

SUBCHAPTER 2C - WELL CONSTRUCTION STANDARDS

SECTION .0100 - CRITERIA AND STANDARDS APPLICABLE TO WATER-SUPPLY AND CERTAIN OTHER TYPE WELLS

15A NCAC 02C .0101 GENERAL PROVISIONS

(a) Authorization. The North Carolina Environmental Management Commission is required, under the provisions of Chapter 87, Article 7, Section 87, General Statutes of North Carolina (short title: North Carolina Well Construction Act) to adopt appropriate rules governing the location, construction, repair, and abandonment of wells, and the installation and repair of pumps and pumping equipment.

(b) Purpose. Consistent with the duty to safeguard the public welfare, safety, health, and to protect and beneficially develop the groundwater resources of the state, it is declared to be the policy of this state to require that the location, construction, repair and abandonment of wells, and the installation of pumps and pumping equipment conform to such reasonable standards and requirements as may be necessary to protect the public welfare, safety, health, and ground water resources.

*History Note: Authority G.S. 87-87;
Eff. February 1, 1976;
Amended Eff. December 1, 1992; July 1, 1988.*

15A NCAC 02C .0102 DEFINITIONS

As used herein, unless the context otherwise requires:

- (1) "Abandon" means to discontinue the use of and to seal the well according to the requirements of 15A NCAC 2C .0113 of this Section.
- (2) "Access port" means an opening in the well casing or well head installed for the primary purpose of determining the position of the water level in the well.
- (3) "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 may be either general agent or a limited agent authorized to do one particular act.
- (4) "ASTM" means the American Society for Testing and Materials.
- (5) "Casing" means pipe or tubing constructed of specified materials and having specified dimensions and weights, 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 to prevent entry of contamination.
- (6) "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.
- (7) "Commission" means the North Carolina Environmental Management Commission or its successor, unless otherwise indicated.
- (8) "Consolidated rock" means rock that is firm and coherent, solidified or cemented, such as granite, gneiss, limestone, slate or sandstone, that has not been decomposed by weathering.
- (9) "Contamination" means the introduction of foreign materials of such nature, quality, and quantity into the groundwaters as to exceed the groundwater quality standards specified in 15A NCAC 2L (Classifications and Water Quality Standards Applicable to the Groundwaters of North Carolina).
- (10) "Department" means the Department of Environment and Natural Resources.
- (11) "Designed capacity" shall mean that capacity that is equal to the yield that is specified prior to construction of the well.
- (12) "Director" means the Director of the Division of Water Quality.
- (13) "Division" means the Division of Water Quality.
- (14) "Domestic use" means water used for drinking, bathing, or other household purposes, livestock, or gardens.
- (15) "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.
- (16) "GPM" and "GPD" mean gallons per minute and gallons per day, respectively.
- (17) "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, potable 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. Bentonite grout may only be used in those instances where specifically approved in this Section 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 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.
- (18) "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.
 - (19) "Monitoring well" means any well constructed for the primary purpose of obtaining samples of groundwater or other liquids for examination or testing, or for 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.
 - (20) "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 rests ownership in the land owner in the absence of contrary agreement in writing.
 - (21) "Pitless adapters" or "pitless units" are devices specifically manufactured to the standards specified under 15A NCAC 2C .0107(i)(5) of this Section for the purpose of allowing a subsurface lateral connection between a well and plumbing appurtenances.
 - (22) "Public water system" means a water system as defined in 15A NCAC 18C (Rules Governing Public Water Supplies).
 - (23) "Recovery well" means any well constructed for the purpose of removing contaminated groundwater or other liquids from the subsurface.
 - (24) "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.
 - (25) "Site" means the land or water area where any facility, activity or situation is physically located, including adjacent or nearby land used in connection with the facility, activity or situation.
 - (26) "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.
 - (27) "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.
 - (28) "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 to 105 degrees Fahrenheit.
 - (29) "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.
 - (30) "Turbidity" means the cloudiness in water, due to the presence of suspended particles such as clay and silt, that may create esthetic problems or analytical difficulties for determining contamination. Turbidity, measured in Nephelometric Turbidity Units (NTU), is based on a comparison of the cloudiness in the water with that in a specially prepared standard.
 - (31) "Vent" means an opening in the well casing or well head, 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.
 - (32) "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.
 - (33) "Well capacity" shall mean the maximum quantity of water that a well will yield continuously as determined by methods outlined in 15A NCAC 2C .0110.
 - (34) "Well head" means the upper terminal of the well including adapters, ports, valves, seals, and other attachments.

- (35) "Well system" means two or more cross-connected wells.
- (36) "Yield" means the amount of water or other fluid that can be extracted from a well under a given set of conditions.

History Note: Authority G.S. 87-85; 87-87; 143-214.2; 143-215.3;
Eff. February 1, 1976;
Amended Eff. April 1, 2001; December 1, 1992; July 1, 1988; March 1, 1985; September 1, 1984.

15A NCAC 02C .0103 REGISTRATION

Pump Installer Registration:

- (1) All persons, firms, or corporations engaged in the business of installing or repairing pumps or other equipment in wells shall register bi-annually with the Department.
- (2) Registration shall be accomplished, during the period from April 1 to April 30 of every odd-numbered year, by completing and submitting to the department a registration form provided by the department for this purpose.
- (3) Upon receipt of a properly completed application form, the applicant will be issued a certificate of registration.

History Note: Authority G.S. 87-87; 143-215.3(a)(1a); 143-355(e);
Eff. February 1, 1976;
Amended Eff. April 1, 2001; December 1, 1992; July 1, 1988; April 20, 1978.

15A NCAC 02C .0104 PUMP INSTALLATION REGISTRATION

History Note: Authority G.S. 87-87;
Eff. February 1, 1976;
Repealed Eff. July 1, 1988.

15A NCAC 02C .0105 PERMITS

(a) It is the finding of the Commission that the entire geographical area of the state is vulnerable to groundwater pollution from improperly located, constructed, operated, altered, or abandoned non-water supply wells and water supply wells not constructed in accordance with the standards set forth in 15A NCAC 2C .0107 of this Section. Therefore, in order to ensure reasonable protection of the groundwater resources, prior permission from the Division must be obtained for the construction of the types of wells enumerated in Paragraph (b) of this Rule.

(b) No person shall locate or construct any of the following wells until a permit has been issued by the Director:

- (1) any water-well or well system with a design capacity of 100,000 gallons per day (gpd) or greater;
- (2) any well added to an existing system where the total design capacity of such existing well system and added well will equal or exceed 100,000 gpd;
- (3) any monitoring well, constructed to assess the impact of an activity not permitted by the state, when installed on property other than that on which the unpermitted activity took place;
- (4) any recovery well;
- (5) any well for recharge or injection purposes;
- (6) any well with a design deviation from the standards specified under the rules of this Subchapter.

(c) The Director may delegate, through a Memorandum of Agreement, to another governmental agency, the authority to permit wells that are an integral part of a facility requiring a permit from the agency. Provided, however, that the permittee comply with all provisions of this Subchapter, including construction standards and the reporting requirements as specified in 15A NCAC 2C .0114. In the absence of such agreement, all wells specified in Paragraph (b) of this Rule require a well construction permit in addition to any other permits.

(d) An application for a permit shall be submitted by the owner or his agent. In the event that the permit applicant is not the owner of the property on which the well or well system is to be constructed, the permit application must contain written approval from the property owner and a statement that the applicant assumes total responsibility for ensuring that the well(s) will be located, constructed, maintained and abandoned in accordance with the requirements of this Subchapter.

(e) The application shall be submitted to the Division, on forms furnished by the Division, and shall include the following:

- (1) For all wells:
 - (A) the owner's name (facility name);
 - (B) the owner's mailing address (facility address);
 - (C) description of the well type and activity requiring a permit;

- (D) facility location (map);
 - (E) a map of the facility and general site area, to scale, showing the locations of:
 - (i) all property boundaries, at least one of which is referenced to a minimum of two landmarks such as identified roads, intersections, streams or lakes within 500 feet of proposed well or well system;
 - (ii) all existing wells, identified by type of use, within 500 feet of proposed well or well system;
 - (iii) the proposed well or well system;
 - (iv) any test borings within 500 feet of proposed well or well system; and
 - (v) all sources of known or potential groundwater contamination (such as septic tank systems; pesticide, chemical or fuel storage areas; animal feedlots; landfills or other waste disposal areas) within 500 feet of the proposed well site;
 - (F) the well drilling contractor's name and state certification number, if known;
 - (G) construction diagram of the proposed well(s) including specifications describing all materials to be used, methods of construction and means for assuring the integrity and quality of the finished well(s).
- (2) For water supply wells or well systems with a designed capacity of 100,000 gpd or greater the application shall include, in addition to the information required in Subparagraph (e)(1) of this Rule:
- (A) the number, yield and location of existing wells in the system;
 - (B) the design capacity of the proposed well(s);
 - (C) any other well construction information or site specific information deemed necessary by the Director for the protection of human health and the environment.
- (3) For those monitoring wells with a design deviation from the specifications of 15A NCAC 2C .0108 of this Section, in addition to the information required in Subparagraph (e)(1) of this Rule:
- (A) a description of the subsurface conditions sufficient to evaluate the site. Data from test borings, wells pumping tests, etc., may be required as necessary;
 - (B) a description of the quantity, character and origin of the contamination;
 - (C) justification for the necessity of the design deviation; and
 - (D) any other well construction information or site specific information deemed necessary by the Director for the protection of human health and the environment.
- (4) For those recovery wells with a design deviation from the specifications in 15A NCAC 2C .0108 of this Section, in addition to the information required in Subparagraph (e)(1) and Parts (e)(3)(A), (B) and (C) of this Rule, the application shall describe the disposition of any fluids recovered if the disposal of those fluids will have an impact on any existing wells other than those installed for the express purpose of measuring the effectiveness of the recovery well(s).

(f) In the event of an emergency, monitoring wells or recovery wells may be constructed after verbal approval is provided by the Director or his delegate. After-the-fact applications shall be submitted by the driller or owner within ten days after construction begins. The application shall include construction details of the monitoring well(s) or recovery well(s) and include the name of the person who gave verbal approval and the time and date that approval was given.

(g) It shall be the responsibility of the well owner or his agent to see that a permit is secured prior to the beginning of construction of any well for which a permit is required under the rules of this Subchapter.

History Note: Authority G.S. 87-87; 143-215.1;
Eff. February 1, 1976;
Amended Eff. April 1, 2001; December 1, 1992; March 1, 1985; September 1, 1984; April 20, 1978.

15A NCAC 02C .0106 WATER USE PERMIT

History Note: Authority G.S. 143-215.14; 143-215.15;
Eff. February 1, 1976;
Repealed Eff. April 20, 1978.

15A NCAC 02C .0107 STANDARDS OF CONSTRUCTION: WATER-SUPPLY WELLS

(a) Location.

- (1) The well shall not be located in an area generally subject to flooding. Areas which have a propensity for flooding include those with concave slope, alluvial or colluvial soils, gullies, depressions, and drainage ways;

- (2) The minimum horizontal separation between a well, intended for a single-family residence or other non-public water system, and potential sources of groundwater contamination, which exists at the time the well is constructed, shall be as follows unless otherwise specified:
- | | | |
|-----|-------------------------------------------------------------------------------------------------------------------------------------|---------|
| (A) | Septic tank and drainfield | 100 ft. |
| (B) | Other subsurface ground absorption waste disposal system | 100 ft. |
| (C) | Industrial or municipal sludge-spreading or wastewater-irrigation sites | 100 ft. |
| (D) | Water-tight sewage or liquid-waste collection or transfer facility | 50 ft. |
| (E) | Other sewage and liquid-waste collection or transfer facility | 100 ft. |
| (F) | Cesspools and privies. | 100 ft. |
| (G) | Animal feedlots or manure piles | 100 ft. |
| (H) | Fertilizer, pesticide, herbicide or other chemical storage areas. | 100 ft. |
| (I) | Non-hazardous waste storage, treatment or disposal lagoons | 100 ft. |
| (J) | Sanitary landfills | 500 ft. |
| (K) | Other non-hazardous solid waste landfills, such as Land Clearing
and Inert Debris (LCID) landfills. | 100 ft. |
| (L) | Animal barns. | 100 ft. |
| (M) | Building foundations, excluding the foundation of a structure housing
the well head | 25 ft. |
| (N) | Surface water bodies which act as sources of groundwater recharge,
such as ponds, lakes and reservoirs. | 50 ft. |
| (O) | All other surface water bodies, such as brooks, creeks, streams, rivers,
sounds, bays and tidal estuaries | 25 ft. |
| (P) | Chemical or petroleum fuel underground storage tanks regulated under
15A NCAC 02N: | |
| | (i) with secondary containment | 50 ft. |
| | (ii) without secondary containment | 100 ft. |
| (Q) | Above ground or underground storage tanks which contain petroleum
fuels used for heating equipment, boilers or furnaces. | 50 ft. |
| (R) | All other potential sources of groundwater contamination | 50 ft. |
- (3) For a well serving a single-family dwelling where lot size or other fixed conditions preclude the separation distances specified in Subparagraph (a)(2) of this Rule, the required horizontal separation distances shall be the maximum possible but shall in no case be less than the following:
- | | | |
|-----|------------------------------------------------------------------------------|--------|
| (A) | Septic tank and drainfield | 50 ft. |
| (B) | Water-tight sewage or liquid-waste collection or transfer facility | 25 ft. |
| (C) | Animal barns. | 50 ft. |
| (D) | Cesspool or privies. | 50 ft. |
- (4) A well or well system, serving more than one single-family dwelling but with a designed capacity of less than 100,000 gpd, must meet the separation requirements specified in Subparagraph (a)(2) of this Rule;
- (5) A well or well system with a designed capacity of 100,000 gpd or greater must be located a sufficient distance from known or anticipated sources of groundwater contamination so as to prevent a violation of applicable groundwater quality standards, resulting from the movement of contaminants, in response to the operation of the well or well system at the proposed rate and schedule of pumping;
- (6) Actual separation distances must conform with the most stringent of applicable federal, state or local requirements;
- (7) Wells drilled for public water supply systems regulated by the Division of Environmental Health shall meet the siting and all other requirements of that Division.
- (b) 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) In designated areas described in 15A NCAC 02C .0117 of this Section, the source shall be greater than 35 feet below land surface;
 - (3) In designated areas described in 15A NCAC 02C .0116 of this Section, the source may be less than 20 feet below land surface, but in no case less than 10 feet below land surface; and
 - (4) In all other areas the source shall be at least 20 feet below land surface.
- (c) Drilling Fluids and Additives. 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:
- (1) the formational material encountered during drilling; or
 - (2) materials manufactured specifically for the purpose of borehole conditioning or water well construction.
- (d) 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 requirements 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 (in.)	Wall Thickness (in.)
For 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; and
 - (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 shall 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 shall not be restricted to those listed in F-480; and
 - (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 Division, 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

