

NORTH CAROLINA ADMINISTRATIVE CODE

TITLE 15
DEPARTMENT OF ENVIRONMENT, HEALTH, & NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL MANAGEMENT

SUBCHAPTER 2L

**CLASSIFICATIONS AND WATER QUALITY STANDARDS
APPLICABLE TO THE GROUNDWATERS OF
NORTH CAROLINA**

SECTION .0100, .0200, AND .0300

CURRENT THROUGH DECEMBER 14, 1989
ENVIRONMENTAL MANAGEMENT COMMISSION
RALEIGH, NORTH CAROLINA

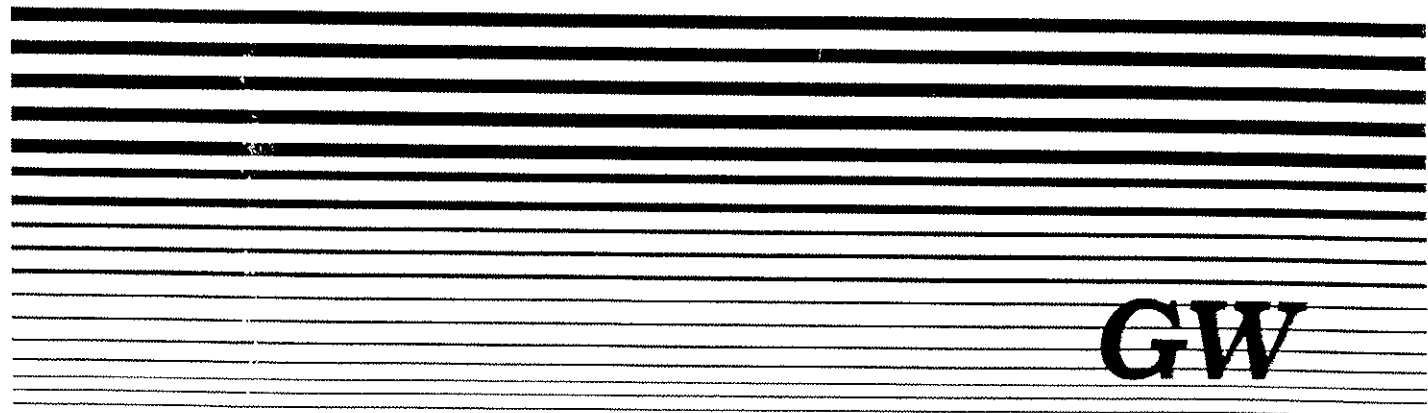


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SUBCHAPTER 2L - GROUNDWATER CLASSIFICATION AND STANDARDS

SECTION .0100 - GENERAL CONSIDERATIONS

.0101 AUTHORIZATION

(a) N.C. General Statute 143-214.1 directs that the Commission develop and adopt after proper study a series of classifications and standards which will be appropriate for the purpose of classifying each of the waters of the state in such a way as to promote the policy and purposes of the act. Pursuant to this statute, the rules in this Subchapter establish a series of classifications and water quality standards applicable to the groundwaters of the state.

(b) These rules are applicable to all activities or actions, intentional or accidental, which contribute to the degradation of groundwater quality, regardless of any permit issued by a governmental agency authorizing such action or activity except an innocent landowner who is a bona fide purchaser of property which contains a source of groundwater contamination, who purchased such property without knowledge or a reasonable basis for knowing that groundwater contamination had occurred, or a person whose interest or ownership in the property is based or derived from a security interest in the property, shall not be considered a responsible party.

*History Note: Statutory Authority G.S. 143-214.1; 143-214.2; 143-215.3(a)(1); 143B-282;
Eff. June 10, 1979;
Amended Eff. August 1, 1989; July 1, 1988; September 1, 1984; December 30, 1983.*

.0102 DEFINITIONS

The definition of any word or phrase used in these rules shall be the same as given in G.S. 143-212 and G.S. 143-213 except that the following words and phrases shall have the following meanings:

