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STATE OF NORTH CAROLINA DEPARTMENT OF ENVIRONMENT, HEALTH AND NATURAL
RESOURCES DIVISION OF ENVIRONMENTAL MANAGEMENT ADMINISTRATIVE CODE
SECTION 15A SUBCHAPTER 2L SECTIONS .0100, .0200 AND .0300 CLASSIFICATIONS
AND WATER QUALITY STANDARDS APPLICABLE TO TH

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STATE OF NORTH CAROLINA DEPARTMENT OF ENVIRONMENT, HEALTH, AND
NATURAL RESOURCES

North Carolina Administrative Code

Title 15A

**Department of Environment, Health, and Natural Resources
Division of Environmental Management**



Subchapter 2L

**Sections .0100,
.0200, and .0300**

**Classifications and
Water Quality
Standards
Applicable To The
Groundwaters of
North Carolina**

**Current Through November 8, 1993
Environmental Management Commission
Raleigh, North Carolina**

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**Current Through November 8, 1993
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**SUBCHAPTER 2L
GROUNDWATER CLASSIFICATION AND STANDARDS**

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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 G.S. 143B.
- (3) "Compliance boundary" means a boundary around a disposal system at and beyond which groundwater quality standards may not be exceeded and only applies to facilities which have received a permit issued under the authority of G.S. 143-215.1 or G.S. 130A.
- (4) "Contaminant" means any substance occurring in groundwater in concentrations which exceed the groundwater quality standards specified in Rule .0202 of this Subchapter.
- (5) "Corrective action plan" means a plan for eliminating sources of groundwater contamination or for achieving groundwater quality restoration or both.

- (6) "Director" means Director of the Division of Environmental Management.
- (7) "Division" means the Division of Environmental Management.
- (8) "Exposure pathway" means a course taken by a contaminant by way of a transport medium after its release to the environment.
- (9) "Free product" means a non-aqueous phase liquid which may be present within the saturated zone or in surface water.
- (10) "Fresh groundwaters" means those groundwaters having a chloride concentration equal to or less than 250 milligrams per liter.
- (11) "Groundwaters" means those waters occurring in the subsurface under saturated conditions.
- (12) "Hazardous substance" means any substance as defined by Section 101(14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).
- (13) "Licensed geologist" means a person who has been duly licensed as a geologist in accordance with the requirements of G.S. 89E.
- (14) "Natural remediation" means those natural processes acting to restore groundwater quality, including dilution, filtration, sorption, ion-exchange, chemical transformation and biodegradation.
- (15) "Practical Quantitation Limit" means the lowest concentration of a given material that can be reliably achieved among laboratories within specified limits of precision and accuracy by a given analytical method during routine laboratory analysis.
- (16) "Natural conditions" means the physical, biological, chemical and radiological conditions which occur naturally.
- (17) "Potable waters" means those waters suitable for drinking by humans.
- (18) "Professional Engineer" means a person who has been duly registered and licensed as a professional engineer in accordance with the requirements of G.S. 89C.
- (19) "Receptor" means any human, plant, animal, or structure which is, or has the potential to be, adversely effected 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.
- (20) "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.
- (21) "Saline groundwaters" means those groundwaters having a chloride concentration of more than 250 mg/l.
- (22) "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.
- (23) "Standards" means groundwater quality standards as specified in Rule .0202 of this Subchapter.
- (24) "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.
- (25) "Time of travel" means the time required for contaminants in groundwater to move a unit distance.

- (26) "Waste boundary" means the perimeter of the permitted waste disposal area.
- (27) "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; 143B-282;
Eff. June 10, 1979.
Amended Eff. October 1, 1993; August 1, 1989; July 1, 1988;
March 1, 1985.*

.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 significant treatment. It is the intent of these Rules to protect the overall high quality of North Carolina's groundwaters to the level established by the standards and to enhance and restore the quality of degraded groundwaters where feasible and necessary to protect human health and the environment, or to ensure their suitability as a future source of drinking water.

(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 groundwater 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 which have existing quality that is better than the assigned standard, unless such degradation is found to be in the best interests of the citizens of North Carolina based upon the projected economic benefits of the facility and a determination that public health will be protected, or
- (2) a violation of a groundwater quality standard beyond a designated compliance boundary, or
- (3) the impairment of existing groundwater uses or increased risk to the health or safety of the public due to the operation of a waste disposal system.

(c) Violations of 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 substance to exceed that specified in Rule .0202 of this Subchapter, except as authorized by the rules of this Subchapter.

(e) Work that is within the scope of the practice of geology and engineering, performed pursuant to the requirements of this Subchapter, which involves site assessment, the interpretation of subsurface geologic conditions, preparation of conceptual corrective action plans or any work requiring detailed technical knowledge of site conditions which is submitted to the Director, shall be performed by persons, firms or professional corporations who are duly licensed to offer geological or engineering services by the appropriate occupational licensing board or are exempted from such licensing by

G.S. 89E-6. Work which involves design of remedial systems or specialized construction techniques shall be performed by persons, firms or professional corporations who are duly licensed to offer engineering services. Corporations that are authorized by law to perform engineering or geological services and are exempt from the Professional Corporation Act, G.S. 55B, may perform these services.

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; RRC Objection Eff. September 17, 1993, due to lack of necessity for Paragraph (e); Amended Eff. November 4, 1993.

.0104 RESTRICTED DESIGNATION (RS)

(a) 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 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 the groundwaters have been reclassified by the Commission. 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 have been contaminated and the Director has approved a corrective action plan, or termination of corrective action, that will not result in the immediate restoration of such groundwaters to the standards established under this Subchapter.
- (2) Where a statutory variance has been granted as provided in Rule .0113 of this Subchapter.

(b) Groundwaters occurring within an area defined by a compliance boundary in a waste disposal permit are deemed to be designated RS.

(c) The boundary of a designated RS area may be approximated in the absence of analytical data sufficient to define the dimension of the area. The boundary shall be located at least 250 feet away from the predicted edge of the contaminant plume, and shall include any areas into which the contamination is expected to migrate.

(d) In areas designated RS, the person responsible for groundwater contamination shall establish and implement a groundwater monitoring system sufficient to detect changes in groundwater quality within the RS designated area. Monitoring shall be quarterly for the first year and may be reduced to semi-annually thereafter until the applicable standards have been achieved. If during the monitoring period, contaminant concentrations increase, additional remedial action or monitoring pursuant to these Rules may be required.

(e) The applicant for an RS designation shall also provide written verification that all property owners within and adjacent to the proposed RS area have been notified of the requested RS designation.

(f) The Division shall provide public notice of the intent to designate any groundwater RS in accordance with the following requirements:

- (1) Notice shall be published at least 30 days prior to any proposed final action in accordance with G.S. 143-215.4. In addition, notice shall be provided to all

- property owners identified pursuant to Paragraph (e) of this Rule and to the local County Health Director and the chief administrative officer of the political jurisdiction(s) in which the contamination occurs.
- (2) The notice shall contain the following information:
 - (A) name, address, and phone number of the agency issuing the public notice;
 - (B) the location and extent of the designated area;
 - (C) the county title number, county tax identification number, or the property tax book and page identifiers;
 - (D) a brief description of the action or actions which resulted in the degradation of groundwater in the area;
 - (E) actions or intended actions taken to restore groundwater quality;
 - (F) the significance of the RS designation;
 - (G) conditions applicable to removal of the RS designation;
 - (H) address and phone number of a Division contact from whom interested parties may obtain further information.
 - (3) The Director shall consider all requests for a public hearing, and if he determines that there is significant public interest he shall issue public notice and hold a public hearing in accordance with G.S 143-215.4(b) and Rule .0113(e) of this Section.
 - (4) These requirements shall not apply to groundwaters defined in Paragraph (b) of this Rule.

History Note: Statutory Authority G.S. 143-214.1; 143-215.3(a)(1); 143B-282(2);
Eff. June 10, 1979;
Amended Eff. October 1, 1993; 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) Where groundwater quality has been degraded, the goal of any required corrective action shall be restoration to the level of the standards, or as closely thereto as is economically and technologically feasible. In all cases involving requests to the Director for approval of corrective action plans, or termination of corrective action, the responsibility for providing all information required by this Rule lies with the person(s) making the request.

(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 Division of the discharge.

(c) Any person conducting or controlling an activity which has not been permitted by the Division and which results in an increase in the concentration of a substance in excess of the standard, other than agricultural operations, shall:

- (1) immediately notify the Division of the activity that has resulted in the increase

- and the contaminant concentration levels;
- (2) take immediate action to eliminate the source or sources of contamination;
 - (3) submit a report to the Director assessing the cause, significance and extent of the violation; and
 - (4) implement an approved corrective action plan for restoration of groundwater quality in accordance with a schedule established by the Director, or his designee. In establishing a schedule the Director, or his designee shall consider any reasonable schedule proposed by the person submitting the plan. A report shall be made to the Health Director of the county or counties in which the contamination occurs in accordance with the requirements of Rule .0114(a) in this Section.
- (d) Any person conducting or controlling an activity which is conducted under the authority of a permit issued by the Division and which results in an increase in concentration of a substance in excess of the standards:
- (1) at or beyond a review boundary, shall 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, or his designee.
 - (2) at or beyond a compliance boundary, shall assess the cause, significance and extent of the violation of standards and submit the results of the investigation, and a plan and proposed schedule for corrective action to the Director, or his designee. The permittee shall implement the plan as approved by and in accordance with a schedule established by the Director, or his designee. In establishing a schedule the Director, or his designee shall consider any reasonable schedule proposed by the permittee.
- (e) For the purposes of Paragraphs (c) and (d) of this Rule, an activity conducted under the authority of a permit issued by the Division, and subject to Paragraph (d) of this Rule, is one for which:
- (1) a permit has been issued pursuant to G.S. 143-215.1;
 - (2) the permit was originally issued after December 30, 1983;
 - (3) the substance for which a standard has been exceeded outside the compliance boundary has been released to groundwater as a result of the permitted activity;
 - (4) all other activities shall for the purpose of this Rule be deemed not permitted by the Division and subject to the provisions of Paragraph (c) of this Rule.
- (f) Corrective action required following discovery of the unauthorized release of a contaminant to the surface or subsurface of the land, and prior to or concurrent with the assessment required in Paragraphs (c) and (d) of this Rule, shall include, but is not limited to:
- (1) Prevention of fire, explosion or the spread of noxious fumes;
 - (2) Abatement, containment or control of the migration of contaminants;
 - (3) Removal, or treatment and control of any primary pollution source such as buried waste, waste stockpiles or surficial accumulations of free products;
 - (4) Removal, treatment or control of secondary pollution sources which would be potential continuing sources of pollutants to the groundwaters such as contaminated soils and non-aqueous phase liquids. Contaminated soils which threaten the quality of groundwaters must be treated, contained or disposed of in

accordance with applicable rules and procedures established by the Division. The treatment or disposal of contaminated soils shall be conducted in a manner that will not result in a violation of standards or North Carolina Hazardous Waste Management rules.