Schedule number-	Nominal Diameter (in inches)											
	2	2.5	3	3.5	4	5	6	8	10	12	14	16
40-	485	635	415	315	253	180	130	85	65	65	50	50
80-	1460	1685	1170	920	755	550	495	340	290	270	265	255
SDR Number	All Diameters (in 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 overlying and underlying groundwater zones shall not occur.
- (4) Every well shall be cased so that the bottom of the casing extends to a minimum depth as follows:
 - (A) Wells located within the area described in 15A NCAC 02C .0117 of this Section shall be cased from land surface to a depth of at least 35 feet.
 - (B) Wells located within the area described in 15A NCAC 02C .0116 of this Section shall be cased from land surface to a depth of at least 10 feet.
 - (C) Wells located in any other area shall be cased from land surface to a depth of at least 20 feet.
- (5) The top of the casing shall be terminated by the drilling contractor at least 12 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 (h) 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.
- (e) Grouting.
 - (1) Casing shall be grouted to a minimum depth of twenty feet below land surface except that:
 - (A) In those areas designated by the Director to meet the criteria of 15A NCAC 02C .0116 of this Section, grout shall extend to a depth of two feet above the screen or, for open end wells, to the bottom of the casing, but in no case less than 10 feet.
 - (B) In those areas designated in 15A NCAC 02C .0117 of this Section, grout shall extend to a minimum of 35 feet below land surface.
 - (C) The casing shall be grouted as necessary to seal off, from the 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 of a pipe diameter equal to or greater than 20 inches, 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, excepting those designated areas specified in 15A NCAC 02C .0116 and 15A NCAC 02C .0117 of this Section. 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; or
 - (B) Pumping. Grout shall be pumped into place through a hose or pipe extended to the bottom of the annular space which can be raised as the grout is applied. The grout hose or pipe shall remain submerged in grout during the entire application; or
 - (C) Other. Grout may be emplaced in the annular space by gravity flow in such a way to ensure complete filling of the space 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 which 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, that large diameter bored wells shall meet the requirements of Subparagraph (e)(2) of this Rule.
- (f) Well Screens.
 - (1) The well, if constructed to obtain water from an unconsolidated rock formation, shall be equipped with a screen that will 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 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 which have differences in water quality which would result in contamination of any aquifer or zone.
- (g) Gravel-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 (h) 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 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 which have differences in water quality that would result in deterioration of the water quality in any aquifer or zone.
- (h) Well Development.
 - (1) All water supply wells shall be developed by the well driller;
 - (2) 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) 10 NTUs of turbidity as suspended solids.
 - (3) Development shall not require efforts to reduce or eliminate the presence of dissolved constituents which 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.

- (i) Well Head Completion.
- (1) Access Port. Every water supply well and such other wells as may be specified by the Commission shall be equipped with a usable access port or air line. The access port shall be at least one half inch inside diameter opening so that the position of the water level can be determined at any time. Such port shall be installed and maintained in such manner as to prevent entrance of water or foreign material.
 - (2) Well Contractor Identification Plate.
 - (A) An identification plate, showing the drilling contractor and certification number and the information specified in Part (i)(2)(E) of this Rule, shall be installed on the well within 72 hours after completion of the drilling.
 - (B) The identification plate shall be constructed of a durable weatherproof, rustproof metal, or equivalent material approved by the Director.
 - (C) 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.
 - (D) The identification plate shall not be removed by any person.
 - (E) The identification plate shall be stamped or otherwise imprinted with permanent legible markings to show the:
 - (i) total depth of well;
 - (ii) casing depth (ft.) and inside diameter (in.);
 - (iii) screened intervals of screened wells;
 - (iv) packing interval of gravel-or sand-packed wells;
 - (v) yield, in gallons per minute (gpm), or specific capacity in gallons per minute per foot of drawdown (gpm/ft.-dd);
 - (vi) static water level and date measured; and
 - (vii) date well completed.
 - (3) Pump Installer Identification Plate.
 - (A) An identification plate, showing the name and registration number of the pump installation contractor, and the information specified in Part (i)(3)(D) of this Rule, 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;
 - (B) The identification plate shall be constructed of a durable waterproof, rustproof metal, or equivalent material approved by the Director;
 - (C) The identification plate shall not be removed by any person; and
 - (D) The identification plate shall be stamped or otherwise imprinted with permanent legible, markings to show the:
 - (i) date the pump was installed;
 - (ii) the depth of the pump intake; and
 - (iii) the horsepower rating of the pump.
 - (4) Valved flow. Every artesian well that flows under natural artesian 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.
 - (5) Pitless adapters or pitless units shall be allowed as a method of well head completion under the following conditions:
 - (A) The pitless device shall be manufactured specifically for the purpose of water well construction;
 - (B) Design, installation and performance standards shall be those specified in PAS-1 (Pitless Adapter Standard No. 1) as adopted by the Water System Council's Pitless Adapter Division;
 - (C) The pitless device shall be compatible with the well casing;
 - (D) The top of the pitless device shall extend at least eight inches above land surface;
 - (E) The pitless device shall have an access port.
 - (6) All openings for piping, wiring, and vents shall enter into the well at least 12 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.

History Note: Authority G.S. 87-87; 87-88;
 Eff. February 1, 1976;
 Amended Eff. May 14, 2001; December 1, 1992; March 1, 1985; September 1, 1984; April 20, 1978;
 Temporary Amendment Eff. August 3, 2001;
 Amended Eff. August 1, 2002.

15A NCAC 02C .0108 STANDARDS OF CONSTRUCTION: WELLS OTHER THAN WATER SUPPLY

(a) No well shall be located, constructed, operated, or repaired in any manner that may adversely impact the quality of groundwater.

(b) Injection wells shall conform to the standards set forth in Section .0200 of this Subchapter.

(c) Monitoring wells and recovery wells shall be located, designed, constructed, operated and abandoned with materials and by methods which are compatible with the chemical and physical properties of the contaminants involved, specific site conditions and specific subsurface conditions. Specific construction standards will be itemized in the construction permit, if such a permit is required, but the following general requirements will apply:

- (1) The borehole shall not penetrate to a depth greater than the depth to be monitored or the depth from which contaminants are to be recovered.
- (2) The well shall not hydraulically connect:
 - (A) separate aquifers; or
 - (B) those portions of a single aquifer where known or suspected contamination would occur in separate and definable layers within the aquifer.
- (3) The well construction materials shall be compatible with the depth of the well and the contaminants to be monitored or recovered.
- (4) The well shall be constructed in such a manner that water or contaminants from the land surface cannot migrate along the borehole annulus into any packing material or well screen area.
- (5) Packing material placed around the screen shall extend at least one foot above the top of the screen. Unless the depth of the screen necessitates a thinner seal; a one foot thick seal, comprised of bentonitic clay or other material approved by the Director, shall be emplaced directly above and in contact with the packing material.
- (6) Grout shall be placed in the annular space between the outermost casing and the borehole wall from the land surface to the top of the bentonite clay seal above any well screen or to the bottom of the casing for open end wells. To provide stability for the well casing, the uppermost three feet of grout below land surface must be a concrete or cement-type grout.
- (7) All wells shall be secured, with a locking well cap, to reasonably ensure against unauthorized access and use.
- (8) All wells shall be afforded reasonable protection against damage during construction and use.
- (9) Any wells that would flow under natural artesian conditions shall be valved so that the flow can be regulated.
- (10) The well casing shall be terminated no less than 12 inches above land surface datum unless both of the following conditions are met:
 - (A) site-specific conditions directly related to business activities, such as vehicle traffic, would endanger the physical integrity of the well; and
 - (B) the well head is completed in such a manner so as to preclude surficial contaminants from entering the well.
- (11) Each well shall have securely affixed an identification plate constructed of a durable material and shall contain the following information:
 - (A) drilling contractor, or pump installation contractor, name and applicable certification or registration numbers;
 - (B) date well completed;
 - (C) total depth of well;
 - (D) a warning that the well is not for water supply and that the groundwater may contain hazardous materials; and
 - (E) depth(s) to the top(s) and bottom(s) of the screen(s).
- (12) Each well shall be developed such that the level of turbidity or settleable solids does not preclude accurate chemical analyses of any fluid samples collected.

(d) Wells constructed for the purpose of monitoring or testing for the presence of liquids associated with tanks regulated under 15A NCAC 02N (Criteria and Standards Applicable to Underground Storage Tanks) shall be constructed in accordance with 15A NCAC 02N .0504.

(e) Wells constructed for the purpose of monitoring for the presence of vapors associated with tanks regulated under 15A NCAC 02N shall:

- (1) be constructed in such a manner as to prevent the entrance of surficial contaminants or water into or alongside the well casing; and
- (2) be provided with a lockable cap in order to reasonably ensure against unauthorized access and use.

(f) Temporary wells and all other non-water supply wells shall be constructed in such a manner as to preclude the vertical migration of contaminants within and along the borehole channel.

(g) For monitoring, sand-or gravel packed wells, centering guides must be evenly distributed in the borehole.

*History Note: Authority G.S. 87-87; 87-88;
Eff. February 1, 1976;
Amended Eff. April 1, 2001; December 1, 1992; September 1, 1984; April 20, 1978.*

15A NCAC 02C .0109 PUMPS AND PUMPING EQUIPMENT

- (a) The pumping capacity of the pump shall be consistent with the intended use and yield characteristics of the well.
- (b) The pump and related equipment for the well shall be conveniently located to permit easy access and removal for repair and maintenance.
- (c) The base plate of a pump placed directly over the well shall be designed to form a watertight seal with the well casing or pump foundation.
- (d) In installations where the pump is not located directly over the well, the annular space between the casing and pump intake or discharge piping shall be closed with a watertight seal preferably designed specifically for this purpose.
- (e) The well shall be properly vented at the well head to allow for the pressure changes within the well except when a suction lift type pump is used.
- (f) A hose bibb shall be installed at the well head by the person installing the pump for obtaining water samples. In the case of offset jet pump installations the hose bibb shall be installed on the return (pressure) side of the jet pump piping.
- (g) A priming tee shall be installed at the well head in conjunction with offset jet pump installations.
- (h) Joints of any suction line installed underground between the well and pump shall be tight under system pressure.
- (i) The drop piping and electrical wiring used in connection with the pump shall meet all applicable underwriters specifications.
- (j) Contaminated water shall not be used for priming the pump.

History Note: Authority G.S. 87-87; 87-88;
Eff. February 1, 1976;
Amended Eff. December 1, 1992; April 20, 1978.

15A NCAC 02C .0110 WELL TESTS FOR YIELD

- (a) Every water supply well shall be tested for capacity by a method and for a period of time as specified in this Rule.
- (b) The permittee may be required as a permit condition to test any well for capacity by a method stipulated in the permit.
- (c) Standard methods for testing domestic well capacities include:
 - (1) Pump Method
 - (A) select a permanent measuring point, such as the top of the casing;
 - (B) measure and record the static water level below or above the measuring point prior to starting the pump;
 - (C) measure and record the discharge rate at intervals of 10 minutes or less;
 - (D) measure and record water levels using a steel or electric tape at intervals of 10 minutes or less;
 - (E) continue the test for a period of at least one hour;
 - (F) make measurements within an accuracy of plus or minus one inch.
 - (2) Bailer Method
 - (A) select a permanent measuring point, such as the top of the casing;
 - (B) measure and record the static water level below or above the measuring point prior to starting the bailing procedure;
 - (C) bail the water out of the well as rapidly as possible for a period of at least one hour; determine and record the bailing rate in gallons per minute at the end of the bailing period;
 - (D) measure and record the water level immediately after stopping bailing process.
 - (3) Air Rotary Drill Method
 - (A) measure and record the amount of water being injected into the well during drilling operations;
 - (B) measure and record the discharge rate in gallons per minute at intervals of one hour or less during drilling operations;
 - (C) after completion of the drilling, continue to blow the water out of the well for at least 30 minutes and measure and record the discharge rate in gallons per minute at intervals of 10 minutes or less during the period;
 - (D) measure and record the water level immediately after discharge ceases.
 - (4) Air Lift Method
 - (A) Measurements shall be made through a pipe placed in the well;
 - (B) The pipe shall have a minimum inside diameter of at least five-tenths of an inch and shall extend from top of the well head to a point inside the well that is below the bottom of the air line;
 - (C) Measure and record the static water level prior to starting the air compressor;
 - (D) Measure and record the discharge rate at intervals of 10 minutes or less;
 - (E) Measure and record the pumping level using a steel or electric tape at intervals of 10 minutes or less;
 - (F) Continue the test for a period of at least one hour.
- (d) Public, Industrial and Irrigation Wells. Every public, industrial and irrigation well upon completion, shall

be tested for capacity by the drilling contractor (except when the owner specifies another agent) by the following or equivalent method:

