All casing and screen materials may be removed prior to initiation of abandonment procedures if such removal will not cause or

contribute to contamination of the groundwater. Any casing not grouted in accordance with Section IV (f) shall be removed or properly grouted.

(b) The entire depth of the well shall be sounded before it is sealed to ensure freedom from obstructions that may interfere with sealing operations.

(c) Using a hypochlorite solution (such as HTH), disinfect the well in accordance with 15A NCAC2C.0111 and Section V of this Rule. Do not use common commercial household liquid bleach, as this is too weak a solution to ensure proper disinfection.

(d) In the case of gravel-packed wells in which the casing and screens have not been removed, neat-cement, or bentonite grout shall be injected into the well completely filling it from the bottom of the casing to the top.

(e) Wells constructed in unconsolidated formations other than "bored" wells shall be completely filled with cement grout, or bentonite grout by introducing it through a pipe extending to the bottom of the well that can be raised as the well is filled.

(f) Wells constructed in consolidated rock formations or that penetrate zones of consolidated rock may be filled with cement grout, bentonite grout, sand, gravel, or drill cuttings opposite the zones of consolidated rock. The top of the cement grout, bentonite grout, sand, gravel, or cutting fill shall terminate at least 10 feet below the top of the consolidated rock or five feet below the bottom of casing. Cement grout or bentonite grout shall be placed beginning 10 feet below the top of the consolidated rock or five feet below the bottom of casing and extend five feet above the top of consolidated rock. The remainder of the well, above the upper zone of consolidated rock, shall be filled with cement grout or bentonite grout up to land surface. For any well in which the depth of casing or the depth of the bedrock is not known or cannot be confirmed, then the entire length of the well shall be filled with cement grout or bentonite grout up to land surface.

(g) Temporary wells or monitor wells less than 20 feet in depth

which do not penetrate the water table shall be abandoned by filling the entire well up to land surface with cement grout, dry clay, bentonite grout, or material excavated during drilling of the well and then compacted in place. Temporary wells or monitor wells that penetrate the water table shall be abandoned by completely filling with a bentonite or cement-type grout.

(2) For **bored wells or hand dug wells**, constructed into unconsolidated material.

(a) For wells that do have standing water in them at any time during the year:

(i) Remove all plumbing or piping entering the well, along with any obstructions in the well;

(ii) Remove as much of the well casing as possible and then fill the entire well up to land surface with cement grout, concrete grout, bentonite grout, dry clay, or material excavated during drilling of the well and then compacted in place.

(b) For wells that do have standing water in them during all or part of the year:

(i) Remove all plumbing or piping into the well, along with any obstructions inside the well;

(ii) Remove as much of the well tile casing as possible, but no less than to a depth of three feet below land surface;

(iii) Remove all soil or other subsurface material present down to the top of the remaining well casing, and extending to a width of at least 12 inches outside of the well casing on all sides;

(iv) Using a hypochlorite solution (such as HTH), disinfect the well in accordance with section V and 15A NCAC 2C .0111. Do not use common commercial household liquid bleach, as this is too weak a solution to ensure proper disinfection.

(v) Fill the well up to the top of the remaining casing with cement grout, concrete grout, bentonite grout, dry clay, or

material excavated during drilling of the well and then compacted in place.

(vi) Pour a one foot thick concrete grout or cement grout plug that fills the entire excavated area above the top of the casing, including the area extending on all sides of the casing out to a width of at least 12 inches on all sides;

(vii) Complete the abandonment process by filling the remainder of the well above the concrete or cement plug with additional concrete grout, cement grout, or soil.

(C) Any well which acts as a source or channel of contamination shall be repaired or abandoned within 30 days or receipt of notice from the department.

(D) The drilling contractor shall abandon any well in which the casing has not been installed or from which the casing has been removed, prior to removing his equipment from the site or a full sheet of structurally sound plywood (4 x 8 feet) a minimum of three-quarter inches thick to be placed over the borehole and held in place by being sufficiently anchored such that it cannot be moved without mechanical means. Caution tape must be staked at a minimum of 3 feet high at 5 feet from the perimeter of the borehole.

This procedure may only be used for a period of up to 5 days (120 hours) from the time the well drilling or boring rig is removed from the well site.

The drilling contractor is ultimately responsible for ensuring that adequate safety measures are taken to preclude accidental entry into the borehole by persons, animals, or contaminants.

Variations in this procedure may be issued by the Health Director on a case by case basis.

(E) The owner shall be responsible for abandonment of a well except that:

(1) The well driller is responsible for well abandonment if abandonment is required because the driller improperly locates, constructs, repairs or completes the well; or

(2) The person who installs, repairs, or removes the well pump is responsible for well abandonment if that abandonment is required because of improper well pump installation, repair, or removal.

(F) A Report Of Well Abandonment shall be made on a form provided by the Health

Director and submitted to the Health Director within 5 days after completion of

Abandonment with a copy being submitted to DENR DWQ APS in addition.

SECTION VIII - Standards for Injection, Monitoring, Recovery, Testing, Temporary, and all other Non-Water Supply Wells

Construction standards for injection, monitoring, recovery, testing, temporary, and all other non-water supply wells shall meet the rules as stated in "Section .0108 Standards of Construction: Wells Other Than Water Supply" of the N.C. Department of Environment and Natural Resources, Division of Water Quality's Well Construction Standards Title 15A Subchapter 2C.