(g) The site assessment conducted pursuant to the requirements of Paragraph (c) of this Rule, shall include:

- (1) The source and cause of contamination;
- (2) Any imminent hazards to public health and safety and actions taken to mitigate them in accordance with Paragraph (f) of this Rule;
- (3) All receptors and significant exposure pathways;
- (4) The horizontal and vertical extent of soil and groundwater contamination and all significant factors affecting contaminant transport; and
- (5) Geological and hydrogeological features influencing the movement, chemical, and physical character of the contaminants.

Reports of site assessments shall be submitted to the Division as soon as practicable or in accordance with a schedule established by the Director, or his designee. In establishing a schedule the Director, or his designee shall consider any reasonable proposal by the person submitting the report.

(h) Corrective action plans for restoration of groundwater quality, submitted pursuant to Paragraphs (c) and (d) of this Rule shall include:

- (1) A description of the proposed corrective action and reasons for its selection.
- (2) Specific plans, including engineering details where applicable, for restoring groundwater quality.
- (3) A schedule for the implementation and operation of the proposed plan.
- (4) A monitoring plan for evaluating the effectiveness of the proposed corrective action and the movement of the contaminant plume.

(i) In the evaluation of corrective action plans, the Director, or his designee shall consider the extent of any violations, the extent of any threat to human health or safety, the extent of damage or potential adverse impact to the environment, technology available to accomplish restoration, the potential for degradation of the contaminants in the environment, the time and costs estimated to achieve groundwater quality restoration, and the public and economic benefits to be derived from groundwater quality restoration.

(j) A corrective action plan prepared pursuant to Paragraph (c) or (d) of this Rule must be implemented using the best available technology for restoration of groundwater quality to the level of the standards, except as provided in Paragraphs (k), (l), and (m) of this Rule.

(k) Any person required to implement an approved corrective action plan for a non-permitted site pursuant to this Rule may request that the Director approve such a plan without requiring groundwater remediation to the standards. A request submitted to the Director under this Paragraph shall include a description of site specific conditions, including information on the availability of public water supplies for the affected area; the technical basis for the request; and any other information requested by the Director to thoroughly evaluate the request. In addition, the person making the request must demonstrate to the satisfaction of the Director:

- (1) that all sources of contamination and free product have been removed or controlled pursuant to Paragraph (f) of this Rule;
- (2) that the time and direction of contaminant travel can be predicted with reasonable certainty;
- (3) that contaminants have not and will not migrate onto adjacent properties, or that:

- (A) such properties are served by an existing public water supply system dependent on surface waters or hydraulically isolated groundwater, or
 - (B) the owners of such properties have consented in writing to the request;
 - (4) that the standards specified in Rule .0202 of this Subchapter will be met at a location no closer than one year time of travel upgradient of an existing or foreseeable receptor, based on travel time and the natural attenuation capacity of subsurface materials or on a physical barrier to groundwater migration that exists or will be installed by the person making the request;
 - (5) that, if the contaminant plume is expected to intercept surface waters, the groundwater discharge will not possess contaminant concentrations that would result in violations of standards for surface waters contained in 15A NCAC 2B .0200;
 - (6) that public notice of the request has been provided in accordance with Rule .0114(b) of this Section;
 - (7) that the proposed corrective action plan would be consistent with all other environmental laws.
- (l) Any person required to implement an approved corrective action plan for a non-permitted site pursuant to this Rule may request that the Director approve such a plan based upon natural processes of degradation and attenuation of contaminants. A request submitted to the Director under this Paragraph shall include a description of site specific conditions, including written documentation of projected groundwater use in the contaminated area based on current state or local government planning efforts; the technical basis for the request; and any other information requested by the Director to thoroughly evaluate the request. In addition, the person making the request must demonstrate to the satisfaction of the Director:
- (1) that all sources of contamination and free product have been removed or controlled pursuant to Paragraph (f) of this Rule;
 - (2) that the contaminant has the capacity to degrade or attenuate under the site-specific conditions;
 - (3) that the time and direction of contaminant travel can be predicted with reasonable certainty;
 - (4) that contaminant migration will not result in any violation of applicable groundwater standards at any existing or foreseeable receptor;
 - (5) that contaminants have not and will not migrate onto adjacent properties, or that:
 - (A) such properties are served by an existing public water supply system dependent on surface waters or hydraulically isolated groundwater, or
 - (B) the owners of such properties have consented in writing to the request;
 - (6) that, if the contaminant plume is expected to intercept surface waters, the groundwater discharge will not possess contaminant concentrations that would result in violations of standards for surface waters contained in 15A NCAC 2B .0200;
 - (7) that the person making the request will put in place a groundwater monitoring program sufficient to track the degradation and attenuation of contaminants and contaminant by-products within and down gradient of the plume and to detect contaminants and contaminant by-products prior to their reaching any existing or foreseeable receptor at least one year's time of travel upgradient of the receptor and no greater than the distance the groundwater at the contaminated site is predicted to travel in five years;

- (8) that all necessary access agreements needed to monitor groundwater quality pursuant to Subparagraph (7) of this Paragraph have been or can be obtained;
 - (9) that public notice of the request has been provided in accordance with Rule .0114(b) of this Section; and
 - (10) that the proposed corrective action plan would be consistent with all other environmental laws.
- (m) The Division or any person required to implement an approved corrective action plan for a non-permitted site pursuant to this Rule may request that the Director approve termination of corrective action.
- (1) A request submitted to the Director under this Paragraph shall include:
 - (A) a discussion of the duration of the corrective action, the total project's cost, projected annual cost for continuance and evaluation of the success of the corrective action;
 - (B) an evaluation of alternate treatment technologies which could result in further reduction of contaminant levels projected capital and annual operating costs for each technology;
 - (C) effects, including health and safety impacts, on groundwater users if contaminant levels remain at levels existing at the time corrective action is terminated; and
 - (D) any other information requested by the Director to thoroughly evaluate the request.
 - (2) In addition, the person making the request must demonstrate to the satisfaction of the Director:
 - (A) that continuation of corrective action would not result in a significant reduction in the concentration of contaminants (At a minimum this demonstration must show the duration and degree of success of existing remedial efforts to attain standards and include a showing that the asymptotic slope of the contaminants curve of decontamination is less than a ratio of 1:40 over a term of one year based on quarterly sampling);
 - (B) that contaminants have not and will not migrate onto adjacent properties, or that:
 - (i) such properties are served by an existing public water supply system dependent on surface waters or hydraulically isolated groundwater, or
 - (ii) the owners of such properties have consented in writing to the request;
 - (C) that, if the contaminant plumes expected to intercept surface waters, the groundwater discharge will not possess contaminant concentrations that would result in violations of standards for surface waters contained in 15A NCAC 2B .0200;
 - (D) that public notice of the request has been provided in accordance with Rule .0114(b) of this Section; and
 - (E) that the proposed termination would be consistent with all other environmental laws.
 - (3) The Director shall not authorize termination of corrective action for any area that, at the time the request is made, has been identified by a state or local groundwater use planning process for resource development.
 - (4) The Director may authorize the termination of corrective action, or amend the corrective action plan after considering all the information in the request. Upon termination of corrective action, the Director shall require implementation of a

groundwater monitoring program sufficient to track the degradation and attenuation of contaminants at a location of at least one year's predicted time of travel upgradient of any existing or foreseeable receptor. The monitoring program shall remain in effect until there is sufficient evidence that the contaminant concentrations have been reduced to the level of the standards.

(n) Upon a determination by the Director that continued corrective action would result in no significant reduction in contaminant concentrations, and the contaminated groundwaters can be rendered potable by treatment using readily available and economically reasonable technologies, the Director may designate the remaining area of degraded groundwater RS. Where the remaining degraded groundwaters cannot be made potable by such treatment, the Director may consider a request for reclassification of the groundwater to a GC classification as outlined in Rule .0201 of this Subchapter.

(o) If at any time the Director determines that a new technology is available that would remediate the contaminated groundwater to the standards specified in Rule .0202 of this Subchapter, the Director may require the responsible party to evaluate the economic and technological feasibility of implementing the new technology in an active groundwater corrective action plan in accordance with a schedule established by the Director. The Director's determination to utilize new technology at any site or for any particular constituent shall include a consideration of the factors in Paragraph (h) of this Rule.

(p) Where 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.

(q) The approval pursuant to this Rule of any corrective action plan, or modification or termination thereof, which permits the migration of a contaminant onto adjacent property, shall not affect any private right of action by any party which may be effected by that contamination.

*History Note: Statutory Authority G.S. 143-215.2; 143-215.3(a)(1); 143B-282;
Eff. August 1, 1989;
Amended Eff. October 1, 1993; September 1, 1992.*

.0107 COMPLIANCE BOUNDARY

(a) For disposal systems individually 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 individually 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, or his designee at the time of permit issuance. Any sale or transfer of property which affects a compliance boundary shall be reported immediately to the Director, or his designee. For disposal systems which are not governed by Paragraphs (e) or (f) of this Rule, the compliance boundary affected by the sale or transfer of property will be re-established consistent with Paragraphs (a) or (b) of this Rule, whichever is applicable.

(d) Except as provided in Paragraph (g) of this Rule, no water supply wells shall be constructed or operated within the compliance boundary of a disposal system individually permitted or repermitted after January 1, 1993.

(e) Except as provided in Paragraph (g) of this Rule, a permittee shall not transfer land within an established compliance boundary of a disposal system permitted or repermitted after January 1, 1993 unless:

- (1) the land transferred is serviced by a community water system as defined in 15A NCAC 18C, the source of which is located outside the compliance boundary; and
- (2) the deed transferring the property:
 - (A) contains notice of the permit, including the permit number, a description of the type of permit, and the name, address and telephone number of the permitting agency; and
 - (B) contains a restrictive covenant running with the land and in favor of the permittee and the State, as a third party beneficiary, which prohibits the construction and operation of water supply wells within the compliance boundary; and
 - (C) contains a restrictive covenant running with the land and in favor of the permittee and the State, as a third party beneficiary, which grants the right to the permittee and the State to enter on such property within the compliance boundary for groundwater monitoring and remediation purposes.