- (1) The water level in the well to be pumped and any observation wells shall be measured and recorded prior to starting the test.
- (2) The well shall be tested by a pump of sufficient size and lift capacity to satisfactorily test the yield of the well, consistent with the well diameter and purpose.
- (3) The pump shall be equipped with sufficient throttling devices to reduce the discharge rate to approximately 25 percent of the maximum capacity of the pump.
- (4) The test shall be conducted for a period of at least 24 hours without interruption and shall be continued for a period of at least four hours after the pumping water level stabilizes (ceases to decline). When the total water requirements for wells other than public, community or municipal supply wells are less than 100,000 gpd, the well shall be tested for a period and in a manner to satisfactorily show the capacity of the well, or that the capacity of the well is sufficient to meet the intended purpose.
- (5) The pump discharge shall be set at a constant rate or rates that can be maintained throughout the testing period. If the well is tested at two or more pumping rates (a step-drawdown test), the pumping water level shall be stabilized for a period of at least four hours for each pumping rate.
- (6) The pump discharge rate shall be measured by an orifice meter, flowmeter, weir, or equivalent metering device. The metering device shall have an accuracy within plus or minus five percent.
- (7) The discharge rate of the pump and time shall be measured and recorded at intervals of 10 minutes or less during the first two hours of the pumping period for each pumping rate. If the pumping rate is relatively constant after the first two hours of pumping, discharge measurements and recording may be made at longer time intervals but not to exceed one hour.
- (8) The water level in each well and time shall be measured and recorded at intervals of five minutes or less during the first hour of pumping and at intervals of 10 minutes or less during the second hour of pumping. After the second hour of pumping, the water level in each well shall be measured at such intervals that the lowering of the pumping water level does not exceed three inches between measurements.
- (9) A reference point for water level measurements (preferably the top of the casing) shall be selected and recorded for the pumping well and each observation well to be measured during the test. All water level measurements shall be made from the selected reference points.
- (10) All water level measurements shall be made with a steel or electric tape or equivalent measuring device.
- (11) All water level measurements shall be made within an accuracy of plus or minus one inch.
- (12) After the completion of the pumping period, measurements of the water level recovery rate, in the pumped well, shall be made for a period of at least two hours in the same manner as the drawdown.

*History Note: Authority G.S. 87-87; 87-88;
Eff. February 1, 1976;
Amended Eff. April 1, 2001; December 1, 1992; September 1, 1984; April 20, 1978.*

15A NCAC 02C .0111 DISINFECTION OF WATER SUPPLY WELLS

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

- (1) Chlorination.
 - (a) 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 manufacturers directions with storing, transporting, and using calcium hypochlorite products. About three ounces of hypochlorite containing 65 percent to 75 percent available chlorine is needed per 100 gallons of water for at least a 100 ppm chlorine residual. As an example, a well having a diameter of six inches, has a volume of about 1.5 gallons per foot. If the well has 200 feet of water, the minimum amount of hypochlorite required would be 9 ounces. (1.5 gallons/foot x 200 feet = 300 gallons at 3 ounces per 100 gallons; 3 ounces x 3 = 9 ounces.)
 - (b) The chlorine shall be placed in the well by one of the following or equivalent methods:
 - (i) Chlorine tablets may be dropped in the top of the well and allowed to settle to the bottom;
 - (ii) 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.
 - (c) Agitate the water in the well to ensure thorough dispersion of the chlorine.
 - (d) 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.
 - (e) The chlorine solution shall stand in the well for a period of at least 24 hours.

- (f) The well shall be pumped until the system is clear of the chlorine before the system is placed in use.
- (2) Other materials and methods of disinfection, at least as effective as those in Item (1) of this Rule, may be used upon prior approval by the Director.

History Note: Authority G.S. 87-87; 87-88;
 Eff. February 1, 1976;
 Amended Eff. April 1, 2001; December 1, 1992; July 1, 1988; September 1, 1984.

15A NCAC 02C .0112 WELL MAINTENANCE: REPAIR: GROUNDWATER RESOURCES

- (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.
- (c) Broken, punctured or otherwise defective or unserviceable casing, screens, fixtures, seals, or any part of the well head shall be repaired or replaced, or the well shall be abandoned pursuant to the requirements of 15A NCAC 02C .0113.
- (d) National Science Foundation (NSF) approved PVC pipe rated at 160 PSI may be used for liner casing. 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.

History Note: Authority G.S. 87-87; 87-88;
 Eff. February 1, 1976;
 Amended Eff. August 1, 2002; April 1, 2001; December 1, 1992; September 1, 1984.

15A NCAC 02C .0113 ABANDONMENT OF WELLS

- (a) Any well which has been temporarily abandoned, shall be abandoned in accordance with one of the following procedures:
 - (1) Upon temporary removal from service or prior to being put into service, the well shall be sealed with a water-tight cap or seal compatible with casing and installed so that it cannot be removed easily by hand.
 - (2) The well shall be maintained whereby it is not a source or channel of contamination during temporary abandonment.
 - (3) Every temporarily abandoned well shall be protected with a casing.
- (b) Any well which has been abandoned permanently shall be abandoned in accordance with the following procedures:
 - (1) Procedures for permanent 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 groundwaters. Any casing not grouted in accordance with 15A NCAC 2C .0107(e) of this Section 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 NCAC 2C .0111. Do not use a 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, other than "bored" wells, constructed in unconsolidated formations shall be completely filled with cement grout, or bentonite grout by introducing it through a pipe extending to the bottom of the well which 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:

- (i) 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; and
 - (ii) 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 not 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; and
 - (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 15A NCAC 2C .0111 of this Subchapter. Do not use a 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; and
 - (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 permanently abandoned within 30 days of receipt of notice from the department.
- (d) The drilling contractor shall permanently 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.
- (e) The owner shall be responsible for permanent 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.

*History Note: Authority G.S. 87-87; 87-88;
Eff. February 1, 1976;
Amended Eff. April 1, 2001; December 1, 1992; September 1, 1984; April 20, 1978.*

15A NCAC 02C .0114 DATA AND RECORDS REQUIRED

(a) Well Cuttings.

- (1) Samples of formation cuttings shall be collected and furnished to the Division from any well when such samples are requested by the Division prior to completion of the drilling or boring activities.
- (2) Samples or representative cuttings shall be obtained for depth intervals of 10 feet or less beginning at the land surface. Representative cuttings shall also be collected at depths of each significant change in formation.
- (3) Samples of cuttings shall be placed in containers furnished by the Division and such containers shall be filled, sealed and properly labeled with indelible-type markers, showing the well owner, well number if applicable, and depth interval the sample represents.
- (4) Each set of samples shall be placed in a suitable container(s) showing the location, owner, well number if applicable, driller, depth interval, and date.
- (5) Samples shall be retained by the driller until delivery instructions are received from the Division or for a period of at least 60 days after the well record form (GW-1), indicating said samples are available, has been received by the Division.
- (6) The furnishing of samples to any person or agency other than the Division shall not constitute compliance with the department's request and shall not relieve the driller of his obligation to the department.

(b) Reports.

- (1) Any person completing or abandoning any well shall submit to the Division a record of the construction or abandonment. For public water supply wells, a copy of each completion or abandonment record shall also be submitted to the Health Department responsible for the county in which the well is located. The record shall be on forms provided by the Division and shall include certification that construction or abandonment was completed as required by these Rules, the owner's name and address, well location, diameter, depth, yield, and any other information the Division may reasonably require.
- (2) The certified record of completion or abandonment shall be submitted within a period of thirty days after completion or abandonment.
- (3) The furnishing of records to any person or agency other than the Division shall not constitute compliance with the reporting requirement and shall not relieve the driller of his obligation to the Department.

*History Note: Authority G.S. 87-87; 87-88;
Eff. February 1, 1976;
Amended Eff. April 1, 2001; December 1, 1992; September 1, 1984; April 20, 1978.*

15A NCAC 02C .0115 DIAGRAMS AND FORMS

*History Note: Authority G.S. 87-87;
Eff. February 1, 1976;
Amended Eff. April 20, 1978;
Repealed Eff. September 1, 1984.*

15A NCAC 02C .0116 DESIGNATED AREAS: WELLS CASED TO LESS THAN 20 FEET

(a) In some areas the best or only source of potable water supply exists between ten and twenty feet below the surface of the land. In consideration of this, the Director may designate areas of the state where wells may be cased to a depth less than twenty feet. To make this determination, the Director will find:

- (1) that the only or best source of drinking water exists between a depth of ten and twenty feet below the surface of the land;
 - (2) that utilization of said source of water is in the best interest of the public.
- (b) The following areas are so designated:
- (1) in Currituck County on Terres Quarter Island and in an area between the sound and a line beginning at the end of SR 1130 near Currituck Sound, thence north to the end of SR 1133, thence north to the end of NC 3 at the intersection with the sound;
 - (2) on the Outer Banks from the northern corporate limit of Nags Head on Bodie Island, south to Ocracoke Inlet;
 - (3) all areas lying between the Intercoastal Waterway and the ocean from New River Inlet south to New Topsail Inlet;
 - (4) all areas lying between the Intercoastal Waterway and the ocean from the Cape Fear River south to the South Carolina line.

(c) In all other areas, the source of water shall be at least 20 feet below land surface, except when adequate quantities of potable water cannot be obtained below a depth of twenty feet, and at sites not within areas designated in Subparagraph (b) of this Rule the source of water may be obtained from unconsolidated rock formations at depths less than twenty feet provided that:

- (1) the well driller can show to the satisfaction of the Division, that sufficient water of acceptable quality is not available to a minimum depth of fifty feet; and
- (2) the proposed source of water is the maximum feasible depth above fifty feet, but in no case less than ten feet.
- (3) the regional office of the department shall be notified prior to the construction of a well obtaining water from a depth between 10 and 20 feet below land surface.

*History Note: Authority G.S. 87-87;
Eff. April 20, 1978;
Amended Eff. December 1, 1992; July 1, 1988; September 1, 1984.*

15A NCAC 02C .0117 DESIGNATED AREAS: WELLS CASED TO MINIMUM DEPTH OF 35 FEET

(a) Wells drilled in areas underlain by metavolcanic rocks identified on the 1985 State Geologic Map as bedded argillites of the Carolina Slate Belt shall be cased to a minimum depth of 35 feet. These areas are generally described as follows:

- (1) Anson County generally west of a line beginning at the intersection of the runs of the Pee Dee River and Buffalo Creek, thence generally northeast to SR 1627, thence generally south along SR 1627 to the intersection with SR 1632, thence generally west along SR 1632 to the intersection with US 52, thence generally south along US 52 to the intersection with SR 1418, thence generally southwest along SR 1418 to the intersection of US 74, thence generally west along US 74 to the intersection of SR 1251, thence generally southwest along SR 1251 to the intersection with SR 1240, thence generally southeast along SR 1240 to the intersection with SR 1252, thence generally south along SR 1252 to the intersection with SR 1003, thence generally west along SR 1003 to the Union County line;
- (2) Cabarrus County generally east of a line beginning at the intersection of SR 1113 and the Union County line, thence generally northeast along SR 1113 to the intersection with SR 1114, thence generally east along SR 1114 to the Stanly County line, thence generally northeast along the county line to the intersection with SR 1100, thence generally northeast along SR 1100 to the intersection of with SR 2622, thence generally southeast along SR 2622 to the intersection with SR 2617, thence generally northeast along SR 2617 to the intersection with SR 2611, thence generally north along SR 2611 to the intersection with NC 73, thence generally east along NC 73 to the intersection with SR 2453, thence generally northeast along SR 2453 to the intersection with SR 2444, thence generally northeast along SR 2444 to the Rowan County line;
- (3) Davidson County generally east of a line starting at the intersection of the runs of Abbotts Creek and the Yadkin River in High Rock Lake, thence generally north along Abbotts Creek to NC 8 bridge, thence generally north along NC 8 to the intersection with Interstate 85, thence generally northeast along Interstate 85 to the intersection with US 64, thence generally southeast along US 64 to the Randolph County line;
- (4) Montgomery County generally west of a line beginning at the intersection of SR 1134 with the Randolph County line, thence generally south along SR 1134 to the intersection with SR 1303, thence generally south along SR 1303 to the intersection with NC 109, thence generally southeast along NC 109 to the intersection with SR 1150, thence generally south along SR 1150 to the intersection with NC 73, thence generally southeast along NC 73 to the intersection with SR 1112, thence generally east along SR 1112 to the intersection with SR 1130, thence generally northeast along SR 1130 to the intersection with SR 1132, thence generally southeast along SR 1132 to the intersection with SR 1174, thence generally east along SR 1174 to the intersection with NC 109, thence generally north along NC 109 to the intersection with SR 1546, generally southeast along SR 1546 to the intersection of SR 1543, thence generally south along SR 1543 to the intersection with NC 73, thence generally west along NC 73 to the intersection with SR 1118, thence generally southwest along SR 1118 to the intersection with SR 1116, thence generally west along SR 1116 to the intersection with NC 109, thence generally south along NC 109 to the intersection with the Richmond County line;
- (5) Randolph County generally west of a line beginning at the intersection of US 64 with the Davidson County line, thence generally east along US 64 to the intersection with NC 49, thence generally southwest along NC 49 to the intersection with SR 1107, thence generally south along SR 1107 to the intersection with SR 1105, thence southeast along SR 1105 to the intersection with the Montgomery County line;
- (6) Rowan County generally east of a line beginning at the intersection of SR 2142 with the Cabarrus County line, thence north along SR 2142 to the intersection with SR 2162, thence generally northeast along SR 2162 to the intersection with the run of the Yadkin River in High Rock Lake;
- (7) Union County generally east of a line beginning at the intersection of SR 1117 with the South Carolina-North Carolina State line, thence generally north along SR 1117 to the intersection with SR 1008, thence generally northeast along SR 1008 to the intersection with SR 1514, thence generally north along SR 1514 to the intersection with SR 1520, thence generally northeast along SR 1520 to the intersection with NC 218, thence generally east along NC 218 to the intersection with US 601, thence generally north along US 601 to the intersection with SR 1600, thence generally northeast along SR 1600 to the intersection with the Cabarrus County line;
- (8) Stanly County -- all.