- (1) "Bedrock" means any consolidated rock encountered in the place in which it was formed or deposited and which cannot be readily excavated without the use of explosives or power equipment.
- (2) "Commission" means the Environmental Management Commission as organized under Chapter 143B of the General Statutes.
- (3) "Compliance boundary" means a boundary around a disposal system at and beyond which water quality standards may not be exceeded and only applies to facilities which have received a permit from the Division of Environmental Management under G.S. 143-215.1, or for disposal systems permitted by the Department of Human Resources.
- (4) "Director" means Director of the Division of Environmental Management.
- (5) "Fresh groundwaters" means those groundwaters having a chloride concentration equal to or less than 250 milligrams per liter.
- (6) "Groundwaters" means those waters in the saturated zone of the earth.
- (7) "Hazardous substance" means any substance as defined by Section 101(14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).
- (8) "Limit of detectability" means the method detection limit established for the U.S. EPA approved test procedure providing the lowest method detection limit for the substance being monitored.
- (9) "Natural conditions" means the physical, biological, chemical and radiological conditions which occur naturally.
- (10) "Potable waters" means those waters suitable for drinking, by humans.
- (11) "Review boundary" means a boundary around a permitted disposal facility, midway between a waste boundary and a compliance boundary at which groundwater monitoring is required.
- (12) "Saline groundwaters" means those groundwaters having a chloride concentration of more than 250 mg l.
- (13) "Saturated zone" means that part of the subsurface below the water table in which all the interconnected voids are filled with water under pressure at or greater than atmospheric. It does not include the capillary fringe.
- (14) "Suitable for drinking" means a quality of water which does not contain substances in concentrations which, either singularly or in combination if ingested into the human body, may cause death, disease, behavioral abnormalities, congenital defects, genetic mutations, or result in an incremental lifetime cancer risk in excess of 1×10^{-6} , or render the water unacceptable due to aesthetic qualities, including taste, odor or appearance.

- (15) "Waste boundary" means the perimeter of the permitted waste disposal area.
- (16) "Water table" means the surface of the saturated zone below which all interconnected voids are filled with water and at which the pressure is atmospheric.

History Note: Statutory Authority G.S. 143-214.1; 143-215(a)(1); 143B-282;
Eff. June 10, 1979.
Amended Eff. August 1, 1989; July 1, 1988; March 1, 1985; September 1, 1984.

.0103 POLICY

(a) The rules established in this Subchapter are intended to maintain and preserve the quality of the groundwaters, prevent and abate pollution and contamination of the waters of the state, protect public health, and permit management of the groundwaters for their best usage by the citizens of North Carolina. It is the policy of the Commission that the best usage of the groundwaters of the state is as a source of drinking water. These groundwaters generally are a potable source of drinking water without the necessity of treatment. It is the intent of these Rules to protect the overall high quality of North Carolina's groundwaters and to enhance and restore the quality of degraded groundwaters to the level established by the standards.

(b) It is the intention of the Commission to protect all groundwaters to a level of quality at least as high as that required under the standards established in Rule .0202 of this Subchapter. In keeping with the policy of the Commission to protect, maintain, and enhance water quality within the State of North Carolina, the Commission will not approve any disposal system subject to the provisions of G.S. 143-215.1 which would result in:

- (1) the significant degradation of groundwaters of which the existing quality is better than the assigned standard, unless found to be economically and socially justifiable, or
- (2) a violation of a water quality standard beyond the boundaries of the property on which the source of pollution is located, or
- (3) the impairment of existing groundwater uses or an adverse impact on the public health, safety or welfare.

(c) Violations of groundwater quality standards resulting from groundwater withdrawals which are in compliance with water use permits issued pursuant to G.S. 143-215.15, shall not be subject to the corrective action requirements of Rule .0106 of this Subchapter.

(d) No person shall conduct or cause to be conducted, any activity which causes the concentration of any substances to exceed that specified in Rule .0202 of this Subchapter, except as authorized by the rules of this Subchapter.

History Note: Statutory Authority G.S. 143-214; 143-214.1; 143-214.2; 143-215.3(e);
143-215.3(a)(1); 143B-282;
Eff. June 10, 1979;
Amended Eff. August 1, 1989; July 1, 1988; September 1, 1984; December 30, 1983.

.0104 RS DESIGNATION

(a) The Director is authorized to designate GA or GSA groundwaters as RS under any of the following circumstances:

- (1) Where, as a result of man's activities, groundwaters contain concentrations of substances in excess of the groundwater quality standards established under this Subchapter, and remedial action to restore groundwater quality has been required, or
- (2) Where a statutory variance has been granted as provided in Rule .0113 of this Subchapter.

(b) The RS designation serves as a warning that groundwater so designated may not be suitable for use as a drinking water supply without treatment. The boundaries of areas designated RS may be approximated in the absence of analytical data sufficient to define the extent of groundwater degradation. The designation is temporary and will be removed by the Director upon a determination that the quality of the groundwater so designated has been restored to the level of the applicable standards or when reclassified GC.

History Note: Statutory Authority G.S. 143-214.1; 143-215.3(a)(1); 143B-282(2);
Eff. June 10, 1979;
Amended Eff. December 1, 1989; August 1, 1989; December 30, 1983.

.0105 ADOPTION BY REFERENCE

*History Note: Statutory Authority G.S. 143-214.1;
Eff. December 30, 1983;
Repealed Eff. August 1, 1989.*

.0106 CORRECTIVE ACTION

(a) The goal of actions taken to restore groundwater quality shall be restoration to the level of the standards, or as close thereto as is economically and technologically feasible.

