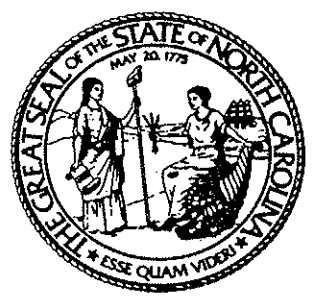


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NORTH CAROLINA ADMINISTRATIVE CODE
TITLE 15
DEPARTMENT OF NATURAL RESOURCES
AND
COMMUNITY DEVELOPMENT
CHAPTER 2
ENVIRONMENTAL MANAGEMENT DIVISION
SUBCHAPTER 2L
CLASSIFICATIONS AND WATER QUALITY STANDARDS
APPLICABLE TO THE GROUNDWATERS
OF
NORTH CAROLINA
SECTION .0100 AND .0200



EFFECTIVE DATE - JUNE 10, 1979
ENVIRONMENTAL MANAGEMENT COMMISSION
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TABLE OF CONTENTS

SUBCHAPTER 2L - GROUNDWATER CLASSIFICATION AND STANDARDS

SECTION .0100 - GENERAL CONSIDERATIONS

- .0101 INTRODUCTION
- .0102 DEFINITIONS
- .0103 GENERAL RULES
- .0104 ANALYTICAL PROCEDURES

SECTIONS .0200 - CLASSIFICATIONS AND WATER QUALITY STANDARDS APPLICABLE
TO GROUNDWATERS OF NORTH CAROLINA

- .0201 GROUNDWATER CLASSIFICATION
- .0202 GROUNDWATER QUALITY STANDARDS

SUBCHAPTER 2L - GROUNDWATER CLASSIFICATION
AND STANDARDS

SECTION .0100 - GENERAL CONSIDERATIONS

.0101 INTRODUCTION

(a) N.C. General Statute [43-214.] directs the Environmental Management Commission to develop and adopt, after proper study, a series of classifications and standards applicable to each classification, 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, this Regulation establishes a series of classifications and water quality standards applicable to the groundwaters of the state.

(b) Only in the very last few years has pollution been recognized as a major threat to the quality of the groundwaters of the state. The increasing incidence and potential for pollution results primarily from the change in the use of land from principally agricultural and silviculture activities to residential, commercial, and industrial activities. This change in land use has resulted in a large and continuing increase in the amount of wastes disposed on the land and in the number of other sources of pollution, such as landfills, waste disposal and processing facilities, chemical stockpiles, chemical and hydrocarbon spills and concentrations of septic tanks. Although the land in much of the state is capable of cycling many types of waste, unlimited and uncontrolled pollution sources will result in, not only pollution of the groundwaters, but eventual pollution of the surface waters as well. Poorly managed groundwater development is having a significant impact on the groundwater quality in some parts of the state.

(c) The regulations established in this Subchapter are intended to maintain and preserve the quality of groundwaters, prevent and abate pollution and contamination, protect public health, and permit management of groundwaters for best usage by the citizens of North Carolina.

History Note: Statutory Authority G.S. [43-214.];
Eff. June 10, 1979.

.0102 DEFINITIONS

The definition of any word or phrase used in these regulations shall be the same as given in North Carolina General Statute [43-

213 except that the following words and phrases shall have the following meanings:

- (1) Deleterious substance means those substances which may cause the water to be exceedingly unpleasant to taste, or unsightly, but which are not toxic.
- (2) Fresh groundwaters are those groundwaters having a chloride concentration equal to or less than 250 milligrams per liter.
- (3) Groundwaters are those waters in the saturated zone of the water-bearing consolidated and unconsolidated formations.
- (4) Micrograms per liter (ug/l) gives the weight in micrograms of any constituent in one liter of solution.
- (5) Milligrams per liter (mg/l) is the weight in milligrams of any specific constituent or constituents in a liter of the solution.
- (6) Naturally occurring concentration means the concentration of chemical or biological substances or physical characteristics which exist naturally and which have not been changed by man's activities.
- (7) Natural quality means the physical, biological and chemical quality which occurs naturally and which has not been changed by man's activities.
- (8) Parts per million (ppm) and parts per billion (ppb) shall be construed to be equivalent to milligrams per liter and micrograms per liter, respectively.
- (9) Point of discharge is the point of initial contact of waste with the existing soil or rock materials.
- (10) Potable waters are those waters suitable for drinking, culinary and food processing purposes.
- (11) Saline groundwaters are those groundwaters having a chloride concentration of more than 250 mg/l.
- (12) The saturated zone is that part of the water-bearing consolidated and unconsolidated formations in which all the voids, large and small, are ideally filled with water under pressure greater than atmospheric. It does not include the capillary fringe.
- (13) Source of water supply for drinking, culinary use or food processing shall mean any groundwater source either public or private, the waters from which are used for human consumption, or are used in connection with the processing of milk, beverages, or food.
- (14) Toxic substances shall mean those substances which if ingested or assimilated into any organism either directly or indirectly will cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in such organisms of their offspring).