(b) The roads describing the boundaries of the designated areas do not necessarily coincide with the rock unit boundaries. Therefore, any well drilled within 400 feet of a road described as a boundary of a designated area shall be cased to the same minimum depth as those within the described area.

*History Note: Authority G.S. 87-87;
Eff. April 20, 1978;
Amended Eff. April 1, 2001.*

15A NCAC 02C .0118 VARIANCE

(a) The Director may grant a variance from any construction standard under the rules of this Section. Any variance will be in writing, and may be granted upon oral or written application to the Director, by the person responsible for the construction of the well for which the variance is sought, if the Director finds facts to support the following conclusions:

- (1) that the use of the well will not endanger human health and welfare or the groundwater;
- (2) that construction in accordance with the standards was not technically feasible in such a manner as to afford a reasonable water supply at a reasonable cost.

(b) The Director may require the variance applicant to submit such information as he deems necessary to make a decision to grant or deny the variance. The Director may impose such conditions on a variance or the use of a well for which a variance is granted as he deems necessary to protect human health and welfare and the groundwater resources. The findings of fact supporting any variance under this Rule shall be in writing and made part of the variance.

(c) The Director shall respond in writing to a request for a variance within 30 days from the receipt of the variance request.

(d) A variance applicant who is dissatisfied with the decision of the Director may commence a contested case by filing a petition under G.S. 150B-23 within 60 days after receipt of the decision.

*History Note: Authority G.S. 87-87; 87-88; 150B-23;
Eff. April 20, 1978;
Amended Eff. April 1, 2001; December 1, 1992; September 1, 1988; September 1, 1984.*

15A NCAC 02C .0119 DELEGATION

(a) The Director is delegated the authority to grant permission for well construction under G.S. 87-87.

(b) The Director is delegated the authority to give notices and sign orders for violations under G.S. 87-91.

(c) The Director is delegated the authority to request the Attorney General to institute civil actions under G.S. 87-95.

(d) The Director is authorized to subdelegate, to an official of the Division, the granting of a variance from any construction standard, or the approval of alternate construction methods or materials, specified under the Rules of this Section.

*History Note: Authority G.S. 143-215.3(a)(1);
Eff. March 1, 1985;
Amended Eff. December 1, 1992.*

SECTION .0200 - CRITERIA AND STANDARDS APPLICABLE TO INJECTION WELLS**15A NCAC 02C .0201 PURPOSE**

The rules in this Section establish classes of injection wells and set forth requirements and procedures for permitting, constructing, operating, monitoring, reporting, and abandoning approved types of injection wells and abandoning, monitoring, and reporting non-permitted wells used for the injection of wastes or any substance of a composition and concentration such that, if it were discharged to the land or waters of the state, would create a threat to human health or would otherwise render those waters unsuitable for their intended best usage. Except as provided for in G.S. 143-215.1A, the discharge of any wastes to the subsurface or groundwaters of the state by means of wells is prohibited by G.S. 143-214.2(b).

*History Note: Authority G.S. 87-84; 87-87; 87-88; 87-94; 87-95; 143-211; 143-214.2(b); 143-215.1A;
143-215.3(a)(1); 143-215.3(c);
Eff. August 1, 1982;
Amended Eff. September 1, 1996.*

15A NCAC 02C .0202 SCOPE

The rules in this Section apply to all persons proposing to construct, alter, repair, or abandon any injection well, or owning, using or operating, or proposing to use or operate any well for injection.

*History Note: Authority G.S. 87-86; 87-87; 143-211; 143-215.1A; 143-215.3(a)(1); 143-215.3(c);
Eff. August 1, 1982;
Amended Eff. September 1, 1996.*

15A NCAC 02C .0203 CONFLICT WITH OTHER LAWS, RULES, AND REGULATIONS

The provisions of any federal, state, county, or municipal laws, rules, or regulations establishing injection well standards affording greater protection to the public welfare, safety, and health and to the groundwater resources shall prevail, within the jurisdiction of such agency or municipality, over standards established by the rules in this Section.

*History Note: Authority G.S. 87-87; 87-96; 143-211; 143-215.1A; 143-215.3(a)(1); 143-215.3(c);
Eff. August 1, 1982;
Amended Eff. September 1, 1996.*

15A NCAC 02C .0204 DEFINITIONS

The definition of any word or phrase used in the rules in this Section shall be the same as given in G.S. 87-85 and G.S. 143-213, except that the following words and phrases shall have the following meanings:

- (1) "Abandonment or Plugging Record" means a systematic listing of permanent or temporary abandonment of a well and may contain a well log or description of amounts and types of abandonment material used, the method employed for abandonment, a description of formation location, formation thickness, and location of abandonment structures.
- (2) "Air Injection Well or Air Sparging Well" means a well that is used to inject uncontaminated air to the subsurface to promote volatilization and enhance bioremediation of contaminants in the groundwater and soil.
- (3) "Aquifer Test Well" means a well into which uncontaminated fluid is injected in order to facilitate the assessment of local aquifer characteristics such as permeability, hydraulic conductivity, storage coefficient, or transmissivity. This includes slug tests which assess aquifer characteristics by the addition of a known volume of water to cause an instantaneous change in the water level of the well.
- (4) "Area Permit" means a permit that regulates all injection activities within the associated Area of Review.
- (5) "Catastrophic Collapse" means the sudden and utter failure of overlying strata caused by removal of underlying materials.
- (6) "Closed-Loop Geothermal Injection Well System" means a system of continuous piping, part of which is installed in the subsurface, through which moves a fluid that does not exit the piping, and which is used to transfer heat energy to and from the fluid.
- (7) "Closed-Loop Groundwater Remediation System" means a system and attendant processes used for improving the quality of contaminated groundwater by collecting or pumping groundwater, treating the groundwater to reduce the concentration of or remove contaminants, and reintroducing the treated water beneath the surface in such a manner that the treated groundwater will be recaptured by the collecting or pumping portion of the system.
- (8) "Compliance Boundary" means a boundary as specified by 15A NCAC 2L (Classifications and Water Quality Standards Applicable To The Groundwaters of North Carolina), at and beyond which groundwater quality standards may not be exceeded.
- (9) "Confined or Enclosed Space" means any space, having a limited means of ingress or egress, which is subject to the accumulation of toxic or flammable contaminants or has an oxygen deficient atmosphere.
- (10) "Confining Zone" means a geological formation, group of formations, or part of a formation that is capable of limiting fluid movement.
- (11) "Contaminant" means any physical, chemical, biological or radiological substance or matter which, if injected, may cause a violation of any water quality standard under 15A NCAC 2L, may adversely affect the health of humans, or may degrade the quality of the groundwater.
- (12) "Contamination" means foreign materials of such nature, quality, and quantity as to cause degradation of the quality of the water.
- (13) "Director" means the Director of the Division of Water Quality.
- (14) "Division" means the Division of Water Quality.
- (15) "Facility, Operation, or Activity" means any injection well or system.
- (16) "Flow Rate" means the volume per unit time of a fluid which emerges from an orifice, pump, or turbine or passes along a conduit or channel.
- (17) "Fluid" means a material or substance which flows or moves; whether in a semisolid, liquid, sludge, gas, or any other form or state.

- (18) "Formation Fluid" means fluid present in a formation under natural conditions. This does not include introduced fluids, such as drilling mud and grout, used to facilitate the construction or development of a well.
- (19) "Generator" means any person, by site location, whose act or process produces hazardous waste.
- (20) "Groundwaters" mean those waters occurring in the subsurface under saturated conditions.
- (21) "Grout" means well construction material as specified in 15A NCAC 2C .0100 (Criteria and Standards Applicable to Water Supply and Certain Other Wells).
- (22) "Hazardous Waste" means any solid, semisolid, liquid, or contained gaseous waste or combination thereof, which because of its quantity, concentration, or physical, chemical or infectious characteristic may:
- (a) cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness; or
 - (b) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.
- (23) "Hazardous Waste Management Facility" means all contiguous land and structures, and other appurtenances and improvements on the land used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (for example, one or more landfills, surface impoundments, or combination of them).
- (24) "Hose Bibb or Tap" means a fluid sampling port located on or appurtenant to a well.
- (25) "Hydraulic Conductivity" means the rate at which a unit volume of fluid of a specific density, viscosity and temperature can flow through a permeable medium of unit cross section and under unit hydraulic gradient.
- (26) "Injectant" means any solid or fluid that is emplaced in the subsurface by means of an injection well.
- (27) "Injection" means emplacement or discharge into the subsurface of a solid or fluid substance or material. This definition excludes drilling fluids, grout used in association with well construction or abandonment, and fluids used in connection with well development, rehabilitation or stimulation.
- (28) "Injection Well" means any excavation which is cored, bored, drilled, jetted, dug, or otherwise constructed, whose depth is greater than its largest surface dimension and which is used, or intended to be used, for the injection of fluids or solids into the subsurface or groundwaters.
- (29) "Injection Zone" means a geological formation, group of formations, or part of a formation receiving fluids through a well.
- (30) "Lithology" means the description of rocks or sediments on the basis of their physical and chemical characteristics.
- (31) "Major Facility" means a Class 1 or 4 well.
- (32) "Mechanical Integrity" means:
- (a) an absence of a leak in the casing, tubing, or packer of an injection well; and
 - (b) an absence of any significant fluid movement into an underground source of drinking water through vertical channels adjacent to the injection well bore.
- (33) "Monitoring Well" means any well constructed for the primary purpose of obtaining samples of groundwater or other liquids for examination or testing, or for the observation or measurement of groundwater levels. This definition excludes lysimeters, tensiometers, and other devices used to investigate the characteristics of the unsaturated zone.
- (34) "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 shall be deemed to vest ownership in the land owner, for purposes of this Section and statutes governing groundwater, in the absence of contrary agreement in writing.
- (35) "Permit" means an authorization, license, or equivalent control document issued by the Director to implement the requirements of these Rules.
- (36) "Plug" means the act or process of stopping the flow of fluids into or out of a formation through a borehole or well penetrating that formation.
- (37) "Potable Water" means those waters which are suitable for drinking, culinary, or food processing purposes.
- (38) "Pressure" means the total load or force per unit area acting on a surface.
- (39) "Site" means the land or water area where any facility or activity is physically located or conducted, including adjacent land used in connection with the facility or activity.
- (40) "Receptor" means any human, plant, animal, or structure which is, or has the potential to be, adversely affected by the release or migration of contaminants. Any well constructed for the purpose of monitoring groundwater and contaminant concentrations shall not be considered a receptor.
- (41) "Subsidence" means the lowering of the natural land surface in response to: earth movements; reduction of formation fluid pressure; removal of underlying supporting material by mining or solution of solids, either artificially or from natural causes; compaction due to wetting (Hydrocompaction); oxidation of organic matter in soils; or added load on the land surface.
- (42) "Thermal Waste" means a material having a temperature which is in excess of 30 degrees Fahrenheit above or below the naturally occurring temperature of the receiving groundwater, as determined by the Director.

- (43) "Transmissivity" means the product of the hydraulic conductivity and the total saturated thickness of a porous or fractured medium.
- (44) "Underground Sources of Drinking Water" means an aquifer or its portion:
- (a) which supplies any public water system; or
 - (b) which contains a sufficient quantity of groundwater to supply a public water supply system; and
 - (i) currently supplies drinking water for human consumption; or
 - (ii) contains fewer than 10,000 milligrams per liter of total dissolved solids.
- (45) "Waste" means waste as defined in G.S. 143-213(18).
- (46) "Well head" means the upper terminal of the well including adapters, ports, valves, seals, and other attachments.
- (47) "Well System" means two or more wells serving the same facility.

History Note: Authority G.S. 87-85; 87-87; 143-213; 143-215.1A;
 Eff. August 1, 1982;
 Amended Eff. September 1, 1996; July 1, 1988; March 1, 1984.

15A NCAC 02C .0205 AREA OF REVIEW

- (a) The area of review for an injection well or well field shall be a fixed radius around the well or well field of 1/4 mile (1320 feet) or greater, as determined by the Director, for the following Class 5 well types:
- (1) Type 5A7 - Heating/Cooling Water Return Well
 - (2) Type 5I - In-situ Groundwater Remediation Well
 - (3) Type 5L - Closed-Loop Groundwater Remediation Well
 - (4) Type 5P - Air Injection Well
 - (5) Type 5Q - Closed-Loop Geothermal Injection Well Systems
 - (6) Type 5X30 - Aquifer Test Well
- (b) In determining a fixed radius greater than 1/4 mile, the following factors shall be taken into consideration by the Director:
- (1) physical and chemical characteristics of the injected and formation fluids;
 - (2) injection rate and pressure;
 - (3) hydrogeology;
 - (4) population and its groundwater use and dependence; and
 - (5) historical practices in the area.
- (c) For all other Class 5 well types which can be approved under the rules in this Section, the area of review for an injection well or well field shall be calculated using the procedure for determining the zone of endangering influence specified in 40 CFR 146.6(a).

History Note: Authority G.S. 87-87; 143-211; 143-215.1A; 143-215.3(a)(1); 143-215.3(c);
 Eff. August 1, 1982;
 Amended Eff. September 1, 1996.