(b) Any person conducting or controlling an activity which results in the discharge of a waste or hazardous substance or oil to the groundwaters of the state, or in proximity thereto, shall take immediate action to terminate and control the discharge, mitigate any hazards resulting from exposure to the pollutants and notify the Department of the discharge.

(c) Any person conducting or controlling an activity which results in an increase in the concentration of a substance in excess of the groundwater standard:

(1) as the result of activities, other than agricultural operations, not permitted by the state, shall assess the cause, significance and extent of the violation; submit a plan for eliminating the source of contamination and for restoration of groundwater quality; and implement the plan in accordance with a Special Order by Consent or a Special Order of the Commission.

(2) as a result of activities conducted under the authority of a permit issued by the state, shall, where such concentrations are detected:

(A) at or beyond a review boundary, demonstrate, through predictive calculations or modeling, that natural site conditions, facility design and operational controls will prevent a violation of standards at the compliance boundary; or submit a plan for alteration of existing site conditions, facility design or operational controls that will prevent a violation at the compliance boundary, and implement that plan upon its approval by the Director.

(B) at or beyond a compliance boundary, shall, assess the cause, significance and extent of the violation of groundwater quality standards and submit the results of the investigation and a plan for groundwater quality restoration to the Director. Upon approval by the Director, the permittee shall implement the plan in accordance with a Special Order by Consent or a Special Order of the Commission.

(d) In the evaluation of remedial action plans, the Director shall consider the extent of any violations, the extent of any threat to human health or safety, the extent of damage to the environment, technology available to accomplish restoration and the public and economic benefits to be derived from groundwater quality restoration.

(e) The Director may authorize the discontinuance of remedial action to restore groundwater quality to the level of the standard upon a demonstration by the responsible party to the Director that continuance would not result in significant reduction in the concentration of contaminants. In the consideration of a request to discontinue remedial actions, the Director shall consider the duration and degree of success of remedial efforts, the feasibility of other treatment techniques which could result in further reduction of contaminant levels, and the effect on groundwater users if contaminants remain at levels existing at the time of termination of remedial action.

(f) Upon a determination by the Director that continued remedial actions would result in no significant reduction in contaminant concentrations, the responsible party shall petition for a variance or a reclassification of the impacted groundwaters.

(g) Where groundwater quality standards are exceeded as a result of the application of pesticides or other agricultural chemicals, the Director shall request the Pesticide Board or the Department of Agriculture to assist the Division of Environmental Management in determining the cause of the violation. If the violation is determined to have resulted from the use of pesticides, the Director shall request the Pesticide Board to take appropriate regulatory action to control the use of the chemical or chemicals responsible for, or contributing to, such violations, or to discontinue their use.

*History Note: Statutory Authority G.S. 143-215.2; 143-215.3(a)(1); 143B-282;
Eff. August 1, 1989.*

.0107 COMPLIANCE BOUNDARY

(a) For disposal systems permitted prior to December 30, 1983, the compliance boundary is established at a horizontal distance of 500 feet from the waste boundary or at the property boundary, whichever is closer to the source.

(b) For disposal systems permitted on or after December 30, 1983, a compliance boundary shall be established 250 feet from the waste boundary, or 50 feet within the property boundary, whichever point is closer to the source.

(c) The boundary shall be established by the Director at the time of permit issuance. Any sale or transfer of property which affects a compliance boundary shall be reported immediately to the Director and the compliance boundary re-established accordingly.

(d) The boundary shall form a vertical plane extending from the water table to the maximum depth of saturation.

(e) For ground absorption sewage treatment and disposal systems which are permitted under 10 NCAC 10A .1900, the compliance boundary shall be established at the property boundary.

(f) Penalties authorized pursuant to G.S. 143-215.6(a)(1)a. will not be assessed for violations of water quality standards within a compliance boundary unless the result of violations of permit conditions or negligence in the management of the facility.

(g) The Director shall require:

- (1) that permits for all activities governed by G.S. 143-215.1 be written to protect the quality of groundwater established by applicable standards, at the compliance boundary;
- (2) that recommendations be made to ensure compliance with the applicable level of standards at the compliance boundary on all permit applications received for review from other state agencies;
- (3) that necessary groundwater quality monitoring shall be conducted within the compliance boundary; and
- (4) that a contravention of standards within the compliance boundary resulting from activities conducted by the permitted facility be remedied through clean-up, recovery, containment, or other response when any of the following conditions occur:
 - (A) a violation of any standard in adjoining classified waters occurs or can be reasonably predicted to occur considering hydrogeologic conditions, modeling, or other available evidence;
 - (B) an imminent hazard or threat to the public health or safety exists or can be predicted; or
 - (C) a violation of any standard in groundwater occurring in the bedrock other than limestones found in the Coastal Plain sediments.