(f) Except as provided in Paragraph (g) of this Rule, if at the time a permit is issued or reissued after January 1, 1993, the permittee is not the owner of the land within the compliance boundary, it shall be a condition of the permit issued or renewed that the landowner of the land within the compliance boundary, if other than the permittee, execute and file in the Register of Deeds in the county in which the land is located, an easement running with the land which:

- (1) contains:
 - (A) either a notice of the permit, including the permit number, a description of the type of permit, and the name, address and telephone number of the permitting agency; or
 - (B) a reference to a notice of the permit with book and page number of its recordation if such notice is required to be filed by statute;
- (2) prohibits the construction and operation of water supply wells within the compliance boundary; and
- (3) reserves the right to the permittee and the State to enter on such property within the compliance boundary for groundwater monitoring and remediation purposes. The easement may be terminated by the Director when its purpose has been fulfilled or the need for the easement no longer exists. Under those conditions the Director shall, upon request by the landowner, file a document terminating the easement with the appropriate Register of Deeds.

(g) The requirements of Paragraphs (d), (e) and (f) of this Rule are not applicable to ground adsorption treatment systems serving four or fewer single family dwellings or multiunit dwellings of four or fewer units.

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

(i) For ground absorption sewage treatment and disposal systems which are permitted under 15A NCAC 18A .1900, the compliance boundary shall be established at the property boundary.

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

(k) 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 necessary groundwater quality monitoring shall be conducted within the compliance boundary; and
- (3) that a violation 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 groundwaters 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
 - (C) a violation of any standard in groundwater occurring in the bedrock other than limestones found in the Coastal Plain sediments, unless it can be demonstrated that the violation will not adversely affect, or have the potential to adversely affect a water supply well.

History Note: Statutory Authority G.S. 143-215.1(b); 143-215.3(a)(1); 143B-282;
Eff. August 1, 1989;
Amended Eff. October 1, 1993; November 2, 1992.

.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 standards except when a public meeting is required as provided in 15A NCAC 2H .1203.

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

(c) The Director, or his designee shall give public notice of proposed consent special orders as specified in 15A NCAC 2H .1203.

History Note: Statutory Authority G.S. 143-215.2; 143-215.3(a)(1); 143-215.3(a)(4);
Eff. August 1, 1989;
Amended Eff. October 1, 1993; October 1, 1990.

.0110 MONITORING

(a) Except where exempted by statute or this Subchapter, any person who causes, permits or has control over any discharge of waste, or groundwater cleanup program, shall install and implement a monitoring system, at such locations, and in such detail, as the Director, or his designee 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. The monitoring plan shall be prepared under the responsible charge of a Professional Engineer or Licensed Geologist and bear the seal of the same.

(b) Monitoring systems shall be constructed 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, or his designee.

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;
Amended Eff. October 1, 1993.

.0111 REPORTS

(a) Any person subject to the requirements for corrective action specified in Rule .0106 of this Section 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) and (d) of Rule .0106 of this Section, 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 (d) of Rule .0106 of this Section; and
- (3) the proposed methodology and timetable associated with the corrective action for those situations identified in Paragraphs (c) and (d) of Rule .0106 of this Section.

(b) The report shall be prepared under the responsible charge of a Professional Engineer or Licensed Geologist and bear the seal of the same as specified in Rule .0106(d) of this Section.

History Note: Statutory Authority G.S. 143-215.1(b); 143-215.3(a)(1); 143-215.65;
143B-282;
Eff. August 1, 1989;
Amended Eff. October 1, 1993.

.0112 ANALYTICAL PROCEDURES

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

- (1) The most sensitive of the following methods or procedures for substances where the standard is at or above the method detection limit value:
 - (a) The most recent version of Standard Methods for the Examination of Water and Wastewater, 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; or
- (2) A method or procedure approved by the Director for substances where the standard is less than the method detection limit value.

History Note: *Statutory Authority G.S. 143-215.3(a)(1); 143B-282;*
 Eff. August 1, 1989;
 Amended Eff. October 1, 1993.

.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 the rules of this Subchapter.

(b) Requests for variances are filed by letter from the applicant to the Environmental Management Commission. The application shall be mailed to the chairman of the Commission in care of the Director, Division of Environmental Management, Post Office Box 29535, Raleigh, N.C. 27626-0535.

(c) The application shall 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.
- (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 the 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/streams, 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 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 requirements of this Rule cannot be achieved by providing the best available technology economically reasonable. This

- information must identify specific technology considered, and the costs of implementing the technology and the impact of the costs on the applicant.
- (6) Supporting information to establish that compliance would produce serious financial hardship on the applicant.
 - (7) Supporting information that compliance would produce serious financial hardship without equal or greater public benefit.
 - (8) A copy of any Special Order that was issued in connection with 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 in Paragraph (e) of this Rule.
- (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 Environment, Health, and Natural Resources, Division of Environmental Health 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 variance request;
 - (D) geographic description of a proposed area for which a variance is requested;
 - (E) brief description of 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 as 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; Amended Eff. October 1, 1993.

.0114 NOTIFICATION REQUIREMENTS

(a) Any person subject to the requirements of Rule .0106(c) of this Section shall submit to the local Health Director, and the chief administrative officer of the political jurisdictions in which the groundwater contamination has occurred, a report that describes:

- (1) The area extent of the contaminant plume;
- (2) The chemical constituents in the groundwater which exceed the standards described in Rule .0202 of this Subchapter;
- (3) Actions taken and intended to mitigate threats to human health;
- (4) The location of any wells installed for the purpose of monitoring the contaminant plume and the frequency of sampling.

The report described in this Rule shall be submitted no later than five working days after submittal of the completed report assessing the cause, significance and extent of the violation as required by Rule .0106(c).

(b) Any person who submits a request under Rule .0106(k), (l), or (m) of this Section shall notify the local Health Director and the chief administrative officer of the political jurisdictions in which the contaminant plume occurs, and all property owners and occupants within or contiguous to the area underlain by the contaminant plume, and under the areas where it is expected to migrate, of the nature of the request and reasons supporting it. Notification shall be made by certified mail concurrent with the submittal of the request to the Director. A final decision by the Director shall be postponed for a period of 30 days following receipt of the request so that the Director may consider comments submitted by individuals interested in the request.

(c) Any person whose request under Rule .0106(k), (l), or (m) of this Section is granted by the Director shall notify parties specified in Paragraph (b) of this Rule of the Director's decision. Notification shall be made by certified mail within 30 days of receipt of the Director's decision.

History Note: *Statutory Authority G.S. 143-214.1; 143-215.3(a)(1); 143B-282(2)b;*
 Eff. October 1, 1993.

SECTION .0200 - CLASSIFICATIONS AND GROUNDWATER 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 groundwaters; 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 groundwaters; 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 groundwaters: usage and occurrence:
 - (a) Best Usage. The best usage of GC groundwaters is as a source of water supply for purposes other than drinking, including other domestic uses by humans.
 - (b) Conditions Related to Best Usage. This class includes those groundwaters that do not meet the quality criteria for GA or GSA groundwaters and for which efforts to improve groundwater quality would not be technologically feasible, or not in the best interest of the public. Continued consumption of waters of this class by humans could result in adverse health affects.
 - (c) Occurrence. Groundwaters of this class may be defined by the Commission pursuant to Section .0300 of this Subchapter on a case by case basis.

History Note: Statutory Authority G.S. 143-214.1; 143B-282(2);
Eff. June 10, 1979;
Amended Eff. October 1, 1993; August 1, 1989; September 1, 1984;
December 30, 1983.

.0202 GROUNDWATER QUALITY STANDARDS

(a) The groundwater quality standards for the protection of 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.

(b) The groundwater quality standards for contaminants specified in Paragraphs (g) and (h) of this Rule shall be as listed, except that:

- (1) Where the standard for a substance is less than the practical quantitation limit,

the detection of that substance at or above the practical quantitation limit shall constitute a violation of the standard.

- (2) Where two or more substances exist in combination, the Director shall consider the effects of chemical interactions as determined by the Division of Epidemiology 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) Except for tracers used in concentrations which have been determined by the Division of Epidemiology to be protective of human health, and the use of which has been permitted by the Division, 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 relevant 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) Groundwater quality standards for substances in Class GA and Class GSA groundwaters are established as the lesser of:

- (1) Systemic threshold concentration calculated as follows: [Reference Dose (mg/kg/day) x 70 kg (adult body weight) x Relative Source Contribution (.10 for inorganics; .20 for organics)] / [2 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.

(e) 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, and scientifically valid peer-reviewed published toxicological data.

(f) Groundwater 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 in a dissolved, colloidal or particulate form which is mobile in groundwater. This does not apply to sediment or other particulate matter which is preserved in a groundwater sample as a result of well construction or sampling procedures.

- (1) acetone: 0.7
- (2) acrylamide (propenamide): 0.00001
- (3) arsenic: 0.05
- (4) barium: 2.0
- (5) benzene: 0.001
- (6) bromoform (tribromomethane): 0.00019
- (7) cadmium: 0.005
- (8) carbofuran: 0.036
- (9) carbon tetrachloride: 0.0003
- (10) chlordane: 2.7×10^{-5}
- (11) chloride: 250.0
- (12) chlorobenzene: 0.05
- (13) chloroform (trichloromethane): 0.00019
- (14) 2-chlorophenol: 0.0001
- (15) chromium: 0.05
- (16) cis-1,2-dichloroethene: 0.07
- (17) coliform organisms (total): 1 per 100 milliliters
- (18) color: 15 color units
- (19) copper: 1.0
- (20) cyanide: 0.154
- (21) 2, 4-D (2,4-dichlorophenoxy acetic acid): 0.07
- (22) 1,2-dibromo-3-chloropropane: 2.5×10^{-5}
- (23) dichlorodifluoromethane (Freon-12; Halon): 1.4
- (24) 1,1 dichloroethane: 0.7
- (25) 1,2-dichloroethane (ethylene dichloride): 0.00038
- (26) 1,1-dichloroethylene (vinylidene chloride): 0.007
- (27) 1,2-dichloropropane: 0.00056
- (28) di-n-butyl (or dibutyl) phthalate (DBP): 0.7
- (29) diethylphthalate (DEP): 5.0
- (30) di(2-ethylhexyl) phthalate (DEHP): 0.003
- (31) p-dioxane (1,4-diethylene dioxide): 0.007
- (32) dioxin: 2.2×10^{-10}
- (33) dissolved solids (total): 500
- (34) endrin: 0.002
- (35) epichlorohydrin (1-chloro-2,3-epoxypropane): 0.00354
- (36) ethylbenzene: 0.029
- (37) ethylene dibromide (EDB; 1,2-dibromoethane): 4.0×10^{-7}
- (38) ethylene glycol: 7.0
- (39) fluoride: 2.0
- (40) foaming agents: 0.5
- (41) gross alpha (adjusted)particle activity (excluding radium-226 and uranium): 15 pCi/l