NR&CD - ENVIRONMENTAL MANAGEMENT

2L .0100

- (15) The unsaturated zone is the portion of the consolidated and unconsolidated formations between land surface and the water table. It includes the capillary fringe.
- (16) Water table is the surface of the saturated zone in the unconfined water-bearing formation or material at which the pressure is atmospheric.

History Note: Statutory Authority G.S. 143-214.1;
Eff. June 10, 1979.

.0103 GENERAL RULES

(a) The discharge of any wastes to the subsurface or groundwaters of the state by means of wells is prohibited [G.S. 143-214.2(b)].

(b) The maximum concentrations for toxic and deleterious substances shall not exceed the specified concentrations for each classification. Where not specified, the maximum concentrations for toxic substances in GA or GSA groundwaters shall not exceed the maximum recommended or established concentrations in the National Interim Primary Drinking Water Regulations. The maximum concentration for unspecified deleterious substances in GA and GSA groundwaters shall not exceed the maximum recommended or established concentration in the National Interim Primary Drinking Water Regulations or the naturally occurring concentration, as determined by the department, whichever is greater.

(c) Waters which, at the time of classification, contain toxic or deleterious substances in excess of the maximum allowable concentrations but for which it would be feasible to upgrade the quality by treatment to the standards established for classification, shall be designated restricted (RS).

(d) Any person subject to the provisions of General Statute 143-215.1 may apply to the Environmental Management Commission for a variance from the groundwater classification and quality standards established pursuant to these regulations and North Carolina General Statute 143-214.1. A variance may be granted by the commission pursuant to the requirements of North Carolina General Statute 143-215.3(e). The burden of proof in any public hearing or other proceeding pursuant to North Carolina General Statute 143-215.3(e) shall be upon the applicant for a variance.

History Note: Statutory Authority G.S. 143-214.1;
Eff. June 10, 1979.

.0104 ANALYTICAL PROCEDURES

Tests or analytical procedures to determine conformity or nonconformity with standards will, insofar as practicable and

NR&CD - ENVIRONMENTAL MANAGEMENT

2L .0100

applicable, be made in accordance with the methods given in the latest pertinent issue of the Federal Register (presently December 1, 1976) as submitted by the U.S. Environmental Protection Agency for water programs. Other analytical procedures shall conform to those found in the latest edition of either "Standard Methods for the Examination of Water and Wastewater" (published jointly by the American Public Health Association, the American Water Works Association and the Water Pollution Control Federation) or "Methods for Chemical Analysis of Water and Wastes" (prepared by the U.S. Environmental Protection Agency and available from the Office of Technology Transfer, Washington, D.C. 20460).

History Note: Statutory Authority G.S. 143-214.1;
Eff. June 10, 1979.

SECTION .0200 - CLASSIFICATIONS AND WATER QUALITY
STANDARDS APPLICABLE TO GROUNDWATERS
OF NORTH CAROLINA

.0201 GROUNDWATER CLASSIFICATIONS

The groundwater classification for separately identified groundwaters shall be those specified in the following series of classifications:

- (1) class GA waters; usage and occurrence:
 - (a) Best Usage of Waters. Source of water supply for drinking, culinary use, and food processing;
 - (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, considered safe for drinking, culinary use, and food processing without treatment, but which may require disinfection or other treatment when necessary to reduce naturally occurring concentrations in order to meet the National Interim Primary Drinking Water Regulations;
 - (c) Occurrence. At depths greater than 20 feet below land surface and in the saturated zone above a depth of 20 feet where these waters are a principal source of potable water supply;
- (2) class GSA waters; usage and occurrence:
 - (a) Best Usage. Sources of water supply for potable mineral water, culinary use, food processing, and conversion to fresh waters;
 - (b) Conditions Related to Best Usage. This class is intended for those groundwaters in which chloride concentrations are greater than 250 mg/l, and which are considered safe for potable mineral water, culinary use, and food processing without treatment but may require disinfection or other treatment when necessary to reduce naturally occurring concentrations in order to meet the National Interim Primary Drinking Water Regulations;
 - (c) Occurrence. At depths greater than 20 feet below land surface and in the saturated zone above a depth of 20 feet where these waters are a principal source of potable water supply;
- (3) class GB waters; usage and occurrence:
 - (a) Best Usage. Source of recharge to surface waters and groundwaters occurring below a depth of 20 feet;
 - (b) Conditions Related to Best Usage. Precipitation is the principal source of recharge to the saturated zone.