15A NCAC 02C .0206 CORRECTIVE ACTION

- (a) Injection wells not constructed in compliance with the criteria and standards specified in these Rules shall be brought into compliance with the rules in this Section or abandoned by the person(s) responsible for the construction of the well(s).
- (b) Where operation of any injection facility is not in compliance with the requirements of the rules in this Section, or where continued operation of the injection facility threatens any water quality standard or classification established under the authority of G.S. 143-214.1, the owner of the injection facility shall perform the following:
- (1) Stop all injection activities immediately;
 - (2) Notify the Division orally within 24 hours (or the next business day), and in writing within five calendar days, of becoming aware of any instance of noncompliance;
 - (3) Perform a complete site assessment and submit to the Division, as soon as practicable or in accordance with a schedule established by the Director, a report which shall include but not be limited to a description of:
 - (A) The source and cause of contamination;
 - (B) Any imminent hazards to public health and safety and actions taken to mitigate them;
 - (C) All receptors and significant exposure pathways;

- (D) The horizontal and vertical extent of soil and groundwater contamination and all significant factors affecting contaminant transport; and
 - (E) Any geological and hydrogeological features influencing the movement or chemical or physical character of the contaminants.
- (4) Submit a corrective action plan and a proposed schedule for implementation to the Director, for approval. In establishing a schedule, the Director shall consider any reasonable schedule proposed by the permittee. The corrective action plan shall include but not be limited to:
- (A) A description of the proposed corrective action and reasons for its selection;
 - (B) Specific plans, including engineering details where applicable for restoring the groundwater quality and for restoring the integrity of the injection facility if the injection activity is to continue;
 - (C) A schedule for the implementation and operation of the proposed plan; and
 - (D) A monitoring plan for evaluating the effectiveness of the proposed corrective action.

History Note: Authority G.S. 87-87; 87-88; 143-211; 143-215.1A; 143-215.3(a)(1); 143-215.3(c);
Eff. August 1, 1982;
Amended Eff. September 1, 1996; March 1, 1984.

15A NCAC 02C .0207 MECHANICAL INTEGRITY

- (a) An injection well shall be considered to have mechanical integrity if:
- (1) there is no measurable leak in the casing, tubing or packer; and
 - (2) there is no measurable fluid movement into an underground source of drinking water through vertical channels adjacent to the injection well bore which would result in deterioration of the water quality in zones above or below the injection zone; and
 - (3) injection pressure is no greater than atmospheric pressure (i.e. 14.7 pounds per square inch).
- (b) If the injection pressure is to be greater than atmospheric, a demonstration of the mechanical integrity of the injection facility prior to injection shall be required unless it can be demonstrated to the Director's satisfaction that the methods and materials used in the construction of the well and injection operations shall not result in a threat to human health or a contravention of a groundwater quality standard as specified in 15A NCAC 2L. In conducting and evaluating the tests for mechanical integrity, the owner shall apply one of the following methods:
- (1) monitoring of the annulus pressure; or
 - (2) a pressure test with liquid or gas.
- (c) When the owner reports the results of mechanical integrity tests to the Director, the owner shall include a description of the test(s) and the method(s) used. In making an evaluation of the data submitted, the Director may review monitoring or other test data available.

History Note: Authority G.S. 87-87; 143-211; 143-215.1A; 143-215.3(a)(1); 143-215.3(c);
Eff. August 1, 1982;
Amended Eff. September 1, 1996; March 1, 1984.

15A NCAC 02C .0208 FINANCIAL RESPONSIBILITY

The permittee shall maintain financial responsibility and resources, in the form of performance bonds or other equivalent forms of financial assurances, as approved by the Director and as specified in the permit, to close, plug, and abandon the injection operation.

History Note: Authority G.S. 87-87; 87-88; 143-211; 143-215.1A; 143-215.3(a)(1); 143-215.3(c);
40 C.F.R. Part 144.52(a)(7); 40 C.F.R. Part 145.11(a)(20);
Eff. August 1, 1982;
Amended Eff. September 1, 1996.

15A NCAC 02C .0209 CLASSIFICATION OF INJECTION WELLS

- (a) Class 1.

- (1) This class applies to industrial, municipal, and nuclear disposal wells that are used to inject wastes beneath the lowermost formation containing an underground source of drinking water.
 - (2) The designated type code and a description of the primary function for wells of this class shall be as follows:
 - (A) Type 1H - Hazardous Waste Disposal Well. These wells are used by generators of hazardous wastes or owners of hazardous waste management facilities to inject hazardous waste.
 - (B) Type 1I - Industrial disposal well. These wells are used to inject non-hazardous industrial waste.
 - (C) Type 1M - Municipal disposal well. These wells are used to inject non-hazardous waste.
 - (D) Type 1N - Nuclear disposal well. These wells are used to inject nuclear waste.
 - (E) Type 1X - Other Class 1 wells.
 - (3) No person shall construct, use, or operate a well of this class for injection.
- (b) Class 2.
- (1) This class applies to oil and gas production and storage related injection wells and includes wells which are used to inject fluids:
 - (A) which are brought to the surface in connection with conventional oil or natural gas production;
 - (B) for enhanced recovery of oil or natural gas; and
 - (C) for storage of hydrocarbons which are liquid at standard temperature and pressure.
 - (2) No person shall construct, use, or operate a well of this class for injection.
- (c) Class 3.
- (1) This class applies to special process wells which are used to inject for the purpose of extraction of minerals or energy.
 - (2) The designated type code and a description of the primary function for wells of this class shall be as follows:
 - (A) Type 3G - In-situ Gasification Well.
 - (B) Type 3M - Solution Mining Well. These wells are used in the solution mining of salts or potash.
 - (C) Type 3S - Sulfur Mining Well. These wells are used in the mining of sulfur by the Frasch process.
 - (D) Type 3T - Geothermal Well.
 - (E) Type 3U - Uranium mining Well.
 - (3) No person shall construct, use, or operate a well of this class for injection.
- (d) Class 4.
- (1) This class applies to injection wells that are used to inject hazardous wastes into or above a formation containing an underground source of drinking water and includes wells used by:
 - (A) generators of hazardous wastes or radioactive wastes; and
 - (B) owners of hazardous waste management facilities, or radioactive waste disposal sites.
 - (2) No person shall construct, use, or operate a well of this class for injection.
- (e) Class 5.
- (1) This class applies to all injection wells not included in Class 1, 2, 3, and 4.
 - (2) The construction, use, or operation of the following Class 5 injection well types are prohibited. The designated type code and a description of the primary function for these wells shall be as follows:
 - (A) Type 5A8 - Groundwater Aquaculture Return Flow Well. These wells inject groundwater or surface water that has been used to support aquaculture.
 - (B) Type 5D2 - Storm Water Drainage Well. These wells receive storm-water runoff from paved areas, including parking lots, streets, residential subdivisions, building roofs, or highways.
 - (C) Type 5F1 - Agricultural Drainage Well. These wells receive irrigation tailwaters, other field drainage, animal yard, feedlot, or dairy runoff.
 - (D) Type 5G30 - Special Drainage Well. These wells are used for disposing of water from sources other than direct precipitation. Examples of this well type include: landslide control drainage wells, water tank overflow drainage wells, swimming pool drainage wells, and lake control drainage wells.
 - (E) Type 5H - Gaseous Hydrocarbon Storage Well. These wells are used for the storage of hydrocarbons which are gases at standard temperature and pressure.
 - (F) Type 5N24 - Radioactive Waste Disposal Well. These wells are used for all radioactive waste disposal other than Class 4 wells.
 - (G) Type 5W - Sewage or Wastewater Disposal Well. These wells are used to inject sewage or wastewater from any source to the groundwaters of the State. This includes but is not limited to cesspools and abandoned drinking water wells.
 - (H) Type 5X13 - Mining, Sand, or Other Backfill Well. These wells are used to inject a mixture of fluid and sand, mill tailings, and other solids into mined out portions of subsurface mines whether, what is injected is a radioactive waste or not. This also includes special wells used to control mine fires and acid mine drainage wells.

- (I) Type 5X14 - Solution Mining Well. These wells are used in solution mining in conventional mines, such as stopes leaching.
 - (J) Type 5X15 - In-situ Fossil Fuel Recovery Well. These wells are used for the in-situ recovery of coal, lignite, oil shale, and tar sands.
 - (K) Type 5X17 - Air Scrubber Waste Disposal Well. These wells are used to inject wastes from air scrubbers.
 - (L) Type 5X18 - Water Softener Regeneration Brine Disposal Well. These wells are used to inject regeneration wastes from water softeners.
 - (M) Type 5X28 - Motor Vehicle Waste Disposal Well. These wells receive wastes from motor vehicle facilities and include but are not limited to autobody repair shops, new and used car dealerships, specialty repair shops (e.g., transmission, muffler, and radiator repair shops and any facility that steam cleans or otherwise washes undercarriages or engine parts or does any vehicular repair work).
- (3) The construction, use, or operation of the following Class 5 injection well types may be approved by the Director provided that the injected material does not contain any waste or any substance of a composition and concentration such that, if it were discharged to the land or waters of the state, would create a threat to human health or would otherwise render those waters unsuitable for their intended best usage. The designated type code and a description of the primary function for these wells shall be as follows:
- (A) Type 5A7 - Heating/Cooling Water Return Well. These wells reinject groundwater used to provide heating or cooling for structures. These wells may be approved by the Director only if the temperature of the injection fluid is not in excess of 30 degrees Fahrenheit above or below the naturally occurring temperature of the receiving groundwater. This includes wells using a geothermal fluid source.
 - (B) Type 5B22 - Salinity Barrier Well. These wells inject uncontaminated water into an aquifer to prevent the intrusion of salt water into the fresh water.
 - (C) Type 5I - In-situ Groundwater Remediation Well. These wells are used to inject additives for the in-situ treatment of contaminated soil or groundwater, when such additives are determined by the Division of Epidemiology to be protective of human health and permitted by the Division.
 - (D) Type 5L - Closed-Loop Groundwater Remediation Well. These wells are used to inject treated groundwater as part of a closed-loop remediation system for the prevention, control, or remediation of aquifer pollution.
 - (E) Type 5P - Air Injection Well. These wells are used to inject air to enhance in-situ treatment of groundwater.
 - (F) Type 5QM - Closed-Loop Geothermal-Mixed-Fluid Injection Well System. These wells are used to house a subsurface system of pipe that re-circulates fluid other than potable water for heating and cooling purposes and where the fluid is isolated from the environment.
 - (G) Type 5QW - Closed-Loop Geothermal-Water-Only Injection Well System. These wells are used to house a subsurface system of pipe that re-circulates potable water for heating and cooling purposes and where the fluid is isolated from the environment.
 - (H) Type 5R21 - Aquifer Recharge Well. These wells are used to recharge depleted aquifers and may inject uncontaminated water of equal or better quality than the aquifer being recharged.
 - (I) Type 5S23 - Subsidence Control Well. These wells are used to inject fluids into a non-oil or gas-producing zone to reduce or eliminate subsidence associated with overdraft of fresh water and not used for the purpose of oil or natural gas production.
 - (J) Type 5T - Tracer Well. These wells are used to inject substances determined by the Division of Epidemiology to be protective of human health and permitted by the Division.
 - (K) Type 5X25 - Experimental Technology Well. These wells are used in experimental or unproven technologies where operation is in compliance with all appropriate rules and Statutes.
 - (L) Type 5X30 - Aquifer Test Well. These wells are used to inject uncontaminated fluid into an aquifer to determine aquifer characteristics.
 - (M) Type 5Z - Other Wells.

History Note: Authority G.S. 87-87; 87-94; 87-95; 143-211; 143-214.2(b); 143-215.1A; 143-215.3(a)(1); 143-215.3(c); 143-215.6(c);
 Eff. August 1, 1982;
 Amended Eff. September 1, 1996; March 1, 1984.

15A NCAC 02C .0210 REQUIREMENTS: WELLS USED TO INJECT WASTE OR CONTAMINANTS

The owner of any well that has been used to inject wastes or contaminants, with the exception of wells permitted in accordance with this Section, shall take corrective action as specified in Rule .0206(b) of this Section.

*History Note: Authority G.S. 87-87; 87-88; 143-214.2; 143-215.1A;
Eff. August 1, 1982;
Amended Eff. September 1, 1996; March 1, 1984.*

15A NCAC 02C .0211 PERMITS

(a) A permit shall be obtained from the Director prior to constructing, operating, or using any well for injection unless the well is deemed permitted in accordance with Paragraph (u) of this Rule. In those instances where all individual injection wells within a well field will be essentially similar with respect to construction, operation, reporting, and abandonment, and are of the same well Type, the Director may issue an area permit for the injection operations within that same well field, facility, site, reservoir, or similar unit. No permit shall be granted for the injection of wastes or any substance of a composition and concentration such that, if it were discharged to the land or waters of the state, would create a threat to human health or would otherwise render those waters unsuitable for their intended best usage unless specifically provided for by Statute or by the Rules in this Section.

(b) All permit applications shall be signed as follows:

- (1) for a corporation: by a responsible corporate officer
- (2) for a partnership or sole proprietorship: by a general partner or the proprietor, respectively;
- (3) for a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official; or
- (4) for all other persons: by the well owner.

(c) The person signing the permit application shall certify that the data furnished on the application is accurate and that the well will be operated in accordance with the approved specifications and conditions of the permit.

(d) An application shall be submitted, in duplicate, to the Director on forms furnished by the Director and shall include the following:

(1) For all Class 5 Well Types:

- (A) The permit well owner's and (if different from the owner) the well operator's name, address, telephone number, and status as a federal, state, private, public, or other activity;
- (B) The name, mailing address, telephone number, and location of the facility for which the application is submitted and a brief description of the nature of the business;
- (C) A description of the injection activities proposed by the applicant;
- (D) A scaled, site-specific map showing the location(s) of the following:
 - (i) the proposed injection well(s);
 - (ii) all property boundaries;
 - (iii) the direction and distance from the injection well or well system to two nearby permanent reference points (such as roads, streams, and highway intersections);
 - (iv) all buildings within the property boundary;
 - (v) any other existing or abandoned wells, including water supply and monitoring wells, within the area of review of the injection well or well system;
 - (vi) any existing sources of potential or known groundwater contamination, including waste storage, treatment, or disposal systems within the area of review of the injection well or well system; and
 - (vii) all surface water bodies within the area of review of the injection well or well system.
- (E) The chemical, physical, biological, and radiological characteristics of the fluid to be injected;
- (F) The proposed average and maximum daily rate and quantity of fluid to be injected;
- (G) Detailed plans and specifications of the surface and subsurface construction details of the system;
- (H) A listing of all permits or construction approvals, received or applied for by the applicant, that are related to the site or facility covered by this application including but not limited to:
 - (i) Hazardous Waste Management program permits or approval under the Resource Conservation and Recovery Act (RCRA);
 - (ii) NC Division of Water Quality Non-Discharge permits;
 - (iii) Sewage Treatment and Disposal Permits issued in accordance with G.S. 130A; and
 - (iv) Other environmental permits required by state or federal law.
- (I) Up to four Standard Industrial Codes which best reflect the principal products or services provided by the facility;
- (J) Whether or not the facility is located on Indian lands;
- (K) Such other information as deemed necessary by the Director for the protection of human health and the environment.