- (42) heptachlor: 8.0×10^{-6}
- (43) heptachlor epoxide: 4.0×10^{-6}
- (44) heptane: 2.1
- (45) hexachlorobenzene (perchlorobenzene): 0.00002
- (46) n-hexane: 0.42
- (47) iron: 0.3
- (48) lead: 0.015
- (49) lindane: 2.0×10^{-4}
- (50) manganese: 0.05
- (51) mercury: 0.0011
- (52) metadichlorobenzene (1,3-dichlorobenzene): 0.62
- (53) methoxychlor: 0.035
- (54) methylene chloride (dichloromethane): 0.005
- (55) methyl ethyl ketone (MEK; 2-butanone): 0.17
- (56) methyl tert-butyl ether (MTBE): 0.2
- (57) nickel: 0.1
- (58) nitrate: (as N) 10.0
- (59) nitrite: (as N) 1.0
- (60) orthodichlorobenzene (1,2-dichlorobenzene): 0.62
- (61) oxamyl: 0.175
- (62) paradichlorobenzene (1,4-dichlorobenzene): 0.075
- (63) pentachlorophenol: 0.0003
- (64) pH: 6.5 - 8.5
- (65) radium-226 and radium-228 (combined): 5 pCi/l
- (66) selenium: 0.05
- (67) silver: 0.018
- (68) styrene (ethenylbenzene): 0.1
- (69) sulfate: 250.0
- (70) tetrachloroethylene (perchloroethylene; PCE): 0.0007
- (71) toluene (methylbenzene): 1.0
- (72) toxaphene: 3.1×10^{-5}
- (73) 2, 4, 5,-TP (Silvex): 0.05
- (74) trans-1,2-dichloroethene: 0.07
- (75) 1,1,1-trichloroethane (methyl chloroform): 0.2
- (76) trichloroethylene (TCE): 0.0028
- (77) trichlorofluoromethane: 2.1
- (78) vinyl chloride (chloroethylene): 1.5×10^{-5}
- (79) xylenes (o-, m-, and p-): 0.53
- (80) zinc: 2.1

(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 the standards applicable to Class GA or GSA groundwaters shall not be caused to increase, nor shall the concentrations of other substances be caused to exceed the

GA or GSA standards as a result of further disposal of contaminants to or beneath the surface of the land within the boundary of the area classified GC.

- (2) The concentrations of substances which, at the time of classification, exceed the standards applicable to GA or GSA groundwaters shall not be caused to migrate as a result of activities within the boundary of the GC classification, so as to violate the 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. October 1, 1993; September 1, 1992; August 1, 1989;
September 1, 1984.*

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 HIWASSEE 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.*

Effective Dates:

October 1, 1993

November 4, 1993 - Requirements for .0103(e)

January 1, 1994 - PE/LG Signoff for Closure Reports

15A NCAC 2L IMPLEMENTATION GUIDANCE

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.0103 POLICY GUIDANCE

Purpose of Rule

Defines the general policy of the EMC with regard to groundwater protection and use. This Rule also restricts site characterizations and corrective actions to persons licensed by appropriate professional licensing boards.

(a) This is a statement of general policy. The term 'significant' found in the third sentence has no regulatory meaning. The paragraph is considered to be a statement of fact given to make the reader aware of groundwater conditions in the State and is given for information purposes. The statement does not require any regulatory action or activity toward any person or entity and is not considered regulatory as a result.

(b) Considered to be self-explanatory.

(c) Considered to be self-explanatory.

(d) Considered to be self-explanatory.

(e) Any investigation, assessment, interpretation, characterization, or corrective action plan will require appropriate licensing as required in .0103(e). Monitoring plans and reports required in 15A NCAC 2L .0110 and .0111 likewise require appropriate licensing. Excluded from these requirements are emergency response, initial response reports, and 24 hour reports. The following forms and reports must be signed by an individual properly licensed by the State in accordance with .0103(e). Such reports and forms include but are not limited to:

- 1) Closure Reports
- 2) Initial abatement and site check (20 day report)
- 3) Initial site characterization (45 day report)
- 4) CSA - Comprehensive Site Assessment
- 5) CAP - Corrective Action Plan

.0104 RESTRICTED DESIGNATION (RS) GUIDANCE

Purpose of Rule

15A NCAC 2L .0104 establishes a temporary groundwater designation (RS) whose purpose is to warn the public that groundwater so designated is not suitable for use as a source of drinking water without treatment. The designation is considered to be temporary. If the groundwater remediation effort is successful, the groundwater will be restored to its original groundwater classification. If it is discovered that remedial efforts are unsuccessful, the groundwater will be reclassified as GC.

The Director is authorized to designate an area as RS under the following conditions:

- groundwater has been contaminated, the Director has approved a Corrective Action Plan or Termination of Corrective Action, and it is evident that the approved plan will not result in restoration of the resource without an extended period of time, or
- a statutory variance has been granted in accordance with 15A NCAC 2L .0113.

Any groundwater occurring in an area previously defined within a Compliance Boundary associated with a waste disposal permit is automatically designated RS.

It has been noted that .0104(c),(d), and (e) could be interpreted to conflict with the Compliance Boundary requirements found in .0107. In all cases the requirements of 15A NCAC 2L .0107 will take precedence over those specified in .0104(c),(d), and (e).

(a) Considered to be self-explanatory.

(b) Considered to be self-explanatory.

(c) The calculation of the RS boundary must be performed using predictive calculations or computer modeling. A brief description of the methodology used with a discussion of the applicability to the site in question is required including all supporting technical data and modeling results.

(d) The monitoring program must be sufficient to:

- determine the quality of the groundwater within the contaminant plume,
- determine the movement of the plume,
- ensure that the conditions established for the approved RS area are maintained.

The State may require the installation of additional wells as conditions change in the RS area.

The term 'increase' refers to an escalation of any chemical parameter above the levels determined for the plume at the time the RS designation was approved. An increase in contaminant levels will be reviewed by the Director or his designee. Additional monitoring or remedial action may be required if it is determined or suspected that the increase represents:

- another release which may or may not be associated with the original contaminant release,
- an increase in contaminant levels resulting from the degradation or attenuation of the original contaminant into new or related chemical compounds,
- an increase due to unknown conditions or circumstances.

(e) The individual responsible for the contamination is considered the 'applicant' for the purposes of this rule.

(f) The individual responsible for the contamination is required to submit to the Division any information required to complete the required notice.

- (1) The Chief Administrative Officer is considered to be the Mayor, Chairman of the County Commissioners, or other individual of equal or similar position as appropriate.
- (2) Considered to be self-explanatory.
- (3) Considered to be self-explanatory.
- (4) Considered to be self-explanatory.

.0106 CORRECTIVE ACTION GUIDANCE

Purpose of Rule

The Rule defines the following:

- a) Notification and corrective action requirements for permitted and nonpermitted facilities.
- b) The kinds of data required for approval of natural remediation, alternate cleanup levels, or termination of corrective actions.
- c) The conditions in which contaminated groundwater may be designated RS or reclassified as GC.
- d) The conditions in which current remedial activities shall be abandoned in favor of new technologies.

(a) Considered to be self-explanatory.

(b) This paragraph refers to the discovery of a sudden and unexpected release of a contaminant into the environment. The term 'immediate' is defined as being within a 24 hour period unless there are extenuating circumstances. If the release occurs at such a time that it is not possible to report the release to the Division within 24 hours due to weekends or holidays, the morning of the next business day is acceptable. This paragraph defines the reporting requirements to the Division of Environmental Management. It has no bearing upon, nor does it affect, any rule or requirement defining additional reporting requirements by North Carolina General Statute or the Division of Emergency Management.

(c) This paragraph is applicable to all contamination incidents which have not taken place at a permitted facility. The term 'immediate' is defined as being within a 24 hour period unless there are extenuating circumstances. This paragraph defines the reporting requirements to the Division of Environmental Management. It has no bearing upon, nor does it affect, any rule or requirement defining additional reporting requirements by North Carolina General Statute or the Division of Emergency Management.

(d) Considered to be self-explanatory.

(e) Considered to be self-explanatory.

(f) Considered to be self-explanatory.

(g) Considered to be self-explanatory.

(h) With regard to monitoring plans, the applicant will submit the results of all monitoring at the frequency required by the CAP using a State approved format. Analytical reports from certified laboratories shall also be provided showing well number, analytical method used, date sampled, date analyzed, method detection limit, and explanations for any keys used. A chain of custody form shall be included. Data should be reviewed for compliance with the CAP and the results of the review included in the quarterly report. The applicant is required to notify the Division immediately if non-compliance with the CAP is discovered. In the event non-compliance is discovered, the applicant must submit a report, prepared and certified by a licensed professional, to the Director assessing the cause, significance and extent of the violation. The quarterly data report does not require the participation of a licensed professional.

The applicant is also required to submit an annual report providing a year end review of monitoring results, site conditions, the effectiveness of the remedial effort, and the degree to which site conditions comply with commitments specified in the CAP. This report must be completed and certified by a licensed professional.

(i) Considered to be self-explanatory.

(j) All corrective action plans are submitted pursuant to subsections (c) or (d) of this rule. This subsection: (1) reiterates the general rule that cleanup must restore groundwater to prerelease conditions; and (2) adds the requirement that plans submitted under subsection (c) and (d) must use the best available technology. The subsection also recognizes the exceptions to these two general requirements as set out in subsections (k), (l), and (m). Subsections (k) and (m) allow cleanup to standards higher than those set out in Rule .0202, but contain no exception to the best available technology requirement. Subsection (l) does not require best available technology, but still requires restoration to the standards set out in Rule .0202 by natural processes of degradation and attenuation of contaminants.

“Best Available Technology (BAT)” is considered to be that technology which achieves the specified cleanup goals within a reasonable time frame at the most practical cost per unit of cleanup. For example, remedial technology which has the capacity to clean a site in 3 months at a cost of \$1,000,000 would not be considered Best Available Technology if an alternate technology existed which would accomplish the same goals in five months at a cost of \$1,000. For those sites at which BAT is required, the Director, or his designee, will review the CAP’s to determine if the requested time frames for remedial activities are appropriate and if the technologies proposed can be considered to be the Best Available Technology for the site in question.

(k) The purpose of paragraph (k) is to provide a means by which a responsible party may seek permission to remediate a site to a level other than that specified by the standards. Contamination sites which cannot be remediated to the groundwater standards specified in .0202 using current technology are considered to be the most eligible for the provisions in this paragraph. Responsible parties will be required to use best available technology until such time as the alternate standards established under paragraph (k) are achieved. The term “served” in (k)(3)(a) means connected to an approved public water supply.