The water in the saturated zone above a depth of 20 feet is of drinking water quality in much of the state. However, the upper 20 feet of the earth's surface is generally very vulnerable to pollution from man's activities, and should be considered a cycling zone for removing most or all of the contaminants from the water by adsorption, absorption, filtration or other natural treatment processes. In recognition of this fact, this classification is intended for those fresh groundwaters occurring at depths less than 20 feet below land surface that are of suitable quality for recharge to the deeper aquifers and surface waters of the state;

- (c) Occurrence. In the saturated zone above a depth of 20 feet below land surface;
- (4) class GSB waters; usage and occurrence:
 - (a) Best Usage. Source of recharge to saline surface waters and saline groundwaters occurring below a depth of 20 feet;
 - (b) Conditions Related to Best Usage. Precipitation is the principal source of recharge to the saturated zone. The water in the saturated zone above a depth of 20 feet is considered safe for potable mineral water in much of the state. However, the upper 20 feet of the earth's surface is generally very vulnerable to pollution from man's activities and should be considered a cycling zone for removing most or all of the contaminants from the water by adsorption, absorption, filtration or other natural treatment processes. In recognition of this fact, this classification is intended for those saline groundwaters occurring at depths less than 20 feet below land surface that are of suitable quality for recharge to the deeper aquifers and surface waters of the state;
 - (c) Occurrence. In the saturated zone above a depth of 20 feet below land surface;
- (5) class GC waters; usage:
 - (a) Best Usage of Waters. Source of water supply for purposes other than human drinking, culinary use, or food processing;
 - (b) Conditions Related to Best Usage. This class includes those waters that do not meet the quality criteria requirements of waters having a higher classification and for which treatment to upgrade to a higher classification would technically or economically not be feasible, or not in the best interest of the public.

History Note: Statutory Authority G.S. 143-214.1;
Eff. June 10, 1979.

.0202 GROUNDWATER QUALITY STANDARDS

The water quality standards for separately identified groundwaters shall be those specified in the following series of standards:

(1) Class GA waters:

- (a) arsenic: not greater than 50 ug/l;
- (b) cadmium: not greater than 10 ug/l;
- (c) chloride: allowable increase not to exceed 50 percent of the naturally occurring chloride concentration or result in a concentration of more than 250 mg/l;
- (d) chromium: not greater than 50 ug/l;
- (e) coliform group total: not greater than 1.0/100 ml;
- (f) color: less than 5.0 units;
- (g) lead: not greater than 50 ug/l;
- (h) mercury: not greater than 2.0 ug/l;
- (i) nitrate (as N): not greater than 10 mg/l;
- (j) nitrite (as N): not greater than 1.0 mg/l;
- (k) oil and grease: free from taste or odor;
- (l) pesticides: shall not exceed maximum limits recommended or established by the National Interim Primary Drinking Water Regulations;
- (m) phenol: not greater than 1.0 ug/l;
- (n) phthalate esters: none in measurable quantities;
- (o) polychlorinated biphenyls: none in measurable quantities;
- (p) radioactive substances: shall not exceed maximum limits recommended or established by the National Interim Primary Drinking Water Regulations;
- (q) selenium: not greater than 10 ug/l;
- (r) silver: not greater than 50 ug/l;
- (s) total dissolved solids: allowable increase not to exceed 50 percent of the naturally occurring total dissolved solids concentration or result in a concentration of more than 1000 mg/l;

(2) Class GSA waters:

- (a) arsenic: not greater than 50 ug/l;
- (b) cadmium: not greater than 10 ug/l;
- (c) chloride: allowable increase not to exceed 100 percent of the naturally occurring chloride concentration;
- (d) chromium: not greater than 50 ug/l;
- (e) coliform group, total: not greater than 1.0 per 100 ml;
- (f) color: less than 5.0 units;
- (g) lead: not greater than 50 ug/l;

NE&CD - ENVIRONMENTAL MANAGEMENT

2L .0200

- (h) mercury: not greater than 2.0 ug/l;
 - (i) nitrate (as N): not greater than 10 mg/l;
 - (j) nitrite (as N): not greater than 1.0 mg/l;
 - (k) pesticides: shall not exceed maximum limits recommended or established by the National Interim Primary Drinking Water Regulations;
 - (l) phenol: not greater than 1.0 ug/l;
 - (m) phthalate esters: none in measurable quantities;
 - (n) polychlorinated biphenyls: none in measurable quantities;
 - (o) radioactive substances: shall not exceed maximum limits recommended or established by the National Interim Primary Drinking Water Regulations;
 - (p) selenium: not greater than 10 ug/l;
 - (q) silver: not greater than 50 ug/l;
- (3) Class GB Waters. All chemical, radioactive, biological, taste producing, odor producing, thermal, and other deleterious substances will be allowed only in such amounts, whether alone or in combination with other substances, as will not result in the contravention of established water quality standards;
- (4) Class GSB Waters. All chemical, radioactive, biological, taste producing, odor producing, thermal, and other deleterious substances will be allowed only in such amounts, whether alone or in combination with other substances, as will not result in the contravention of established water quality standards;
- (5) Class GC Waters. All chemical, radioactive, biological, taste producing, odor producing, thermal, and other deleterious substances shall not exceed the concentration existing at the time of classification.

History Note: Statutory Authority G.S. 143-214.1;
Eff. June 10, 1979.