- (2) For Type 5A7 and 5QM Wells, in addition to the information required in Subparagraph (d)(1) of this Rule, the application shall include the heating/cooling system installation contractor's name, address, and telephone number;
- (3) For Type 5I and 5L Wells, in addition to the information required in Subparagraph (d)(1) of this Rule, the application shall include:
- (A) a brief description of the contamination incident and incident number assigned by Division staff in the Department's Regional Office;
 - (B) a site specific scaled map showing the following:
 - (i) contour intervals not exceeding two feet;
 - (ii) the location of all springs, lakes, ponds, or other surface drainage features within 1000 feet of the injection well or well system;
 - (iii) potentiometric surface showing direction of groundwater movement; and
 - (iv) the horizontal and vertical extent of the contaminant plume (including isoconcentration lines and plume cross sections).
 - (C) a tabulation of data on all wells within 1/4 mile of the injection well(s), excepting water supply wells serving a single-family residence, which penetrate the proposed injection zone. Such data shall include a description of each well's type, depth, record of abandonment or completion, and any additional information the Director may require;
 - (D) a hydrogeologic description, soils description, and cross section of the subsurface to a depth that includes the known or projected depth of contamination. G.S. 89E-18 requires that any geologic plans, reports, or documents in which the performance is related to the public welfare or safeguarding of the environment be prepared by a licensed geologist or subordinate under his direction. G.S. 89E-13 requires that all drawings, reports, or documents involving geologic work which shall have been prepared or approved by a licensed geologist or a subordinate under his direction be signed and sealed by him or her. The number of borings shall be sufficient to determine the following:
 - (i) the regional geologic setting;
 - (ii) significant changes in lithology;
 - (iii) the hydraulic conductivity of the saturated zone;
 - (iv) the depth to the mean seasonal high water table; and
 - (v) a determination of transmissivity and specific yield of the aquifer to be used for injection (showing calculations used for transmissivity and specific yield).
 - (E) a detailed description of the proposed injection procedure including:
 - (i) average and maximum daily rate and quantity of fluid to be injected;
 - (ii) average and maximum injection pressure;
 - (iii) injection pressure relative to the overburden pressure of the soils and injection zone;
 - (iv) injection temperature; and
 - (v) demonstration of closed-loop recovery of injected and contaminated fluids;
 - (F) proposed concentration of any contaminant in the effluent, given any proposed pretreatment;
 - (G) plans for proposed location and construction details of groundwater monitoring well network including schedule for sampling and analytical methods.
- (4) For Types 5B22, 5R21, 5S23, 5T, 5X25, and 5Z wells, in addition to the information required in Subparagraph (d)(1) of this Rule, the application shall include:
- (A) a detailed description of all planned activities relating to the proposed injection facility including but not limited to:
 - (i) construction plans and materials;
 - (ii) operation procedures; and
 - (iii) planned injection schedule.
 - (B) a hydrogeologic description, soils description, and cross section of the subsurface to the depth of the proposed injection zone. G.S. 89E-18 requires that any geologic plans, reports, or documents in which the performance is related to the public welfare or safeguarding of the environment be prepared by a licensed geologist or subordinate under his direction. G.S. 89E-13 requires all drawings, reports, or documents involving geologic work which shall have been prepared or approved by a licensed geologist or a subordinate under his direction be signed and sealed by him or her. The number of borings shall be sufficient to determine the following:
 - (i) the regional geologic setting;
 - (ii) significant changes in lithology;
 - (iii) the hydraulic conductivity of the saturated zone;
 - (iv) the depth to the mean seasonal high water table; and
 - (v) a determination of transmissivity and specific yield of the aquifer to be used for injection (show calculations used for transmissivity and specific yield).

- (C) plans for proposed location and construction details of groundwater monitoring well network including schedule for sampling and analytical methods.
- (e) All applications for a new permit or renewal, modification, or transfer of an existing permit shall be filed in sufficient time prior to construction and operation or expiration, modification, or transfer to allow compliance with all legal procedures.
- (f) All reports shall be signed by a person described in Paragraph (b) of this Rule or by a duly authorized agent of that person. All records, reports, and information required to be submitted to the Director and public comment on these records, reports, or information shall be disclosed to the public unless the person submitting the information can show that such information, if made public, would disclose methods or processes entitled to protection as trade secrets. The Director shall determine which information is entitled to confidential treatment. In the event the Director determines that such information is entitled to confidential treatment, the Director shall take steps to protect such information from disclosure.
- (g) The Director shall consider the cumulative effects of drilling and construction of multiple wells and operation of all proposed wells within a well field during evaluation of an area permit application.
- (h) Injection may not commence until construction is complete, the permittee has submitted notice of completion of construction to the Director, and the Director has inspected or otherwise reviewed the injection well and finds it in compliance with the permit conditions. If the permittee has not received notice from the Director of intent to inspect or otherwise review the injection well within 10 days after the Director receives the notice, the permittee may commence injection. Prior to granting approval for the operation of any injection well, the Director shall consider the following information when such information is required by these Rules:
- (1) all available logging and testing data on the well;
 - (2) a satisfactory demonstration of mechanical integrity pursuant to these Rules;
 - (3) the proposed operating procedures;
 - (4) the results of the formation testing program; and
 - (5) the status of corrective action on defective wells in the area of review.
- (i) The Director may establish maximum injection volumes and pressures necessary to assure that:
- (1) fractures are not initiated in the confining zone;
 - (2) injected fluids do not migrate outside the injection zone or area;
 - (3) injected fluids do not cause or contribute to the migration of fluids beyond the compliance boundary;
 - (4) formation fluids are not displaced outside the formation; and
 - (5) there is compliance with operating requirements.
- (j) A permit shall be issued for a period not to exceed five years from the date of issuance. On expiration of the permit, the permit shall become invalid unless application is made, at least 120 days prior to the expiration date, for an extension of the subject permit.
- (k) The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.
- (l) The permit may be modified, revoked and reissued, or terminated by the Director in whole or part for actions which would adversely impact human health or the environment, such actions to include but not be limited to:
- (1) violation of any terms or conditions of the permit;
 - (2) obtaining a permit by misrepresentation or failure to disclose fully all relevant facts;
 - (3) refusal of the permittee to allow authorized employees of the Division upon proper presentation of credentials:
 - (A) to enter upon permittee's premises on which a system is located in which any records are required to be kept under terms and conditions of the permit;
 - (B) to have access to and copy any records required to be kept under terms and conditions of the permit;
 - (C) to inspect any monitoring equipment or method required in the permit; or
 - (D) to sample any discharge from the injection facility.
- (m) The filing of an application by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, shall not stay any permit condition.
- (n) The permit shall not convey any property rights of any sort, or any exclusive privilege.
- (o) The permittee shall furnish to the Director any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit, or to determine compliance with the permit. The permittee shall also furnish to the Director, upon request, copies of records required by the permit to be kept.
- (p) The permittee shall allow the Director, or an authorized representative, upon their presentation of credentials and other documents as may be required by law, to:
- (1) enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;

- (2) have access to and copy, during normal business hours, any records that must be kept under the conditions of the permit;
- (3) inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under the permit; and
- (4) sample or monitor, at reasonable times, and for the purposes of assuring permit compliances or as otherwise authorized, any substances or parameters.

(q) The permittee shall retain copies of records of all monitoring information, including all calibration and maintenance records, all original strip chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit, for a period of at least three years from the date of the sample, measurement, report, or application. Records of monitoring information shall include:

- (1) the date, exact place, and time of sampling or measurements;
- (2) the individual(s) who performed the sampling or measurements;
- (3) the date(s) analyses were performed;
- (4) the individual(s) who performed the analyses;
- (5) the analytical techniques or methods used; and
- (6) the results of any such sampling, measurements, and analyses.

(r) The permit shall not be transferable to any person. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be appropriate.

(s) The permittee shall report any monitoring or other information which indicates that any contaminant may cause an endangerment to an underground source of drinking water and any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration outside the injection zone or area. The information shall be provided, to the Director, orally within 24 hours of the occurrence and as a written submission within five days of the occurrence. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue, and any steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

(t) The Commission may delegate, through a Memorandum of Agreement to another state agency, the authority to permit injection wells that are an integral part of a facility requiring a permit from that agency.

(u) The following injection wells are deemed to be permitted pursuant to G.S. 87-87 and it shall not be necessary for the Division to issue individual permits for construction or operation of the following Class 5 Well Types:

- (1) Type 5P - Air Injection Well which meets the following criteria:
 - (A) The air to be injected shall not exceed the ambient air quality standards set forth in 15A NCAC 2D Section .0400 and shall not contain any detectable hazardous constituents; and
 - (B) The operation of the air injection well shall not cause contaminated groundwater to migrate into an area not contaminated prior to initiation of injection activities or cause a contravention of a groundwater quality standard as specified in 15A NCAC 2L.
- (2) Type 5QW - Closed-Loop Geothermal-Water-Only Injection Well System which recirculates potable water only and meets the following criteria:
 - (A) The construction of the system shall be completed in such a manner so as to preclude surficial contaminants from entering the borehole; and
 - (B) The person responsible for the construction of the injection well system shall submit notification, prior to construction, of construction to the Division on forms supplied by the Division.
- (3) Type 5X30 - Aquifer Test Well which meets the following criteria:
 - (A) The operation of the aquifer test well shall not cause contaminated groundwater to migrate into an area not contaminated prior to initiation of injection activities or cause a contravention of a groundwater quality standard as specified in 15A NCAC 2L ; and
 - (B) The fluid to be injected shall be uncontaminated.
- (4) In addition to the criteria specified in Subparagraph (u)(2) of this Rule, any test hole or boring shall be permanently abandoned by the driller in accordance with Rule .0214 of this Section within two days after drilling or two days after testing is complete, whichever is less restrictive, except when a test well is being converted to a permanent injection well, in which case conversion shall be completed within 30 days.

History Note: Authority G.S. 87-87; 87-88; 87-90; 87-94; 87-95; 89E-13; 89E-18; 143-211; 143-214.2(b); 143-215.1A; 143-215.3(a)(1); 143-215.3(c); 150B-19(4); 40 CFR Part 144.52(a)(7); 40 CFR Part 145.11(a)(20); Eff. August 1, 1982; Amended Eff. February 1, 1997; October 1, 1996; March 1, 1984.

15A NCAC 02C .0212 ADDITIONAL CRITERIA AND STANDARDS: CLASS II: CLASS III

History Note: Authority G.S. 87-87; 87-88; 143-211; 143-214.2; 143-215.3(a)(1); 143-215.3(c); Eff. August 1, 1982;

Repealed Eff. March 1, 1984.

15A NCAC 02C .0213 ADDITIONAL CRITERIA AND STANDARDS APPLICABLE TO CLASS 5 WELLS

(a) Location.

- (1) For all well types, the injection well shall not be located in an area generally subject to flooding. Areas which are generally subject to flooding include those with concave slope, alluvial or colluvial soils, gullies, depressions, and drainage ways.
- (2) For Type 5I, and 5L wells where the concentration of any component of the injectant:
 - (A) exceeds the groundwater quality standards specified in 15A NCAC 2L .0202, the injection well shall not be located:
 - (i) at a point where the injectant would degrade the existing quality of the groundwater in the water-bearing unit into which the injectant is being released; or
 - (ii) at a point where, as a result of the injection activity, corrective action would be required under 15A NCAC 2L .0106.
 - (B) is less than the groundwater quality standards specified in 15A NCAC 2L .0202, the injection well shall not be located at point where the injectant would result in a contravention of any of the aforementioned groundwater quality standards in the water-bearing unit into which the injectant is being released.
- (3) For all well types, the injection well shall be located in an area which does not require a person to enter confined spaces to perform sampling and inspection activities.
- (4) For Type 5A7, 5R21, 5S23, 5X25, and 5Z wells, the minimum horizontal separation between a well that is designed for injection at atmospheric pressure and potential sources of groundwater contamination shall be as follows unless it can be demonstrated to the Director's satisfaction that a lesser separation distance will not result in a threat to human health or a contravention of a groundwater quality standard as specified in 15A NCAC 2L:

(A) Septic tank and drainfield	50 ft.
(B) Other subsurface ground absorption waste disposal system.	50 ft.
(C) Industrial or municipal sludge-spreading or wastewater-irrigation sites	50 ft.
(D) Water-tight sewage or liquid-waste collection or transfer facility	25 ft.
(E) Cesspools and privies	50 ft.
(F) Animal feedlots or manure piles	50 ft.
(G) Fertilizer, pesticide, herbicide, or other chemical storage areas	50 ft.
(H) Sanitary landfills	500 ft.
(I) Non-hazardous waste storage, treatment, or disposal lagoons	100 ft.
(J) Other non-hazardous solid waste landfills	100 ft.
(K) Animal barns	50 ft.
(L) All other potential sources of groundwater contamination	50 ft.

- (5) For all other well types the minimum horizontal separation between a well that is designed for injection and potential sources of groundwater contamination shall be the distance necessary to prevent migration of contaminants or a violation of groundwater standards as demonstrated by hydrogeologic computer modeling.