*History Note: Statutory Authority G.S. 143-215.1(b); 143-215.3(a)(1); 143B-282;
Eff. August 1, 1989.*

.0108 REVIEW BOUNDARY

A review boundary is established around any disposal system midway between the compliance boundary and the waste boundary. When the concentration of any substance equals or exceeds the standard at the review boundary as determined by monitoring, the permittee shall take action in accordance with the provisions of Rule .0106(c)(2)(A) of this Subchapter.

*History Note: Statutory Authority G.S. 143-215.1(b); 143-215.3(a)(1); 143B-282;
Eff. August 1, 1989.*

.0109 DELEGATION

(a) The Director is delegated the authority to enter into consent special orders under G.S. 143-215.2 for violations of the water quality standards.

(b) The Director is delegated the authority to issue a proposed special order without the consent of the person affected and to notify the affected person of the procedure set out in G.S. 150B-23 to contest the proposed special order.

(c) The Director shall give public notice of proposed special orders and consent special orders.

*History Note: Statutory Authority G.S. 143-215.2; 143-215.3(a)(1); 143-215.3(a)(4);
Eff. August 1, 1989.*

.0110 MONITORING

(a) Any person subject to the provisions of G.S. 143-215.1 who causes, permits or has control over any discharge of waste, shall install a monitoring system, at such locations, and in such detail, as the Director may require to evaluate the effects of the discharge upon the waters of the state, including the effect of any actions taken to restore groundwater quality, as well as the efficiency of any treatment facility.

(b) Monitoring systems shall be operated in a manner that will not result in the contamination of adjacent groundwaters of a higher quality.

(c) Monitoring shall be conducted and results reported in a manner and at a frequency specified by the Director.

History Note: Statutory Authority G.S. 143-215.1(b); 143-215.3(a)(1); 143-215.65; 143-215.66; 143B-282; Eff. August 1, 1989.

.0111 REPORTS

Any person subject to the provisions of G.S. 143-215.1 and to the requirements for corrective action specified in Rule .0106 of this Subchapter shall submit to the Director, in such detail as the Director may require, a written report that describes:

- (1) the results of the investigation specified in Paragraphs (c)(1) and (c)(2)(B) of Rule .0106, including but not limited to:
 - (a) a description of the sampling procedures followed and methods of chemical analyses used; and
 - (b) all technical data utilized in support of any conclusions drawn or determinations made.
- (2) the results of the predictive calculations or modeling, including a copy of the calculations or model runs and all supporting technical data, used in the demonstration required in Paragraph (c)(2)(A) of Rule .0106; and
- (3) the proposed methodology and timetable associated with the restoration of groundwater quality for those situations identified in Paragraphs (c)(1) and (c)(2)(B) of Rule .0106.

History Note: Statutory Authority G.S. 143-215.1(b); 143-215.3(a)(1); 143-215.65; 143B-282; Eff. August 1, 1989.

.0112 ANALYTICAL PROCEDURES

Tests or analytical procedures to determine compliance or noncompliance with the water quality standards established in Rule .0202 of this Subchapter will be in accordance with:

- (1) The following methods or procedures for substances where the selected method or procedure provides a method detection limit value at or less than the standard:
 - (a) Standard methods for the Examination of Water and Wastewater, 16th Edition, 1985, published jointly by American Public Health Association, American Water Works Association and Water Pollution Control Federation;
 - (b) Methods for Chemical Analysis of Water and Waste, 1979, U.S. Environmental Protection Agency publication number EPA-600/4-79-020, as revised March 1983;
 - (c) Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods, 3rd Edition, 1986, U.S. Environmental Protection Agency publication number SW-846;
 - (d) Test Procedures for the Analysis of Pollutants Under the Clean Water Act, Federal Register Vol. 49, No. 209, 40 CFR Part 136, October 26, 1984;
 - (e) Methods or procedures approved by letter from the Director upon application by the regulated source.
- (2) A method or procedure approved by the Director for substances where the standard is less than the limit of detectability.

History Note: Statutory Authority G.S. 143-215.3(a)(1); 143B-282; Eff. August 1, 1989.

.0113 VARIANCE

(a) The Commission, on its own initiative or pursuant to a request under G.S. 143-215.3(e), may grant variances to water quality standards and the compliance boundary. Persons subject to the provisions of G.S. 130A-294 may apply for a variance under this Section.

(b) Requests for variances are filed by letter from the applicant to the Environmental Management Commission. The application should be mailed to the chairman of the Commission in care of the Director, Division of Environmental Management, Post Office Box 27687, Raleigh, N.C. 27611.