Requests for alternative standards will be made as part of the proposed corrective action plan submitted pursuant to subsection (c). The enumerated items are the minimum information needed to consider such a request and should be submitted with the corrective action plan. The Director may request further information. In determining whether to approve a corrective action plan requesting an alternative standard/natural remediation, the Director will apply the standard for approval of all plans set out in subsection (i).

It should be understood that .0106(k)(4) and .0106(k)(5) define the degree to which contaminants must degrade or attenuate in order to be considered eligible for the provisions of .0106(k), and that a monitoring plan may be required to verify the degradation and/or attenuation.

(l) The purpose of paragraph (l) is to allow the natural remediation of a contaminant site until such time as the affected groundwater conforms with the standards specified in .0202. In order to naturally remediate any site, one of the conditions which must be met is to demonstrate to the satisfaction of the Director, or his designee, that the contaminant(s) in question can be remediated to 15A NCAC 2L .0202 standards within an acceptable period of time.

Requests for natural remediation will be made as part of the proposed corrective action plan submitted pursuant to subsection (c). The enumerated items are the minimum information needed to consider such a request and should be submitted with the corrective action plan. The Director may request further information. In determining whether to approve a corrective action plan requesting an alternative standard/natural remediation, the Director will apply the standard for approval of all plans set out in subsection (i).

With regard to the monitoring requirements specified in .0106(l)(7), the text should be construed to mean that the migration of the contaminant plume must be restricted. The

contaminant plume must conform to the groundwater standards specified in .0202 one year's time of travel upgradient of any receptor. It must also conform to those same standards at a distance which conforms to five year's predicted time of travel for the contaminant plume. If a receptor exists at a distance closer to the source than the distance the contaminant plume is predicted to travel in five years, the contaminant plume must attain compliance with .0202 standards at a point one year's time of travel upgradient from that receptor.

15A NCAC 2L .0106(l)(2) requires that contaminants considered under this Paragraph must have the capacity to degrade or attenuate. It should be understood that .0106(l)(7) defines the degree to which contaminants must degrade or attenuate in order to be considered for natural remediation. If a contaminant plume does not have the capacity to achieve compliance within the defined time of travel, the site is not eligible for the provisions specified in .0106(l).

In .0106(l)(5)(a) the term "served" means connected to an approved public water supply.

(m) The purpose of paragraph (m) is to provide a mechanism whereby a responsible party may seek approval to terminate corrective action. The information and demonstrations outlined in .0106(m)(1) and .0106(m)(2) are considered to be self-explanatory with the exception of .0106(m)(2)(A).

The asymptotic slope described in .0106(m)(2)(A) is used as a means of determining the rate at which remediation is progressing. In order to qualify for the provisions in .0106(m), a showing must be made that current remedial efforts have produced their maximum result. The asymptotic slope is determined by graphing the concentration of the contaminants with regard to time. The contaminant concentrations must be graphed in the same units as those used in Section .0202 of this Rule. The time scale to be used is months. If, after plotting the data, it is determined that the slope of the graph produced is equal to or less than one unit of chemical contamination remediated during the course of 40 months, then the stipulations of .0106(m)(2)(A) have been met.

With regard to the monitoring requirements specified in .0106(m)(4), the text should be construed to mean that the migration of the contaminant plume must be restricted. The contaminant plume must conform to the groundwater standards specified in .0202 one year's predicted time of travel upgradient of any receptor.

It should be understood that this .0106(m)(4) defines the degree to which a contaminant must degrade or attenuate in order for termination of corrective action to be approved. If a contaminant plume does not have the capacity to achieve compliance within the defined time of travel, the site is not eligible for the provisions specified in .0106(m).

In (m)(2)(b)(i) the term "served" means connected to an approved public water supply.

(n) Considered to be self-explanatory.

(o) Considered to be self-explanatory.

(p) Considered to be self-explanatory.

(q) Considered to be self-explanatory.

.0114 NOTIFICATION REQUIREMENTS

Purpose of Rule

Notification requirements are defined for contamination incidents not related to permitted facilities.

Although not specified in the Rule, the notice requirements contained in 15A NCAC .0114 have, as part of their authority, North Carolina General Statute 143.215.2.

- (a) Considered to be self-explanatory.
- (b) Considered to be self-explanatory.
- (c) Considered to be self-explanatory.

DIVISION OF ENVIRONMENTAL MANAGEMENT
CERTIFICATION FOR THE SUBMITTAL
OF A CORRECTIVE ACTION PLAN

Responsible Party: _____

Address: _____

City: _____, State: _____, Zip Code: _____

Site Name: _____

Address: _____

City: _____, State: _____, Zip Code: _____

I, _____, a Professional Engineer/Licensed Geologist (circle one) for _____ do hereby certify that the information indicated below is enclosed as part of the requested Corrective Action Plan (CAP) and that to the best of my knowledge the data, site assessments, engineering plans and other associated materials are correct and accurate.

(Each item must be initialed by the certifying licensed professional)

- _____ A listing of the names and addresses of those individuals meeting the notification requirements of 15A NCAC 2L are enclosed (if applicable).
All Some None (Circle one) of the notification requirements contained in 15A NCAC 2L have been met. A list of any notification requirements not met is enclosed.
- _____ A Professional Engineer or Licensed Geologist has prepared, reviewed, or certified all applicable parts of the CAP in accordance with 15A NCAC 2L .0103(e).
- _____ A site assessment is attached which provides the information required by 15A NCAC 2L .0106(g).
- _____ A description of the proposed corrective action and supporting justification is enclosed.
- _____ Specific plans and engineering details for the restoration of groundwater quality are enclosed and propose the use of the best available technology for the restoration of groundwater quality to the levels of the groundwater standards prescribed in 15A NCAC 2L .0202..
- _____ A schedule for the implementation and operation of the CAP is enclosed.
- _____ A monitoring plan is enclosed which has the capacity to evaluate the effectiveness of the remedial activity and the movement of the contaminant plume, and which meets the requirements of 15A NCAC 2L .0110.
- _____ The activity which resulted in the contamination incident is not permitted by the State as defined in 15A NCAC 2L .0106(e).

(Please Affix Seal and Signature)

DIVISION OF ENVIRONMENTAL MANAGEMENT
CERTIFICATION FOR THE SUBMITTAL OF A CORRECTIVE ACTION PLAN
UNDER 15A NCAC 2L .0106(k)

Responsible Party: _____
Address: _____
City: _____, State: _____, Zip Code: _____

Site Name: _____
Address: _____
City: _____, State: _____, Zip Code: _____

I, _____, a Professional Engineer/Licensed Geologist
(circle one) for _____ do hereby certify that the
information indicated below is enclosed as part of the requested Corrective Action Plan (CAP) and
that to the best of my knowledge the data, site assessments, engineering plans and other associated
materials are correct and accurate.

(Each item must be initialed by the certifying licensed professional)

- _____ A listing of the names and addresses of those individuals meeting the notification requirements of 15A NCAC 2L are enclosed (if applicable).
All Some None (Circle one) of the notification requirements contained in 15A NCAC 2L have been met. A list of any notification requirements not met is enclosed.
- _____ A Professional Engineer or Licensed Geologist has prepared, reviewed, or certified all applicable parts of the CAP in accordance with 15A NCAC 2L .0103(e).
- _____ A site assessment is attached which provides the information required by 15A NCAC 2L .0106(g).
- _____ A description of the proposed corrective action and supporting justification is enclosed.
- _____ Specific plans and engineering details for the restoration of groundwater quality are enclosed and propose the use of the best available technology for the restoration of groundwater quality to the levels of the groundwater standards prescribed in 15A NCAC 2L .0202..
- _____ A schedule for the implementation and operation of the CAP is enclosed.
- _____ A monitoring plan is enclosed which has the capacity to evaluate the effectiveness of the remedial activity and the movement of the contaminant plume, and which meets the requirements of 15A NCAC 2L .0110.
- _____ The activity which resulted in the contamination incident is not permitted by the State as defined in 15A NCAC 2L .0106(e)

- (OVER) -

In addition, the undersigned also certifies that in accordance with the requirements of 15A NCAC 2L .0106(k), the following determinations have been made and are included in the CAP:

- _____ all sources of contamination and free product have been removed or controlled in accordance with 15A NCAC 2L .0106(f).
- _____ the time and direction of contaminant travel can be predicted with reasonable certainty.
- _____ the contaminants have not and will not migrate onto adjacent properties, adjacent properties are served by public water supplies which cannot be influenced by contaminants migrating off-site, or adjacent landowners have consented in writing to a request allowing the contaminant upon their property.
- _____ the standards specified in 15A NCAC 2L .0202 will be met within one year time of travel upgradient from any receptor. This determination is based on the travel time and natural attenuation capacity of the contaminant or on a physical barrier to groundwater migration that currently exists or will be installed.
- _____ groundwater discharge of the contaminant plume to surface waters will not result in a violation of 15A NCAC 2B .0200.
- _____ the proposed CAP is consistent with all other environmental laws.

(Please Affix Seal and Signature)

DIVISION OF ENVIRONMENTAL MANAGEMENT
CERTIFICATION FOR THE SUBMITTAL OF A CORRECTIVE ACTION PLAN
UNDER 15A NCAC 2L .0106(1)

Responsible Party: _____
Address: _____
City: _____, State: _____, Zip Code: _____

Site Name: _____
Address: _____
City: _____, State: _____, Zip Code: _____

I, _____, a Professional Engineer/Licensed Geologist (circle one) for _____ do hereby certify that the information indicated below is enclosed as part of the requested Corrective Action Plan (CAP) and that to the best of my knowledge the data, site assessments, engineering plans and other associated materials are correct and accurate.