SECTION IX - RECORDS REQUIRED

(a) Reports

(1) Any person completing or abandoning any well in Lincoln County shall submit to the Health Director and to the well owner a record of the construction or abandonment to include the owner's name and address; the well's location, diameter and depth, type of casing; static water level; pumping water level; yield; and date of completion or abandonment.

(2) Any person repairing a well shall submit to the Health Director and the well owner a record of the repair to include the owner's name; location of the well; change in construction and materials replaced; and date of repair.

(3) Reports shall be certified by the contractor or persons completing the construction, abandonment, or repair and shall be submitted within a period of thirty days after completion, abandonment, or repair.

(4) A copy of reports on all construction and repair records shall also be submitted to DENR DWQ APS.

SECTION X – DESIGNATED AREAS

(a) Wells Cased to Less Than 20 Feet

The provisions contained in 15A NCAC 020 .0116 DESIGNATED AREAS: WELLS CASSED TO LESS THAN 20 FEET are hereby incorporated by reference including and subsequent amendments and editions.

(b) Wells Cased to Minimum Depth of 35 Feet

The provisions contained in 15A NCAC 02C .0117 DESIGNATED AREAS: WELLS CASED TO MINIMUM DEPT OR 35 FEET are hereby incorporated by reference including any subsequent amendments and editions.

(c) Variances

The provisions contained in 15A NCAC 02C.0118 VARIANCE are hereby incorporated by reference including any subsequent amendments and editions.

(d) Enforcement and Penalties

If any person violates any part of these regulations or willfully fails to perform any acts required by these regulations, he shall be guilty of a misdemeanor and shall be subject to sanctions as provided in N.C.G.S. 130A-25, 87-94 and 87-95; additionally, he may have any permit or registration issued pursuant to these rules suspended or revoked. Such enforcement procedures shall be in addition to and not to the exclusion of any other civil enforcement mechanisms available under law.

(e) Injunctions

If any person violates any of these regulations or if any person hinders or interferes with the proper performance of duty by the Health Department, the Director may institute an action in the Superior Court of Lincoln County for injunctive relief as provided in N.C.G.S. 130A-18.

SECTION XI – APPEAL PROCEDURE

Appeals concerning the interpretation and enforcement of these rules shall be conducted in accordance with N.C.G.S. 130A-24.

SECTION XII - SEVERABILITY

If any provision or clause of these regulations or the application thereof shall be declared invalid by a court of competent jurisdiction, such declaration shall not invalidate any other provision, clause, or application of these regulations.

Any changes in state rules (15A NCAC .0100) take precedence over these regulations. In cases where wells are regulated by 15A NCAC 18A .1700, those codes and any changes therein will take precedence.

SECTION XIII - EFFECTIVE DATE

These rules and regulations adopted by the Lincoln County Board of Health on _____ shall be in full force and effect from and after _____.

SIGNED:

Chairman, Lincoln County Board of Health
Director

Lincoln County Health

Appendix A:

Water Quality Standards:

Component:	Established Standard:
Total Coliform	Negative
Fecal Coliform	Negative
Arsenic	0.01 mg/l
Chloride	250 mg/l
Copper	1.30 mg/l
Fluoride	4.00 mg/l
Iron	0.30 mg/l
Lead	0.015 mg/l
Manganese	0.05 mg/l
Nitrate	10.0 mg/l
Nitrite	1.00 mg/l
Zinc	5.0 mg/l
pH	Not less than 6.5 units

Appendix B:

Well Chlorination Guide:

Chlorination with 70% Calcium Hypochlorite (powder)[3 oz per 100 gal. of water]:

Well Diameter	Gallons/foot	50 feet of water	100 feet of water	200 feet of water	300 feet of water	400 feet of water
2"	.16	.24 oz	.48 oz	.96 oz	1.44 oz	1.92 oz
4"	.65	.98 oz	1.96 oz	3.92 oz	5.88 oz	7.84 oz
6.25"	1.59	2.38 oz	4.77 oz	9.54 oz	14.13 oz	19.08 oz
8"	2.61	3.92 oz	7.84 oz	15.68 oz	23.52 oz	47.04 oz
20"	16.32	24.48 oz	48.96 oz	-	-	-
24"	23.50	35.25 oz	70.5 oz	-	-	-

Procedural guidelines for well disinfection:

1. Unscrew the vent plug from the well seal.
2. Using the table above, determine the amount of chlorine to use. If using powdered calcium hypochlorite, dissolve the powder in 5 gallons of mild warm water (stirring with a long spoon to avoid contact with skin) and pour through a funnel through the vent hole
3. Place a clean hose on the hose bib at the wellhead and recirculate the water through the well (utilizing the funnel) until the chlorine is well mixed in the well (at least 1-hour).
4. One at a time, turn on cold-water taps on the well's system until you smell chlorine.
5. Run hot water taps until chlorine is smelled, also.
6. Allow the chlorine to remain in the entire system at least 24 hours with no water running.
7. After the 24-hour period, place a hose on an exterior spigot and run the water to a ditch, across the surface of the ground, or other area away from the house and septic system. DO NOT run the chlorinated water down drains in your house.
8. Water samples may be collected after 24 hours of the system remaining chlorine free.