(c) The application should contain the following information:

- (1) Applications filed by counties or municipalities must include a resolution of the County Board of Commissioners or the governing board of the municipality requesting the variance from water quality standards which apply to the area for which the variance is requested.
- (2) A description of the past, existing or proposed activities or operations that have or would result in a discharge of contaminants to the groundwaters.
- (3) Description of proposed area for which a variance is requested. A detailed location map, showing the orientation of the facility, potential for groundwater contaminant migration, as well as the area covered by the variance request, with reference to at least two geographic references (numbered roads, named streams rivers, etc.) must be included.
- (4) Supporting information to establish that the variance will not endanger the public health and safety, including health and environmental effects from exposure to the groundwater contaminants. (Location of wells and other water supply sources including details of well construction within 1/2 mile of site must be shown on a map).
- (5) Supporting information to establish that standards cannot be achieved by providing the best available technology economically reasonable. This information must identify specific technology considered, changes in quality of the contaminant plume as demonstrated through predictive calculations approved by the Director, and technological constraints which limit restoration to the level of the standard.
- (6) Supporting information to establish that compliance would produce serious hardship on the applicant.
- (7) Supporting information that compliance would produce serious hardship without equal or greater public benefit.
- (8) A copy of any Special Order that was issued in connection with the contaminants in the proposed area and supporting information that applicant has complied with the Special Order.
- (9) A list of the names and addresses of any property owners within the proposed area of the variance as well as any property owners adjacent to the site covered by the variance.

(d) Upon receipt of the application, the Director will review it for completeness and request additional information if necessary. When the application is complete, the Director shall give public notice of the application and schedule the matter for a public hearing in accordance with G.S. 143-215.4(b) and the procedures set out below.

(e) Notice of Public Hearing.

- (1) Notice of public hearing on any variance application shall be circulated in the geographical areas of the proposed variance by the Director at least 30 days prior to the date of the hearing:
 - (A) by publishing the notice one time in a newspaper having general circulation in said county;
 - (B) by mailing to the North Carolina Department of Human Resources, Division of Health Services, and appropriate local health agency;
 - (C) by mailing to any other federal, state or local agency upon request;
 - (D) by mailing to the local governmental unit or units having jurisdiction over the geographic area covered by the variance;
 - (E) by mailing to any property owner within the proposed area of the variance, as well as any property owners adjacent to the site covered by the variance; and
 - (F) by mailing to any person or group upon request.
- (2) The contents of public notice of any hearing shall include at least the following:
 - (A) name, address, and phone number of agency holding the public hearing;
 - (B) name and address of each applicant whose application will be considered at the meeting;
 - (C) brief summary of the proposed standard variance or modification of the perimeter of compliance being requested;
 - (D) geographic description of a proposed area for which a variance is requested;
 - (E) brief description of the activities or operations which have or will result in the discharge of contaminants to the groundwaters described in the variance application;
 - (F) a brief reference to the public notice issued for each variance application;
 - (G) information regarding the time and location for the hearing;
 - (H) the purpose of the hearing;

- (I) address and phone number of premises at which interested persons may obtain further information, request a copy of each application, and inspect and copy forms and related documents; and
- (J) a brief description of the nature of the hearing including the rules and procedures to be followed. The notice shall also state that additional information is on file with the Director and may be inspected at any time during normal working hours. Copies of the information on file will be made available upon request and payment of cost or reproduction.
- (f) All comments received within 30 days following the date of the public hearing shall be made part of the application file and shall be considered by the Commission prior to taking final action on the application.
- (g) In determining whether to grant a variance, the Commission shall consider whether the applicant has complied with any Special Order, or Special Order by Consent issued under G.S. 143-215.2.
- (h) If the Commission's final decision is unacceptable, the applicant may file a petition for a contested case in accordance with Chapter 150B of the General Statutes. If the petition is not filed within 60 days, the decision on the variance shall be final and binding.
- (i) A variance shall not operate on a defense to an action at law based upon a public or private nuisance theory or any other cause of action.

History Note: Statutory Authority G.S. 143-215.3(a)(1); 143-215.3(a)(3); 143-215.3(a)(4);
143-215.3(e); 143-215.4;
Eff. August 1, 1989.

SECTION .0200 - CLASSIFICATIONS AND WATER QUALITY STANDARDS

.0201 GROUNDWATER CLASSIFICATIONS

The classifications which may be assigned to the groundwaters will be those specified in the following series of classifications:

- (1) Class GA waters: usage and occurrence:
 - (a) Best Usage. Existing or potential source of drinking water supply for humans.
 - (b) Conditions Related to Best Usage. This class is intended for those groundwaters in which chloride concentrations are equal to or less than 250 mg/l, and which are considered suitable for drinking in their natural state, but which may require treatment to improve quality related to natural conditions.
 - (c) Occurrence. In the saturated zone.
- (2) Class GSA waters: usage and occurrence:
 - (a) Best Usage. Existing or potential source of water supply for potable mineral water and conversion to fresh waters.
 - (b) Conditions Related to Best Usage. This class is intended for those groundwaters in which the chloride concentrations due to natural conditions is in excess of 250 mg l, but which otherwise may be considered suitable for use as potable water after treatment to reduce concentrations of naturally occurring substances.
 - (c) Occurrence. In the saturated zone.
- (3) Class GC waters: usage and occurrence:
 - (a) Best Usage. Source of water supply for purposes other than drinking.
 - (b) Conditions Related to Best Usage. This class includes those groundwaters that do not meet the quality criteria of waters having a higher classification and for which efforts to restore in-situ to a higher classification would not be technologically feasible, or not in the best interest of the public.
 - (c) Occurrence. In the saturated zone, as determined by the Commission on a case by case basis.