(b) Drilling Fluids and Additives. Drilling fluids and additives shall not contain organic materials that cause the surrounding groundwaters to become non-potable nor toxic substances, and may be comprised only of:

- (1) the formational material encountered during drilling; or
- (2) materials manufactured specifically for the purpose of borehole conditioning or well construction; or
- (3) materials approved by the Director, based on a demonstration of not adversely affecting human health or the environment.

(c) Drilling, Casing, Screens, and Testing.

- (1) In the drilling, casing, screening, and testing of injection wells the following procedures shall be utilized:
 - (A) unless otherwise excepted by this Rule, a casing shall be installed which extends from at least 12 inches above land surface to the top of the injection zone or to a depth of 20 feet whichever is shallower;
 - (B) wells with casing extending less than 12 inches above land surface and wells without casing may be approved by the Director only when the following conditions are met:
 - (i) Either:

- (I) site-specific conditions directly related to business activities, such as vehicle traffic, would endanger the physical integrity of the well; or
 - (II) it is not operationally feasible for the well head to be completed 12 inches above land surface due to the engineering design requirements of the system; and
 - (ii) for Type 5Q wells without permanent casing, the well head is completed in such a manner so as to preclude surficial contaminants from entering the well; and the vertical length of the borehole shall be grouted to a minimum depth of 20 feet below land surface with a grout, as specified in Rule .0204 of this Section, and by a method approved by the Director based on a demonstration of not adversely affecting human health or the environment; and
 - (iii) for all other wells, the well head is completed in such a manner so as to preclude surficial contaminants from entering the well; and well head protection shall include:
 - (I) an accessible external sanitary seal installed around the casing and grouting;
 - (II) a sufficient vertical distance between the top of the grouting and the top of the casing to prevent any surficial fluids from entering the injection well casing; and
 - (III) a water-tight seal installed on the top of the casing;
 - (C) the methods and materials used in construction shall not threaten the physical and mechanical integrity of the well during its lifetime (i.e., it shall be designed and constructed to operate the projected life of the well) and shall be compatible with the proposed injection activities. In determining the suitability of the methods and materials to be used in the drilling, casing, screening, and testing, the Director shall consider the following:
 - (i) depth to the injection zone;
 - (ii) injection pressure, external pressure, internal pressure, and axial loading;
 - (iii) hole size;
 - (iv) size and grade of all casing (wall thickness, diameter, nominal weight, length, joint specification, and casing material);
 - (v) size and grade of all screen material (wall thickness, nominal weight, diameter, length, joint specification, and screen material);
 - (vi) corrosiveness of injected and formation fluids;
 - (vii) lithology of injection and confining zones;
 - (viii) type and grade of cement;
 - (ix) type and grade of drilling fluid and additives; and
 - (x) other applicable state and local well construction and environmental standards;
 - (D) multi-screened wells shall not connect aquifers or zones which have differences in water quality which would result in a degradation of any aquifer or zone;
 - (E) the migration of fluids outside the approved injection or recovery zone or area is not permitted;
 - (F) contaminants are not introduced into underground sources of drinking water unless specifically authorized by Statute or Rule; and
 - (G) the borehole shall not penetrate to a depth greater than the depth at which injection will occur unless the purpose of the borehole is the investigation of the geophysical and geochemical characteristics of an aquifer. Following completion of the investigation the borehole beneath the zone of injection shall be grouted completely to prevent the vertical migration of any contaminants downward.
- (2) In addition to the requirements of Subparagraph (c)(1) of this Rule, the testing requirements for all wells other than Type 5A7, 5QW, 5P, and 5X30 shall include but not be limited to:
- (A) Appropriate logs and other tests conducted during the drilling and construction of the wells shall be submitted to the Director within 30 days of completion of well construction. A descriptive report interpreting the results of such logs and tests shall be prepared by a knowledgeable log analyst and submitted to the Director within 30 days of completion of the tests. The logs and tests appropriate to each type of Class 5 well shall be determined by the Director based on the intended function, depth, construction, and other characteristics of the well, availability of similar data in the area of the drilling site, and the need for additional information that may arise from time to time as the construction of the well progresses. At a minimum, such logs and tests shall include deviation checks conducted on all holes where pilot holes and reaming are used, and at sufficiently frequent intervals to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling. In the case of area permits, the Director may authorize logs and tests of the well field as a whole, rather than of each individual well within the well field.
 - (B) When the injection zone is a water-bearing formation, the following information concerning the injection zone as determined or calculated by the owner, shall be submitted to the Director within 30 days of completion of the determinations in an integrated form:
 - (i) fluid pressure;

- (ii) fluid temperature;
 - (iii) fracture pressure;
 - (iv) other physical and chemical characteristics of the injection zone;
 - (v) physical and chemical characteristics of the formation fluids; and
 - (vi) compatibility of injected fluids with formation fluids.
- (C) When the injection formation is not a water-bearing formation, only the information required in Parts (B)(iii) and (iv) of this Subparagraph shall be determined or calculated and submitted to the Director within 30 days of completion of the determinations.
- (D) Monitoring wells completed in the injection zone and any of those zones adjacent to the injection zone might be affected by the injection operations. These wells shall be located in such a fashion as to detect any movement of injection fluids, process by-products, or formation fluids outside the injection area or zone. If the operation may be affected by subsidence or catastrophic collapse, the monitoring wells shall be located so that they will not be physically affected and shall be of an adequate number to detect movement of injected fluids, process by-products, or formation fluids outside the injection zone or area. In determining the number, location and spacing of monitoring wells, the following criteria shall be considered by the Director:
- (i) the population relying on the underground source of drinking water affected, or potentially affected, by the injection operation;
 - (ii) the proximity of the injection operation to points of withdrawal of drinking water;
 - (iii) the local geology and hydrology;
 - (iv) the operating pressures;
 - (v) the chemical characteristics and volume of the injected fluid, formation water, and process by-products; and
 - (vi) the density of injection wells.
- (E) For any wells that inject at a pressure exceeding atmospheric, tests for mechanical integrity and injection capacity shall be conducted in accordance with Rule .0207 of this Section.
- (3) All piping, wiring, and vents shall enter the well through the top of the casing unless otherwise approved by the Director based on a design demonstrated to preclude surficial contaminants from entering the well.
- (4) A hose bibb, sampling tap, or other collection equipment, as approved by the Director based on a demonstration of not adversely affecting human health or the environment, shall be installed on the line entering the injection well such that a sample of the injectant can be obtained immediately prior to its entering the injection well.
- (d) Grouting and Sand-and-Gravel-Packing.
- (1) The annular space between the casing and the borehole shall be grouted:
- (A) with a type of cement that is non-toxic and is non-reactive with the casing or screen materials, the formation, and the injected fluids;
 - (B) by a method such that the physical and mechanical integrity of the well(s) is not threatened during its life expectancy;
 - (C) from land surface:
 - (i) to a minimum depth of 20 feet when the well is greater than 20 feet in depth; or
 - (ii) to within two feet of the top of the injection zone in those wells less than 20 feet in depth; or
 - (iii) in another configuration, as approved by the Director, upon demonstrations that such a configuration is necessitated by engineering design of the injection facility and will not adversely affect human health or the environment; and
 - (D) so that 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.
- (2) 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 which can be raised as the grout is applied. The grout hose or pipe shall remain submerged in grout during the entire application.
 - (C) Other. Grout may be emplaced in the annular space by gravity flow in such a way to insure complete filling of the space.
- (3) If an outer casing is installed, it shall be grouted by either the pumping or pressure method.
- (4) All grout mixtures shall be prepared prior to emplacement.
- (5) The well shall be grouted within five working days after the casing is set.
- (6) No additives which will accelerate the process of hydration shall be used in grout for thermoplastic well casing.

- (7) In those instances where the life expectancy of the well will not exceed 90 days, the Director may consider modifications or deletion of the grouting requirements where such modifications or deletion would not have a deleterious effect upon an underground source of drinking water.
- (8) Packing materials shall:
 - (A) be composed of quartz, granite, or similar rock material and shall be clean, of uniform size, water-washed and free from clay, silt, or other deleterious material;
 - (B) be disinfected prior to subsurface emplacement;
 - (C) be emplaced such that it shall not connect aquifers or zones which have differences in water quality that would result in the deterioration of the water qualities in any aquifer or zone; and
 - (D) be evenly distributed around the screen and shall extend to a depth at least one foot above the top of the screen. A one foot thick seal, comprised of bentonitic clay or other sealing material approved by the Director based on a demonstration of not adversely affecting human health or the environment, shall be emplaced directly above and in contact with the packing material.
- (e) Operating.
 - (1) Pressure at the well head shall be limited to a maximum which will ensure that the pressure in the injection zone does not initiate new fractures or propagate existing fractures in the injection zone, initiate fractures in the confining zone, or cause the migration of injected or formation fluids outside the injection zone or area.
 - (2) Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited.
 - (3) Provisions shall be made by the permittee for the monitoring of operating processes at the well head.
 - (4) All injection wells shall be afforded protection against damage during construction and use.
- (f) Monitoring.
 - (1) Monitoring of any injection wells may be required by the Director as necessary to demonstrate adequate protection of underground sources of drinking water. In determining the type, density, frequency, and scope of monitoring, the Director shall consider the following:
 - (A) physical and chemical characteristics of the injection zone;
 - (B) physical and chemical characteristics of the injected fluid(s);
 - (C) volume and rate of discharge of the injected fluid(s);
 - (D) compatibility of the injected fluid(s) with the formation fluid(s);
 - (E) the number, type and location of all wells, mines, surface bodies of water, and man-made structures within the area of review;
 - (F) proposed injection procedures;
 - (G) expected changes in pressure, formation fluid displacement, and direction of movement of injected fluid;
 - (H) proposals of corrective action to be taken in the event that a failure in any phase of injection operations endangers an underground source of drinking water; and
 - (I) the life expectancy of the injection operations.
 - (2) Monitoring, if required by the Director, shall be in accordance with the following requirements:
 - (A) Samples and measurements, taken for the purpose of monitoring, shall be representative of the monitored activity.
 - (B) Analysis of the physical and chemical characteristics of the injected fluid shall be made monthly or more frequently, as necessary, in order to provide representative data for characterization of the injectant.
 - (C) Monitoring of injection pressure, flow rate, and cumulative volume shall occur according to a schedule determined necessary by the Director.
 - (D) Monitoring wells associated with the injection site shall be monitored quarterly to detect any migration of injected fluids from the injection zone.
 - (E) Continuous recording devices to monitor the injection pressure, flow, rate, and volume of injected fluid shall be installed.
- (g) Injection Well Identification Plate.
 - (1) An identification plate showing the name and registration number of the drilling contractor shall be permanently installed on the well within 24 hours after completion of the drilling.
 - (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 the well casing, or other location approved by the Director due to its immediate proximity to another part of the injection well, where it is readily visible.
 - (4) The identification plate shall not be removed from the well by any person.
 - (5) The identification tag shall be stamped with a permanent marking within 30 days of completion of the well to show the following:
 - (A) total depth of well;
 - (B) casing depth (ft.) and inside diameter (in.);

- (C) screened intervals of screened wells;
 - (D) gravel interval of gravel-packed wells;
 - (E) yield, in gallons per minute (gpm), or specific capacity in gallons per minute per foot of drawdown (gpm ft.-dd);
 - (F) static water level and date measured;
 - (G) drilling contractor and registration number; and
 - (H) date well completed.
- (h) Reporting. The well owner shall be responsible for submitting to the Director on forms furnished by the Director, or on an alternate approved form which provides the same information:
- (1) A record of the construction or abandonment or repairs of a well, to include: the owner's name; well location, size, and depth; casing record; method of completion or abandonment; formation log; static water level; injection apparatus; and records of any surveys, geophysical logs, tests, or water analyses, and changes in construction or in materials replaced. These records shall be submitted within 30 days of completion of specified activities or abandonment of the well, whichever occurs earliest.
 - (2) Quarterly reports on required monitoring activities, which shall include:
 - (A) the date, exact place, and time of sampling or measurements;
 - (B) the individual(s) who performed the sampling or measurements;
 - (C) the date(s) analyses are performed;
 - (D) the individual(s) who performed the analyses;
 - (E) the analytical techniques or methods used; and
 - (F) the results of such sampling, measurements or analyses.

History Note: Authority G.S. 87-87; 87-88; 87-94; 87-95; 143-211; 143-214.2(b); 143-215.1A; 143-215.3(a)(1); 143-215.3(c); Eff. August 1, 1982; Amended Eff. February 1, 1997; October 1, 1996; March 1, 1984.

15A NCAC 02C .0214 ABANDONMENT AND CHANGE-OF-STATUS OF WELLS

(a) In the event any injection or associated monitoring well is abandoned, either temporarily or permanently, the well owner shall notify the Director within 15 days and the well(s) shall be abandoned in accordance with one of the following procedures or other alternatives approved by the Director based on a demonstration of not adversely affecting human health or the environment:

- (1) Procedures for temporarily abandoned wells.
 - (A) Upon temporary removal from service, or prior to being put into service, the well shall be sealed with a water-tight cap or seal compatible with the casing and installed so that it cannot be removed without the use of hand or powers tools.
 - (B) The well shall be maintained whereby it is not a source or channel of contamination to an underground source of drinking water during its temporary status.
 - (C) The well shall be repaired, to achieve compliance with the Rules in this Section, or permanently abandoned within 30 days of receipt of notice from the department, upon finding that a well is acting as a source or channel of contamination to an underground source of drinking water.
- (2) Procedures for permanently abandoned wells.
 - (A) All casing and materials may be removed prior to initiation of abandonment procedures if the Director finds such removal will not be responsible for, or contribute to, the contamination of an underground source of drinking water. Any casing not grouted in accordance with 15A NCAC 2C .0113 shall be removed or properly grouted.
 - (B) The entire depth of the well shall be sounded before it is sealed to insure freedom from obstructions that may interfere with sealing operations.
 - (C) The well shall be thoroughly disinfected, prior to sealing, if the Director determines that failure to do so could lead to the contamination of an underground source of drinking water.
 - (D) Drilled wells shall be completely filled with cement grout, which shall be introduced into the well through a pipe which extends to the bottom of the well and is raised as the well is filled. "Bored" or hand-dug wells over 24 inches in diameter may be filled with an alternative material approved by the Director based on a demonstration of not adversely affecting human health or the environment.
 - (E) In the case of gravel-packed wells in which the casing and screens have not been removed, neat-cement shall be injected into the well completely filling it from the bottom of the casing to the top.
 - (F) In those cases when, as a result of the injection operations, a subsurface cavity has been created, the well shall be abandoned in such a manner that will prevent the movement of fluids into or

between underground sources of drinking water and in accordance with the terms and conditions of the permit.