(Each item must be initialed by the certifying licensed professional)

- _____ A listing of the names and addresses of those individuals meeting the notification requirements of 15A NCAC 2L are enclosed (if applicable).
All Some None (Circle one) of the notification requirements contained in 15A NCAC 2L have been met. A list of any notification requirements not met is enclosed.
- _____ A Professional Engineer or Licensed Geologist has prepared, reviewed, or certified all applicable parts of the CAP in accordance with 15A NCAC 2L .0103(e).
- _____ A site assessment is attached which provides the information required by 15A NCAC 2L .0106(g).
- _____ A description of the proposed corrective action and supporting justification is enclosed.
- _____ Specific plans and engineering details for the restoration of groundwater quality are enclosed and propose the use of the best available technology for the restoration of groundwater quality to the levels of the groundwater standards prescribed in 15A NCAC 2L .0202..
- _____ A schedule for the implementation and operation of the CAP is enclosed.
- _____ A monitoring plan is enclosed which has the capacity to evaluate the effectiveness of the remedial activity and the movement of the contaminant plume, and which meets the requirements of 15A NCAC 2L .0110.
- _____ The activity which resulted in the contamination incident is not permitted by the State as defined in 15A NCAC 2L .0106(e)

- (OVER) -

In addition, the undersigned also certifies that in accordance with the requirements of 15A NCAC 2L .0106(l), the following determinations have been made are included in the CAP:

- _____ all sources of contamination and free product have been removed or controlled in accordance with 15A NCAC 2L .0106(f).
- _____ the contaminant has the capacity to degrade and attenuate under the site-specific conditions.
- _____ the time and direction of contaminant travel can be predicted with reasonable certainty.
- _____ the migration of the contaminant will not result in any violation of the standards specified in 15A NCAC 2L .0202 at any existing or foreseeable receptor.
- _____ the contaminants have not and will not migrate onto adjacent properties, adjacent properties are served by public water supplies which cannot be influenced by contaminants migrating off-site, or adjacent landowners have consented in writing to a request allowing the contaminant upon their property.
- _____ the standards specified in 15A NCAC 2L .0202 will be met within one year time of travel upgradient from any receptor and no greater than the distance the contaminant can travel in five years. A groundwater monitoring system has been installed which is sufficient to track the degradation and attenuation of contaminants and to ensure the limitations above are met.
- _____ all necessary access agreements needed to monitor groundwater quality have been or can be obtained.
- _____ the proposed CAP is consistent with all other environmental laws.

(Please Affix Seal and Signature)

DIVISION OF ENVIRONMENTAL MANAGEMENT
SUBMISSION OF A REQUEST TO TERMINATE CORRECTIVE ACTION
UNDER 15A NCAC 2L .0106(m)

Responsible Party: _____
Address: _____
City: _____, State: _____, Zip Code: _____

Site Name: _____
Address: _____
City: _____, State: _____, Zip Code: _____

I, _____, a Professional Engineer/Licensed Geologist
(circle one) for _____ do hereby certify that the
information indicated below is enclosed as part of the request to terminate corrective action and
that to the best of my knowledge the data, site assessments, engineering plans and other associated
materials are correct and accurate.

(Each item must be initialed by the certifying licensed professional)

- _____ A discussion of the duration of corrective action currently in progress or proposed, the total projects cost, projected annual cost for continuance and an evaluation of the success of the corrective action.
- _____ An evaluation of alternate treatment technologies which could result in further reduction of contaminant levels at the site. Projected capital and annual operating costs for each technology are included.
- _____ Potential problems generated if contaminant levels are allowed to remain at current levels. The discussion includes human health and safety as well as environmental concerns.
- _____ Any additional information requested by the Director of the Division of Environmental management.

In addition, the undersigned also certifies that in accordance with the requirements of 15A NCAC 2L .0106(m), the following determinations have been made and are included in the request:

_____ continuation of corrective action will not result in a significant reduction in the concentration of contaminants. Data showing the degree and success of remedial efforts are enclosed. A plot of the contaminants curve of decontamination is also included which shows an asymptotic slope with a ratio of less than 1:40 (contaminant concentration versus time).

- _____ the contaminants have not and will not migrate onto adjacent properties, adjacent properties are served by public water supplies which cannot be influenced by contaminants migrating off-site, or adjacent landowners have consented in writing to a request allowing the contaminant upon their property.
- _____ groundwater discharge of the contaminant plume to surface waters will not result in a violation of 15A NCAC 2B .0200.
- _____ All notification requirements contained in 15A NCAC 2L .0106(m) have been met.
- _____ the request for termination of corrective action is consistent with all other environmental laws.

(Please Affix Seal and Signature)

15A NCAC 2L IMPLEMENTATION GUIDANCE

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Effective Dates:

October 1, 1993

November 4, 1993 - Requirements for .0103(e)

January 1, 1994 - PE/LG Signoff for Closure Reports

DIVISION OF ENVIRONMENTAL MANAGEMENT

15A NCAC 2L IMPLEMENTATION GUIDANCE

.0103 POLICY GUIDANCE

Purpose of Rule

Defines the general policy of the EMC with regard to groundwater protection and use. This Rule also restricts site characterizations and corrective actions to persons licensed by appropriate professional licensing boards.

(a) This is a statement of general policy. The term 'significant' found in the third sentence has no regulatory meaning. The paragraph is considered to be a statement of fact given to make the reader aware of groundwater conditions in the State and is for informational purposes. The statement does not require any regulatory action or activity toward any person or entity and as a result is not considered regulatory.

(b) Considered to be self-explanatory.

(c) Considered to be self-explanatory.

(d) Considered to be self-explanatory.

(e) Any investigation, assessment, interpretation, characterization, or corrective action plan will require appropriate licensing as specified in .0103(e). Monitoring plans required in 15A NCAC 2L .0110 and .0106, and monitoring reports required in .0106 which contain the interpretation of monitoring data likewise require appropriate licensing. Excluded from these requirements are emergency response, initial response reports, 24 hour reports, and reports which serve only to transmit data and do not contain data interpretation. Examples of reports and forms, which are submitted to the Division and which must be signed and sealed by an individual properly licensed by the State include, but are not limited to:

- 1) Closure Reports (the site assessment portions only)
- 2) Initial Abatement and Site Check (20 day report)
- 3) Initial Site Characterization (45 day report)
- 4) CSA - Comprehensive Site Assessment
- 5) CAP - Corrective Action Plan
- 6) Monitoring and Free Product Reports (those which include the review and interpretation of data)
- 7) RS Designation Applications
- 8) Variance Applications

Either a qualified Professional Engineer (P.E.) or Licensed Geologist (L.G.) may prepare and seal the following: UST Closure Reports; Initial Site Characterization Reports; Initial Abatement and Site Check Reports; CSAs; Monitoring Reports; and CAPs that do not

contain plans or designs for active groundwater remediation techniques. Active groundwater remediation is defined here to mean any remediation method which employs the use of pumps to move liquids and/or gases at a site. All plans and specifications required under .0106 and intended for use in construction or for obtaining regulatory authorization to construct must be prepared under responsible charge of a Professional Engineer and must bear the seal of the same. However, preliminary or conceptual site restoration plans which are not intended for use in construction or for obtaining regulatory approval may be prepared by either a Professional Engineer or a Licensed Geologist.

.0104 RESTRICTED DESIGNATION (RS) GUIDANCE

Purpose of Rule

15A NCAC 2L .0104 establishes a temporary groundwater designation (RS) whose purpose is to warn the public that groundwater so designated is not suitable for use as a source of drinking water without treatment. The designation is considered to be temporary. If the groundwater remediation effort is successful, the groundwater will be restored to its original groundwater classification. If it is discovered that remedial efforts are unsuccessful, the groundwater will be reclassified as GC.

The Director is authorized to designate an area as RS under either of the following conditions:

- groundwater has been contaminated, the Director has approved a Corrective Action Plan or Termination of Corrective Action, and it is evident that the approved plan will not result in restoration of the resource without an extended period of time, or
- a statutory variance has been granted in accordance with 15A NCAC 2L .0113.

Any groundwater occurring in an area previously defined within a Compliance Boundary associated with a waste disposal permit is automatically designated RS.

It has been noted that .0104(c), (d), and (e) could be interpreted to conflict with the Compliance Boundary requirements found in 15A NCAC 2L .0107. In all cases the requirements of .0107 will take precedence over those specified in .0104(c), (d), and (e).

(a) Considered to be self-explanatory.

(b) Considered to be self-explanatory.

(c) The calculation of the RS boundary must be performed using predictive calculations or computer modeling. A brief description of the methodology used with a discussion of the

applicability to the site in question is required including all supporting technical data and modeling results.

- (d) The monitoring program must be sufficient to:
- determine the quality of the groundwater within the contaminant plume,
 - determine the movement of the plume, and
 - ensure that the conditions established for the approved RS area are maintained.

The State may require the installation of additional wells as conditions change in the RS area.

The term 'increase' refers to an escalation of any chemical parameter concentration above the level determined for the plume at the time the RS designation was approved. An increase in contaminant levels will be reviewed by the Director or his designee. Additional monitoring or remedial action may be required if it is determined or suspected that the increase represents:

- another release which may or may not be associated with the original contaminant release,
- an increase in contaminant levels resulting from the degradation or transformation of the original contaminant into new or related chemical compounds, or
- an increase due to unknown conditions or circumstances.

(e) The individual responsible for the contamination is considered the 'applicant' for the purposes of this rule. If a responsible party cannot be identified and the Division initiates the RS designation for an area of groundwater, then the Division shall ensure that all public notification requirements have been met.

(f) The individual responsible for the contamination must submit to the Division all information required in .0104(f)(2) to complete the required public notice.

- (1) The Chief Administrative Officer is considered to be the Mayor, Chairman of the County Commissioners, the County Manager, the City Manager or other individual of equal or similar position as appropriate.
- (2) Considered to be self-explanatory.
- (3) Considered to be self-explanatory.
- (4) Considered to be self-explanatory.

.0106 CORRECTIVE ACTION GUIDANCE

Purpose of Rule

The Rule defines the following:

- a) Notification and corrective action requirements for permitted and non-permitted facilities.

- b) The kinds of data required for approval of natural remediation, alternate cleanup levels, or termination of corrective actions.
- c) The conditions in which contaminated groundwater may be designated RS or reclassified as GC.
- d) The conditions in which current remedial activities shall be abandoned in favor of new technologies.

The meaning of 'foreseeable receptor' as used in 15A NCAC 2L .0106 is defined to include any of the receptors listed in .0102 (19), and any property where the groundwater resources have a potential use and public water is not available, including:

- locations for which formal plans exist to use groundwater for public or private use,
- locations for which the property owner(s) has expressed an anticipated or possible future use of groundwater resources,
- rural locations for which public water supplies will most likely not be available for future residential, agricultural or industrial development and the owner(s) has expressed a future anticipated use, and
- any location where the landownership cannot be determined at present.

(a) Considered to be self-explanatory.

(b) This paragraph refers to the discovery of a sudden and unexpected release of a contaminant into the environment. The term 'immediate' is defined as being within a 24 hour period unless there are extenuating circumstances. If the release occurs at such a time that it is not possible to report the release to the Division within 24 hours due to weekends or holidays, the morning of the next business day is acceptable. This paragraph defines the reporting requirements to the Division of Environmental Management. It has no bearing upon, nor does it affect, any rule or requirement defining additional reporting requirements by North Carolina General Statute or the Division of Emergency Management.