*History Note: Statutory Authority G.S. 143-214.1; 143B-282(2);
Eff. June 10, 1979;
Amended Eff. August 1, 1989; September 1, 1984; December 30, 1983.*

.0202 WATER QUALITY STANDARDS

- (a) The water quality standards for the groundwaters of the state are those specified in this Rule. They are the maximum allowable concentrations resulting from any discharge of contaminants to the land or waters of the state, which may be tolerated without creating a threat to human health or which would otherwise render the groundwater unsuitable for its intended best usage. Where groundwater quality standards have been exceeded due to man's activities, restoration efforts shall be designed to restore groundwater quality to the level of the standard or as closely thereto as is practicable.
- (b) The maximum allowable concentrations for contaminants specified in Paragraphs (g) and (h) of this Rule shall be as listed, except that:
 - (1) Where the maximum allowable concentration of a substance is less than the limit of detectability, the substance shall not be permitted in detectable concentrations.
 - (2) Where two or more substances exist in combination, the Director shall consider the effects of chemical interactions and may establish maximum concentrations at values less than those established in accordance with Paragraphs (c) and (g) of this Rule. In the absence of information to the contrary, the carcinogenic risks associated with carcinogens present shall be considered additive and the toxic effects associated with non-carcinogens present shall also be considered additive.
 - (3) Where naturally occurring substances exceed the established standard, the standard will be the naturally occurring concentration as determined by the Director.
- (c) Substances which are not naturally occurring and for which no standard is specified shall not be permitted in detectable concentrations in Class GA or Class GSA groundwaters. Any person may petition the Director to establish an interim maximum allowable concentration for an unspecified substance, however, the burden of demonstrating those concentrations of the substance which correspond to the levels described in Paragraph (d) of this Rule rests with the petitioner. The petitioner shall submit all toxicological and epidemiological data, study results, and calculations necessary to establish

a standard in accordance with the procedure prescribed in Paragraph (d) of this Rule. Within three months after the establishment of an interim maximum allowable concentration for a substance by the Director, the Director shall initiate action to consider adoption of a standard for that substance.

(d) Maximum allowable concentrations for substances in Class GA and Class GSA waters are established as the lesser of:

- (1) Systemic threshold concentration calculated as follows: $[\text{Reference Dose (mg kg day)} \times 70 \text{ kg (adult body weight)} \times \text{Relative Source Contribution (.10 for inorganics; .20 for organics)}] / [2 \text{ liters day (avg. water consumption)}]$;
- (2) Concentration which corresponds to an incremental lifetime cancer risk of 1×10^{-6} ;
- (3) Taste threshold limit value;
- (4) Odor threshold limit value;
- (5) Maximum contaminant level; or
- (6) National secondary drinking water standard.

(c) The following references, in order of preference, shall be used in establishing concentrations of substances which correspond to levels described in Paragraph (d) of this Rule.

- (1) Integrated Risk Information System (U.S. EPA).
- (2) Health Advisories (U.S. EPA Office of Drinking Water).
- (3) Other health risk assessment data published by U.S. EPA.
- (4) Other appropriate, published health risk assessment data.

(f) Water quality standards specified in Paragraphs (g) and (h) of this Rule and interim maximum allowable concentrations established pursuant to Paragraph (c) of this Rule shall be reviewed on a biennial basis. Appropriate modifications to established standards will be made in accordance with the procedure prescribed in Paragraph (d) of this Rule where modifications are considered appropriate based on data published subsequent to the previous review.

(g) Class GA Standards. Where not otherwise indicated, the standard refers to the total concentration in milligrams per liter of any constituent.