(b) Exploratory or test wells, constructed for the purposes of obtaining information regarding an injection well site, shall be permanently abandoned in accordance with Subparagraph (2) of this Rule upon completion of their exploratory or testing status.

(c) An injection well shall be permanently abandoned by the drilling contractor before removing his equipment from the site if the well casing has not been installed or has been removed from the well bore.

History Note: Authority G.S. 87-87; 87-88; 143-211; 143-215.1A; 143-215.3(a)(1); 143-215.3(c); Eff. August 1, 1982; Amended Eff. February 1, 1997; October 1, 1996.

15A NCAC 02C .0215 VARIANCE

(a) The Director may grant a variance from any construction or operation standards under the rules of this Section. Any variance will be in writing, and may be granted upon written application to the Director, by the person responsible for the construction of the well for which the variance is sought, if the Director finds facts to support the following conclusions:

- (1) that the use of the well will not endanger human health and welfare or the groundwater;
- (2) that construction or operation in accordance with the standards was not technically feasible or desirable.

(b) The Director may require the variance applicant to submit such information as he deems necessary to make a decision to grant or deny the variance. The Director may impose such conditions on a variance or the use of a well for which a variance is granted as he deems necessary to protect human health and welfare and the groundwater resources. The findings of fact supporting any variance under this Rule shall be in writing and made part of the variance.

(c) A variance applicant who is dissatisfied with the decision of the Director may commence a contested case by filing a petition under G.S. 150B-23 within 60 days after receipt of the decision.

History Note: Authority G.S. 87-87(4); 87-88; 143-215.1A; 143-215.3(a)(4); 150B-23; Eff. September 1, 1996.

15A NCAC 02C .0216 DELEGATION

(a) The Director may grant permission for well construction under G.S. 87-87.

(b) The Director may give notices and sign orders for violations under G.S. 87-91.

(c) The Director may subdelegate, to an official of the Division, the granting of a variance from any construction standard, or the approval of alternate construction methods or materials, as specified under the rules in this Section.

History Note: Authority G.S. 87-87(4); 143-215.1A; 143-215.3(a)(1); 143-215.3(a)(4); Eff. September 1, 1996.

SECTION .0300 - PERMITTING AND INSPECTION OF PRIVATE DRINKING WATER WELLS

15A NCAC 02C .0301 SCOPE AND PURPOSE

(a) The purpose of the rules of this Section is to set out standards for permitting and inspection of private drinking water wells as defined in G.S. 87-85 by local health departments pursuant to G.S. 87-97.

(b) The rules of 15A NCAC 02C .0100 are applicable to private drinking water wells. In addition to the provisions in 15A NCAC 02C .0100, the following shall apply:

- (1) The well owner shall not place potential sources of groundwater contamination closer to the well than the separation distances specified in 15A NCAC 02C .0107(a)(2) or .0107(a)(3), as applicable;
- (2) In addition to the provisions in 15A NCAC 02C .0109 PUMPS AND PUMPING EQUIPMENT, the builder, well contractor, pump installer, or homeowner, as applicable, shall provide assistance when necessary to gain access for inspection of the well, pumps, and pumping equipment; and
- (3) In addition to the requirements of 15A NCAC 02C .0113 ABANDONMENT OF WELLS, 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 local health department. The person abandoning the well shall provide a minimum 24-hour notice to the local health department prior to commencement of permanent abandonment procedures.

History Note: Authority G.S. 87-87; 87-97;
Eff. July 1, 2008.

15A NCAC 02C .0302 DEFINITIONS

The definitions in G.S. 87-85 and 15A NCAC 02C .0102 apply throughout this Section. In addition, the following definitions apply throughout this Section:

- (1) "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.
- (2) "Board of Health" means the County Board of Health or successor entity.
- (3) "Certificate of Completion" means a certification by the Department that a private drinking water well has been constructed or repaired in compliance with the construction permit or repair permit.
- (4) "Construction of wells" means all acts necessary to construct wells for any intended purpose or use, including the location and excavation of the well, placement of casings, screens and fittings, development and testing.
- (5) "Construction permit" means a well construction permit issued by the Department authorizing or allowing the construction of any private drinking water well as defined in the rules of this Section.
- (6) "Department of Environment and Natural Resources" or "Department" means the North Carolina Department of Environment and Natural Resources. The term also means the authorized representative of the Department. For the purposes of any notices required pursuant to the rules of this Section, notice shall be mailed to "Division of Environmental Health, On-Site Water Protection Section, North Carolina Department of Environment and Natural Resources," 1642 Mail Service Center, Raleigh, NC 27699-1642.
- (7) "Local Health Department" means the county or district health department or its successor.
- (8) "Person" means 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 any other state or country.
- (9) "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 all structures and proposed structures and appurtenances, including but not limited to decks, porches, pools, driveways, out buildings, existing and proposed wastewater systems, existing and proposed wells, springs, water lines, surface waters or designated wetlands, easements, including utility easements, and existing or proposed chemical or petroleum storage tanks above or below ground. "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.
- (10) "Pumps" and "pumping equipment" means any equipment or materials utilized or intended for use in withdrawing or obtaining ground-water including well seals.
- (11) "Repair" means work involved in deepening, reaming, sealing, installing or changing casing depths, perforating, screening, or cleaning, acidizing or redevelopment of a well excavation, or any other work which results in breaking or opening the well seal.
- (12) "Repair permit" means a well repair permit issued by the Department authorizing or allowing the repair of any private drinking water well as defined in the rules of this Section.
- (13) "Site plan" means a drawing not necessarily drawn to scale that shows the existing and proposed property lines with dimensions, and the specific location of all structures and proposed structures and appurtenances, including decks, porches, pools, driveways, out buildings, existing and proposed wastewater systems, existing and proposed wells, springs, water lines, surface waters or designated wetlands, easements, including utility easements, and existing or proposed chemical or petroleum storage tanks above or below ground.
- (14) "Water supply system" means pump and pipe used in connection with or pertaining to the operation of a private drinking water well including pumps, distribution service piping, pressure tanks and fittings.
- (15) "Well contractor activity" means the construction, installation, repair, alteration or abandonment of any well.
- (16) "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 in accordance with the well contractor certification requirements of 15A NCAC 27.

- (17) "Well seal" means an approved arrangement or device used to cap a well or to establish and maintain a junction between the casing or 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.

History Note: Authority G.S. 87-87; 87-97;
Eff. July 1, 2008.

15A NCAC 02C .0303 APPLICATION FOR CONSTRUCTION PERMIT

An application for a permit to construct, repair, or abandon a private drinking water well shall be submitted to the local health department for the county where the well is to be located by a property owner or the property owner's agent. The application shall include:

- (1) Name, address and phone number of the proposed well property owner or owner's agent;
- (2) Signature of owner or agent;
- (3) Address and parcel identification number of the property where the proposed well is to be located;
- (4) A plat or site plan as defined in the rules of this Section;
- (5) Intended use(s) of the property;
- (6) Other information deemed necessary by the Department to determine the location of the property and any site characteristics such as existing or permitted sewage disposal systems, easements or rights of way, existing wells or springs, surface water or designated wetlands, chemical or petroleum storage tanks, landfills, waste storage, known underground contamination and any other characteristics or activities on the property or adjacent properties that could impact groundwater quality or suitability of the site for well construction;
- (7) Any current or pending restrictions regarding groundwater use as specified in G.S. 87-88(a); and
- (8) Any variances regarding well construction or location issued under 15A NCAC 02C .0118.

History Note: Authority G.S. 87-87; 87-97;
Eff. July 1, 2008.

15A NCAC 02C .0304 PERMITTING

(a) No person shall construct a private drinking water well without first obtaining a well construction permit from the Department. No person shall repair a private drinking water well without first obtaining a well repair permit except a well repair permit is not required for maintenance or pump repair or replacement. Disinfection in accordance with 15A NCAC 02C .0113 is a maintenance activity that does not require a repair permit.

(b) Before issuing a well construction permit, the Department shall conduct a field investigation to evaluate the topography, landscape position, available space and potential sources of groundwater contamination on or around the site on which a private drinking water well is to be located. The Department shall issue a private water well construction permit after determining the site can be permitted for a well meeting the rules of this Section. Notwithstanding the above, the Department shall not issue a construction permit for a well in violation of restrictions regarding groundwater use established pursuant to G.S. 87-88(a). The construction permit shall include a site plan showing the location of potential sources of contamination and area(s) suitable for well construction. The Department shall issue a written notice of denial of a construction permit if it determines a private drinking water well cannot be constructed in compliance with the rules of this Section. The notice of denial shall include reference to specific laws or rules that cannot be met and shall be provided to the applicant.

(c) A well construction permit is valid for a period of five years except that the 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 is not affected by a change in ownership of the site on which a private drinking water well is proposed to be located. Well construction permits issued under local well ordinances prior to the effective date of these Rules remain valid for the term of those permits unless those permits are suspended or revoked. The Department may suspend or revoke any permits issued upon a determination that the rules of this Section have been violated.

(d) If there is an improperly abandoned well(s) on the site, the construction permit shall be conditioned upon repair or abandonment of any improperly abandoned well(s) in accordance with the rules of 15A NCAC 02C .0100.

History Note: Authority G.S. 87-87; 87-97;
Eff. July 1, 2008.

15A NCAC 02C .0305 GROUT INSPECTION: CERTIFICATION

(a) The well contractor shall contact the local health department to schedule a grout inspection before grouting a private drinking water well. Contact shall include the location, permit number and anticipated time for grouting each private drinking water well and the appointment shall be scheduled by the end of the business day before the grouting is to occur except where the local health department has made provisions for scheduling inspections at night or on the same day of the inspection.

(b) Upon completion of a grout inspection, the Department shall provide a written certification on the well permit that a grout inspection was completed and that the grouting is in compliance with the rules of 15A NCAC 02C .0100. When a local health department is unable to conduct a grout inspection within one hour of the scheduled time, the well contractor may grout a well without a grout inspection by the Department. The well contractor shall provide a written certification to the local health department that the well has been grouted in compliance with the rules of 15A NCAC 02C .0100. A completed Well Construction Record form GW-1 indicating the well was grouted in compliance with the rules of this Section shall serve as the well contractor's grout certification. For purposes of issuing a certificate of completion, the well contractor's grout certification shall be accepted by the Department as evidence the grout complies with the rules of this Section if the local health department:

- (1) was contacted by the well contractor to schedule a grout inspection;
- (2) was unable to inspect the grouting of the well within one hour following the scheduled time; and
- (3) upon final inspection, finds no evidence to indicate the well grout does not comply with the rules of this Section.

History Note: Authority G.S. 87-87; 87-97;
Eff. July 1, 2008.

15A NCAC 02C .0306 WELL COMPLETION AND CERTIFICATION

(a) After receiving a permit to construct a private drinking water well, the property owner or his agent shall notify the health department prior to well construction if any of the following occur:

- (1) The separation criteria specified in 15A NCAC 02C .0107 cannot be met;
- (2) The residence or other structure is located other than indicated on the permit;
- (3) The use of the structure is changed from the use specified on the permit;
- (4) The septic system needs to be changed from the location indicated on the permit;
- (5) Landscaping changes have been made that may affect the integrity of the well;
- (6) There are current or pending restrictions regarding groundwater use as specified in G.S. 87-88(a);
- (7) The water source for any well intended for domestic use is adjacent to any water-bearing zone suspected or known to be contaminated; or
- (8) Any other changes occur in the information provided in the application for the well permit.

(b) The well contractor shall maintain a copy of the well construction permit or repair permit on the job site at all times during the construction, repair or abandonment of the well. The well contractor shall meet all the conditions of the permit.

(c) Upon completion of construction of a private drinking water well, the Department shall complete an "as built" drawing of the well location. The well contractor shall submit a copy of Residential Well Construction Record to the local health department. Upon completion of construction or repair of a private drinking water well for which a permit is required, the Department shall inspect the well and issue a Certificate of Completion. Prior to the issuance of a Certificate of Completion, the Department shall: verify that the well was constructed in the designated area and according to the well construction permit and the rules of this Subchapter. The Department shall inspect the grout 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.

History Note: Authority G.S. 87-87; 87-97;
Eff. July 1, 2008.

15A NCAC 02C .0307 WELL DATA AND RECORDS

(a) Any person completing, abandoning or repairing any well shall submit a record of the construction, abandonment or repair to the local health department and the Division of Water Quality within 30 days of completion of construction, abandonment or repair. The record shall be on a form provided by the Department.

(b) The local health department shall maintain a registry of all permitted private drinking water wells, specifying the well location and the water quality test results until the well is permanently abandoned in accordance with this Subchapter.

History Note: Authority G.S. 87-87; 87-97;
Eff. July 1, 2008.

15A NCAC 02C .0308 APPEAL PROCEDURE

Appeals concerning permit decisions or actions by the Department to enforce the rules of this Section shall be conducted according to the procedures established in G.S. 150B, the Administrative Procedures Act.

History Note: Authority G.S. 87-87;
Eff. July 1, 2008.