(c) This paragraph is applicable to all contamination incidents resulting from activities which have not been permitted by the Division, including all non-permitted facilities. The term 'immediate' is defined as being within a 24 hour period unless there are extenuating circumstances. This paragraph defines the reporting requirements to the Division of Environmental Management. It has no bearing upon, nor does it affect, any rule or requirement defining additional reporting requirements by North Carolina Statute or the Division of Emergency Management.

(1) Considered to be self-explanatory.

(2) Considered to be self-explanatory.

(3) Reports must be prepared in accordance with 2L 15A NCAC 2L .0103(e).

(4) Corrective action plans must be prepared in accordance with .0103(e). In addition, each CAP must have a properly executed (GW-100(c) form, entitled Certification for the Submittal of a Corrective Action Plan Under 15A NCAC 2L .0106(c), attached to the front. Either an original or a legible photocopy of an original form must be used. A CAP will not be accepted if a retyped version of the GW-100 form is used. Each item on the certification must be initialed by hand and the form must bear the seal and signature of a qualified and duly licensed North Carolina professional (see implementation guidance on paragraph .0103(e) for clarification on the professional jurisdictions of PEs and LGs). The CAP must display the seal and signature of the certifying licensed professional on the title page. The GW-100 forms have been revised since the original November, 1993 printing. Copies are available from the Groundwater Section's regional offices (ROs) and from the Pollution Control Branch (PCB).

The term 'prepared' as it appears on the GW-100(c) certification form should be construed to mean that the CAP has been prepared under the responsible charge of the certifying licensed professional pursuant to North Carolina Statutes. The term is included on the form because Professional Engineers (PEs) and Licensed Geologists (LGs) are prohibited from certifying plans prepared by individuals not working under their direct control and supervision.

(d) Reporting must be done in accordance with the provisions of .0103(e).

(e) Considered to be self-explanatory.

(f)

(1) Considered to be self-explanatory.

(2) Considered to be self-explanatory.

(3) See .0106(f)(4) for explanation of the definition of 'control' as it pertains to sources of contamination.

(4) DEM policy defines the meaning of 'control' as it applies to .0106 differently for different types of secondary sources of contamination. All active (primary) sources of contamination (ie. leaking storage containers, waste stockpiles, etc.) and non-aqueous phase liquids [i.e. free product which is defined in 2L .0106(f)(4) to be a secondary source] must be removed or actively controlled. Here, 'controlled' means demonstrating the physical ability to direct, restrain or dominantly influence the non-aqueous phase liquid contaminant plume.

In comparison, demonstrating complete delineation of the extent of soil contamination (a secondary source) in accordance with "Groundwater Section Guidelines for the Investigation and Remediation of Soils and Groundwater"

(June 1993) and 15A NCAC 2L .0106 (g), and providing an acceptable plan for its remediation following CAP approval may satisfy the meaning of 'controlled' as it pertains to soil contamination.

Capping or otherwise sealing the contaminated soil may be a viable option for controlling the secondary source, but justification is required including discussion of the expected effectiveness of the barrier over an extended period of time. Predictive modeling or calculations which address changes in contaminant concentrations due to seasonal water table fluctuations should also be included.

(g) Reporting must be done in accordance with the provisions of .0103(e).

(h) With regard to monitoring plans, the applicant will submit the results of all monitoring at the frequency required by the CAP using a State-approved format. Analytical reports from certified laboratories shall also be provided showing well numbers, analytical method used, date sampled, date analyzed, method detection limit, and explanations for any keys used. A chain of custody form shall be included. Data should be reviewed for compliance with the CAP and the results of the review included in the quarterly monitoring report. The applicant is required to notify the Division immediately if non-compliance with the CAP is discovered. In the event non-compliance is discovered, the applicant must submit a report, prepared and certified by a licensed professional, to the Director assessing the cause, significance and extent of the violation. A monitoring report does not require the participation of a licensed professional if it is only transmitting information to the Division and does not include any interpretation of data.

The applicant is also required to submit an annual report providing a year end review of monitoring results, site conditions, the effectiveness of the remedial effort, and the degree to which site conditions comply with commitments specified in the CAP. This report must be prepared and certified by a licensed professional.

(i) Considered to be self-explanatory.

(j) All corrective action plans are submitted pursuant to paragraphs (c) or (d) of this rule. This paragraph: (1) reiterates the general rule that cleanup must restore groundwater to prerelease conditions; and (2) adds the requirement that plans submitted under paragraph (c) and (d) must use the best available technology. The paragraph also recognizes the exceptions to these two general requirements as set out in paragraphs (k), (l), and (m). Paragraphs (k) and (m) allow cleanup to standards higher than those set out in Rule 2L .0202, but contain no exception to the best available technology requirement. Paragraph (l) does not

require best available technology, but still requires restoration to the standards set out in Rule 2L .0202 by the natural processes of degradation and attenuation of contaminants.

"Best Available Technology (BAT)" is considered to be that technology which achieves the specified cleanup goals within a reasonable time frame at the most practical cost per unit of cleanup. For example, a remedial technology which has the capacity to clean up a site in 3 months at a cost of \$1,000,000 would not be considered the Best Available Technology if an alternative technology existed which would accomplish the same goals in five months at a cost of \$10,000. For those sites at which BAT is required, the Director, or his designee, will review the CAPs to determine if the requested time frames for remedial activities are appropriate and if the technologies proposed can be considered to be the Best Available Technology for the site in question.

k) The purpose of paragraph (k) is to provide a means by which a responsible party may seek permission to remediate a site to a level other than that specified by the standards. Approval of a CAP under this paragraph will be considered only for non-permitted sites for which active remediation, other than by natural processes, has already been or is proposed to be implemented. Contamination sites which cannot be remediated to the groundwater standards specified in .0202 using current technology are considered to be the most eligible for the provisions in this paragraph. Responsible parties will be required to use Best Available Technology [see paragraph (j) for the definition of Best Available Technology] until such time as the alternate standards established under paragraph (k) are achieved.

Requests for alternative standards will be made as part of the proposed CAP submitted pursuant to paragraph (c). Documentation relating to the enumerated items must be submitted with the CAP. Additionally, the CAP must list all contaminants detected at the site in concentrations which exceed the standards specified in .0202 and their respective proposed cleanup levels. All pertinent laboratory analytical reports must be provided as well as justification and supporting arguments for the recommended cleanup levels. The Director may request additional information. In determining whether to approve a CAP submitted under .0106(k) the Director will apply the standard for approval of all plans set out in paragraph (i).

Reasonable and necessary costs for activities performed to prepare and implement an alternative corrective action at eligible sites under .0106(k) may be reimbursed by the State UST Trust Fund. However, the responsible party must first demonstrate, as part of the preliminary discussion on corrective action options and prior to doing extensive investigation or modeling, that remediation under this paragraph appears to be feasible. These costs would not be

reimbursable if data existed prior to the request that clearly indicated that the site conditions did not meet the requirements specified in .0106(k).

It is important to note that existing or foreseeable receptors are not permitted to be adversely impacted as a result of the approval and implementation of a CAP under this paragraph. Therefore, health risk analyses are not required.

Each CAP must have a properly executed (GW-100(k) form, entitled Certification for the Submittal of a Corrective Action Plan Under 15A NCAC 2L .0106(k), attached to the front. Either an original or a legible photocopy of an original form must be used. A CAP will not be accepted if it is submitted with a retyped version of the GW-100 form. Each item on the certification form must be initialed by hand and the form must bear the seal and signature of the certifying North Carolina-licensed professional (see implementation guidance on .0103(e) for clarification on the professional jurisdictions of PEs and LGs). The CAP must display the seal and signature of the certifying licensed professional on the title page. The GW-100 forms have been revised since the original November, 1993 printing. Copies are available from the Groundwater Section's regional offices (ROs) and from the Pollution Control Branch (PCB).

The term 'prepared' as it appears on the GW-100(k) certification form should be construed to mean that the CAP has been prepared under the responsible charge of the certifying licensed professional pursuant to North Carolina Statutes. The term is included on the form because PEs and LGs are prohibited from certifying plans prepared by individuals not working under their direct control and supervision.

It is preferred that supporting information be submitted in the order requested in the 2L Rule. A description of site-specific conditions must be included with this report but previous CAP, comprehensive site assessment (CSA), and monitoring report(s) should be referenced. Critical data should be summarized in figures and tables and included with the CAP.

(1) All sources of contamination and free product have been removed or controlled pursuant to 15A NCAC 2L .0106 (f), and 15A NCAC 2N .0703 and .0705, if applicable. Please note that free product and contaminated soil are addressed separately on the GW-100(k) form, and that DEM policy deals with them differently with respect to .0106 (k) and (l). All active (primary) sources of contamination and non-aqueous phase liquid [i.e. free product which is defined in 2L .0106(f)(4) to be a secondary source] must already have been removed to the extent practicable before approval may be granted to remediate under .0106(k).

In comparison, demonstrating complete delineation of the soil contamination (a secondary source) in accordance with "Groundwater Section Guidelines for the Investigation

and Remediation of Soils and Groundwater" (June 1993) and 15A NCAC 2L .0106 (g), and providing an acceptable plan for its remediation following CAP approval may satisfy the meaning of 'controlled' as it pertains to the secondary source of contamination in the 2L Rule.

Capping or otherwise sealing the contaminated soil may be a viable option for controlling the secondary source, but justification is required including discussion of the expected effectiveness of the barrier over an extended period of time. Predictive modeling or calculations which address changes in contaminant concentrations due to seasonal water table fluctuations should also be included, if applicable.

(2) Time and direction of contaminant travel can be predicted with reasonable certainty. The technical basis for the determination of rate and direction of groundwater flow used in modeling and/or calculations must be provided. The direction of contaminant transport should be predicted based on groundwater potentiometric surface data and should take all nearby pumping, recharge and discharge influences into account. The rate of contaminant transport should be estimated through direct calculation and/or computer modeling. Corrective action under .0106(k) will generally not be approved for bedrock contamination.

Pumping tests may be required for sites where there are potentially impacted receptors, and where the data is required to design remediation systems. However, for some sites where there are no potential receptors, an aquifer pumping test may not be required to obtain estimated values for aquifer parameters such as hydraulic conductivity (K). In these cases, an alternative means of estimating site characteristics may be adequate.

For example, it may be acceptable at some sites to perform a textural analysis of the soil from the zone of contamination and use slug test data and/or published values of K corresponding to the soil types present at the site to estimate the rate of contaminant transport. Please note that this is an exception to the Groundwater Section's June 30, 1994 policy which prohibits the use of slug test data in modeling groundwater flow.