- (1) acrylamide (propenamide): 0.00001
- (2) arsenic: 0.05
- (3) barium: 1.0
- (4) benzene: 0.001
- (5) bromoform (tribromomethane): 0.00019
- (6) cadmium: 0.005
- (7) carbofuran: 0.036
- (8) carbon tetrachloride: 0.0003
- (9) chlordane: 2.7×10^{-5}
- (10) chloride: 250.0
- (11) chlorobenzene: 0.3
- (12) chloroform (trichloromethane): 0.00019
- (13) 2-chlorophenol: 0.0001
- (14) chromium: 0.05
- (15) cis-1,2-dichloroethene: 0.07
- (16) coliform organisms (total): 1 per 100 milliliters
- (17) color: 15 color units
- (18) copper: 1.0
- (19) cyanide: 0.154
- (20) 2, 4-D (2,4-dichlorophenoxy acetic acid): 0.07
- (21) 1,2-dibromo-3-chloropropane: 2.5×10^{-5}
- (22) dichlorodifluoromethane (Freon-12; Halon): 0.00019
- (23) 1,2-dichloroethane (ethylene dichloride): 0.00038
- (24) 1,1-dichloroethylene (vinylidene chloride): 0.007
- (25) 1,2-dichloropropane: 0.00056
- (26) p-dioxane (1,4-diethylene dioxide): 0.007
- (27) dioxin: 2.2×10^{-16}
- (28) dissolved solids (total): 500
- (29) endrin: 0.0002
- (30) epichlorohydrin (1-chloro-2,3-epoxypropane): 0.00354
- (31) ethylbenzene: 0.029
- (32) ethylene dibromide (EDB; 1,2-dibromoethane): 0.05×10^{-5}

- (33) ethylene glycol: 7.0
- (34) flouride: 2.0
- (35) foaming agents: 0.5
- (36) gross alpha particle activity (including radium-226 but excluding radon and uranium): 15 pCi/l
- (37) heptachlor: 7.6×10^{-5}
- (38) heptachlor epoxide: 3.8×10^{-5}
- (39) hexachlorobenzene (perchlorobenzene): 0.00002
- (40) n-hexane: 14.3
- (41) iron: 0.3
- (42) lead: 0.05
- (43) lindane: 2.65×10^{-5}
- (44) manganese: 0.05
- (45) mercury: 0.0011
- (46) metadichlorobenzene (1,3-dichlorobenzene): 0.62
- (47) methoxychlor: 0.1
- (48) methylene chloride (dichloromethane): 0.005
- (49) methyl ethyl ketone (MEK; 2-butanone): 0.17
- (50) nickel: 0.15
- (51) nitrate: (as N) 10.0
- (52) nitrite: (as N) 1.0
- (53) orthodichlorobenzene (1,2-dichlorobenzene): 0.62
- (54) oxamyl: 0.175
- (55) paradichlorobenzene (1,4-dichlorobenzene): 0.0018
- (56) pentachlorophenol: 0.22
- (57) pH: 6.5 - 8.5
- (58) radium-226 and radium-228 (combined): 5 pCi/l
- (59) selenium: 0.01
- (60) silver: 0.05
- (61) styrene (ethenylbenzene): 1.4×10^{-5}
- (62) sulfate: 250.0
- (63) tetrachloroethylene (perchloroethylene; PCE): 0.0007
- (64) toluene (methylbenzene): 1.0
- (65) toxaphene: 3.1×10^{-5}
- (66) 2, 4, 5,-TP (Silvex): 0.01
- (67) trans-1,2-dichloroethene: 0.07
- (68) 1,1,1-trichloroethane (methyl chloroform): 0.2
- (69) trichloroethylene (TCE): 0.0028
- (70) vinyl chloride (chloroethylene): 1.5×10^{-5}
- (71) xylenes (o-, m-, and p-): 0.4
- (72) zinc: 5.0

(h) Class GSA Standards. The standards for this class shall be the same as those for Class GA except as follows:

- (1) chloride: allowable increase not to exceed 100 percent of the natural quality concentration.
- (2) total dissolved solids: 1000 mg/l.

(i) Class GC Waters.

- (1) The concentrations of substances which, at the time of classification exceed water quality standards, shall not be permitted to increase. For all other substances, concentrations shall not be caused or permitted to exceed the established standard.
- (2) The concentrations of substances which, at the time of classification, exceed water quality standards shall not cause or contribute to the contravention of groundwater or surface water quality standards in adjoining waters of a different class.
- (3) Concentrations of specific substances, which exceed the established standard at the time of classification, shall be listed in Section .0300 of this Subchapter.

History Note: Statutory Authority G.S. 143-214.1; 143B-282(2);

Eff. June 10, 1979;

Amended Eff. August 1, 1989; September 1, 1984; December 30, 1983.

SECTION .0300 - ASSIGNMENT OF UNDERGROUND WATER CLASSIFICATIONS

.0301 CLASSIFICATIONS: GENERAL

(a) Schedule of Classifications. The classifications are based on the quality, occurrence and existing or contemplated best usage of the groundwaters as established in Section .0200 of this Subchapter and are assigned statewide except where supplemented or supplanted by specific classification assignments by major river basins.

(b) Classifications and Water Quality Standards. The classifications and standards assigned to the groundwaters are denoted by the letters GA, GSA, or GC. These classifications refer to the classifications and standards established by Rule .0201 of this Subchapter.

*History Note: Statutory Authority G.S. 143-214.1; 143B-282(2);
Eff. December 30, 1983;
Amended Eff. August 1, 1989.*

.0302 STATEWIDE

The classifications assigned to the groundwaters located within the boundaries or under the extraterritorial jurisdiction of the State of North Carolina are:

- (1) Class GA Waters. Those groundwaters in the state naturally containing 250 mg/l or less of chloride are classified GA.
- (2) Class GSA Waters. Those groundwaters in the state naturally containing greater than 250 mg/l chloride are classified GSA.
- (3) Class GC Waters. Those groundwaters assigned the classification GC in Rules .0303 - .0318 of this Section.

*History Note: Statutory Authority G.S. 143-214.1; 143B-282(2);
Eff. December 30, 1983;
Amended Eff. August 1, 1989.*

.0303 BROAD RIVER BASIN

No classification assignments other than those specified in Rule .0302 are made for the river basin.

*History Note: Statutory Authority G.S. 143-214.1;
Eff. December 30, 1983.*

.0304 CAPE FEAR RIVER BASIN

No classification assignments other than those specified in Rule .0302 are made for the river basin.

*History Note: Statutory Authority G.S. 143-214.1;
Eff. December 30, 1983.*

.0305 CATAWBA RIVER BASIN

No classification assignments other than those specified in Rule .0302 are made for the river basin.

*History Note: Statutory Authority G.S. 143-214.1;
Eff. December 30, 1983.*

.0306 CHOWAN RIVER BASIN

No classification assignments other than those specified in Rule .0302 are made for the river basin.

*History Note: Statutory Authority G.S. 143-214.1;
Eff. December 30, 1983.*

.0307 FRENCH BROAD RIVER BASIN

No classification assignments other than those specified in Rule .0302 are made for the river basin.

History Note: Statutory Authority G.S. 143-214.1;

Eff. December 30, 1983.

.0308 IIIWASSEE RIVER BASIN

No classification assignments other than those specified in Rule .0302 are made for the river basin.

*History Note: Statutory Authority G.S. 143-214.1;
Eff. December 30, 1983.*

.0309 LITTLE TENNESSEE RIVER BASIN

No classification assignments other than those specified in Rule .0302 are made for the river basin.

*History Note: Statutory Authority G.S. 143-214.1;
Eff. December 30, 1983.*

.0310 SAVANNAH RIVER BASIN

No classification assignments other than those specified in Rule .0302 are made for the river basin.

*History Note: Statutory Authority G.S. 143-214.1;
Eff. December 30, 1983.*

.0311 LUMBER RIVER BASIN

No classification assignments other than those specified in Rule .0302 are made for the river basin.

*History Note: Statutory Authority G.S. 143-214.1;
Eff. December 30, 1983.*

.0312 NEUSE RIVER BASIN

No classification assignments other than those specified in Rule .0302 are made for the river basin.

*History Note: Statutory Authority G.S. 143-214.1;
Eff. December 30, 1983.*

.0313 NEW-WATAUGA RIVER BASIN

No classification assignments other than those specified in Rule .0302 are made for the river basin.

*History Note: Statutory Authority G.S. 143-214.1;
Eff. December 30, 1983.*

.0314 PASQUOTANK RIVER BASIN

No classification assignments other than those specified in Rule .0302 are made for the river basin.

*History Note: Statutory Authority G.S. 143-214.1;
Eff. December 30, 1983.*

.0315 ROANOKE RIVER BASIN

No classification assignments other than those specified in Rule .0302 are made for the river basin.

*History Note: Statutory Authority G.S. 143-214.1;
Eff. December 30, 1983.*

.0316 TAR PAMLICO RIVER BASIN

No classification assignments other than those specified in Rule .0302 are made for the river basin.

*History Note: Statutory Authority G.S. 143-214.1;
Eff. December 30, 1983.*

.0317 WHITE OAK RIVER BASIN

No classification assignments other than those specified in Rule .0302 are made for the river basin.

*History Note: Statutory Authority G.S. 143-214.1;
Eff. December 30, 1983.*

.0318 YADKIN-PEE DEE RIVER BASIN

No classification assignments other than those specified in Rule .0302 are made for the river basin.

*History Note: Statutory Authority G.S. 143-214.1;
Eff. December 30, 1983.*

.0319 RECLASSIFICATION

The groundwater classifications as assigned may be revised by the Commission following public notice and subsequent public hearing. Changes may be to a higher or lower classification. Reclassification requests may be submitted to the Director.

*History Note: Statutory Authority G.S. 143-214.1; 143-215.3(e); 143B-282(2);
Eff. December 30, 1983;
Amended Eff. August 1, 1989.*