Alternatively, contamination in monitoring wells may also be used to determine the rate of contaminant transport in cases where the approximate release date is known. However, the estimated values should always be very conservative. Ideally, in order to predict a "worst case" scenario, it should be assumed that there will be no contaminant losses from volatilization and adsorption to aquifer material.

A potentiometric map (superimposed on the base map) identifying the location of the current plume and all potential receptors must be included. The location of one year of groundwater travel time upgradient of the existing or foreseeable receptor closest to the leading edge of the

plume must be indicated on the map. All current and proposed monitoring wells must also be located on the base map. Isoconcentration maps from the CSA showing the most recent analytical data must also be included.

A statement must be contained in the CAP acknowledging that a PE or LG is required to report any indication that the system is not performing according to the design or model that was proposed. Interim monitoring will be required to determine whether the proposed design or model is adequate.

(3) Migration of contaminants onto adjacent properties. In order to be considered for approval, the CAP must demonstrate that at least one of the three conditions described in subsection (k)(3) is true. The term "served" in (k)(3)(a) means connected to an approved public water supply.

The base map must show the plume boundary as well as all adjacent property owners and all supply wells within 1500 feet of the plume. A tax map of the area would be ideal for this purpose. Documentation, preferably, a letter from the utility company, should be provided indicating which households are on public water supply. An indication of which properties are likely to be impacted and the technical basis for this determination should also be provided.

The CAP must certify that the public water supply is dependent on surface waters or hydraulically isolated groundwater (where applicable). Additionally, documentation of property owner's written consent must be included in the CAP when applicable under .0106(k)(3)(B).

(4) The standards specified in 2L .0202 will be met at a location no closer than one year time of travel up gradient of an existing or foreseeable receptor. All existing and foreseeable receptors must be identified on the base map, and the basis for this determination provided. Receptors may include but are not limited to utility lines, basements, elevator shafts, public and domestic supply wells, surface waters, and regions of groundwater that have been identified for planned resource development by State or local governments.

If a property is to be developed in the future but is served by a public water supply, then planned domestic supply wells might not be considered as receptors. In addition, utilities will not be considered receptors unless they are predicted to be adversely impacted.

(5) Groundwater discharge will not result in the violation of a surface water quality standard specified in 15A NCAC 2B .0200. If the groundwater plume is predicted to discharge to surface waters, the CAP must document the technical basis for predicting that such discharge will not result in the violation of a surface water quality standard.

If the plume is already discharging to surface waters, the CAP should include laboratory analytical results from a recent sampling event from that water body including samples from upstream and downstream of the discharge area, if applicable. All surface water quality data should be provided in table format with lab reports and chain of custody forms also included.

It should be understood that .0106(k)(4) and .0106(k)(5) define the degree to which contaminants must degrade and/or attenuate in order to be considered eligible for the provisions of .0106(k), and that a monitoring plan will be required to verify the degradation and/or attenuation [see .0106(h) of this document and .0110 for additional information regarding monitoring plans and monitoring reports].

(6) Public notice provided in accordance with 15A NCAC 2L .0114(b). The Groundwater Section of the DEM has developed a standard format to assist the regulated community in preparing the notification letters required in .0106 and .0114. It contains several key elements which must be included in any notification letter if it is to satisfy the requirements of the 2L Rule. Copies of this shell document are available from the ROs or from PCB.

A list of individuals notified along with copies of the notification letters and the certified mail receipts ("green cards") must be included with the CAP. Therefore, the notification letters must be sent out and "green cards" received back by the sender before the CAP may be submitted to the Division.

For sites where the contamination resulted from the release of petroleum fuel hydrocarbons from regulated underground storage tanks (USTs), the Division may need to fulfill additional public notice requirements. For sites where public notice of corrective action was placed in local newspapers prior to implementation of active remediation, the Division shall place similar notice prior to approving a CAP under 2L .0106(k).

If approval of a CAP submitted under .0106(k) is granted, the applicant is required to notify all parties specified under .0114(b) of the decision within 30 days via certified mail.

(1) The purpose of paragraph (1) is to allow the natural remediation of a contaminated site until such time as the affected groundwater conforms with the standards specified in .0202. This rule only applies to sites where the contamination resulted from a non-permitted activity, and does not apply if the proposed corrective action requires any type of ongoing active groundwater remediation. For a contaminated site which meets the specified criteria, it is possible to request approval to remediate under the provisions of .0106(1) after a period of active remediation

has occurred. This CAP should be based on the current site conditions.

Reasonable and necessary costs for activities performed to prepare and implement an alternative corrective action at eligible sites under .0106(1) may be reimbursed by the State UST Trust Fund. However, the responsible party must first demonstrate, as part of the preliminary discussion on corrective action options and prior to doing extensive investigation or modeling, that remediation under this paragraph appears to be feasible. These costs would not be reimbursable if data existed prior to the request that clearly indicated that the site conditions did not meet the requirements specified in .0106(1).

In order to be granted approval to remediate any site by natural processes, it must be demonstrated to the satisfaction of the Director, or his designee, that the contaminant(s) in question can be remediated to 15A NCAC 2L .0202 standards within an acceptable period of time.

Each CAP must have a properly executed (GW-100(1) form, entitled Certification for the Submittal of a Corrective Action Plan Under 15A NCAC 2L .0106(1), attached to the front. Either an original or a legible photocopy of an original form must be used. A CAP will not be accepted if it is submitted with a retyped version of the GW-100 form. Each item on the certification form must be initialed by hand and the form must bear the seal and signature of the certifying North Carolina-licensed professional (see implementation guidance on .0103(e) for clarification on the professional jurisdictions of PEs and LGs). The CAP must display the seal and signature of the certifying licensed professional on the title page. The GW-100 forms have been revised since the original November, 1993 printing. Copies are available from the Groundwater Section's regional offices (ROs) and from the Pollution Control Branch (PCB).

The term 'prepared' as it appears on the GW-100(1) certification form should be construed to mean that the CAP has been prepared under the responsible charge of the certifying licensed professional pursuant to North Carolina Statutes. The term is included on the form because PEs and LGs are prohibited from certifying plans prepared by individuals not working under their direct control and supervision.

Requests for approval of a CAP based on natural processes of degradation and attenuation will be made as part of the proposed corrective action plan submitted pursuant to paragraph (c). A description of site-specific conditions must be included with this report but previous CAPs, comprehensive site assessments (CSA), and monitoring report(s) should be referenced. Critical data should be summarized in figures and tables and included in the request. The enumerated items are the minimum additional information needed to consider such as request and should be submitted with the CAP in the order presented in the 2L Rule. The Director may request additional information.

In determining whether to approve a CAP based on natural remediation, the Director will apply the standard for approval of all plans set out in paragraph (i).

(1) All sources of contamination and free product have been removed or controlled pursuant to 15A NCAC 2L .0106 (f), and 15A NCAC 2N .0703 and .0705, if applicable. Please note that free product and contaminated soil are addressed separately on the GW-100(1) form, and that DEM policy deals with them differently with respect to .0106 (k) and (l). All active (primary) sources of contamination and non-aqueous phase liquid [i.e. free product which is defined in 2L .0106(f)(4) to be a secondary source] must already have been removed to the extent practicable before approval may be granted to remediate under .0106(l).

In comparison, demonstrating complete delineation of the soil contamination (a secondary source) in accordance with "Groundwater Section Guidelines for the Investigation and Remediation of Soils and Groundwater" (June 1993) and 15A NCAC 2L .0106 (g), and providing an acceptable plan for its remediation following CAP approval may satisfy the meaning of 'controlled' as it pertains to soil contamination.

Capping or otherwise sealing the contaminated soil may be a viable option for controlling the secondary source, but justification is required including discussion of the expected effectiveness of the barrier over an extended period of time. Predictive modeling or calculations which address changes in contaminant concentrations due to seasonal water table fluctuations should also be included.

(2) The contaminant has the capacity to degrade or attenuate under site-specific conditions. The CAP should include references to publication(s) which indicate that the contaminant has the capacity to degrade and/or attenuate under appropriate site conditions. Additionally, the CAP must document that site-specific conditions are conducive to natural remediation processes and provide any evidence that supports the premise that natural remediation is occurring at the site. For example, benzene is readily biodegradable given appropriate site conditions; TCE may not readily degrade under aerobic conditions but can degrade under anaerobic conditions and may also attenuate due to adsorption to aquifer material.

The CAP should include a discussion of the relative toxicity and environmental fate of potential chemical compounds which may result from incomplete degradation (i.e. intermediates products). Also, the request should indicate which site-specific parameters are predicted to limit the rate of biodegradation and/or attenuation.

Groundwater parameters that may be appropriate to analyze for at potential natural remediation sites include: contaminant concentrations, intermediate compounds formed by

degradation of contaminants, dissolved carbon dioxide, iron, manganese, oxygen, and other terminal electron acceptors (nitrate, sulfate, etc.).

Time and direction of contaminant travel can be predicted with reasonable certainty. The CAP must provide the technical basis for the determination of rate and direction of groundwater flow used in modeling and/or calculations. The direction of contaminant transport should be predicted based on groundwater potentiometric surface data and should take all nearby pumping, recharge and discharge influences into account. The rate of contaminant transport should be estimated through direct calculation via groundwater quality data and/or computer modeling. Corrective action under .0106(1) will generally not be approved for bedrock contamination.

Pumping tests may be required for sites where there are potentially impacted receptors. However, for some sites where there are no potential receptors, an aquifer pumping test may not be required to obtain estimated values for aquifer parameters such as hydraulic conductivity (K). In these cases, an alternative means of estimating site characteristics may be adequate.

For example, it may be acceptable at some sites to perform a textural analysis of the soil from the zone of contamination and use slug test data and/or published values of K corresponding to the soil types present at the site to estimate the rate of contaminant transport. Please note that this is an exception to the Groundwater Section's June 30, 1994 policy which prohibits the use of slug test data in modeling groundwater flow.

Alternatively, contamination in monitoring wells may also be used to determine the rate of contaminant transport in cases where the approximate release date is known. However, the estimated values should always be very conservative. Ideally, in order to predict a "worst case" scenario, it should be assumed that there will be no contaminant losses from volatilization and adsorption to aquifer material.

A potentiometric map (superimposed on the base map) identifying the location of the current plume and all potential receptors must be included. The location of one year of groundwater travel time upgradient of the existing or foreseeable receptor closest to the leading edge of the plume must be indicated on the map. All current and proposed monitoring wells must also be located on the base map. Isoconcentration maps from the CSA showing the most recent analytical data must also be included.

A statement must be contained in the CAP acknowledging that a PE or LG is required to report any indication that natural remediation is not performing according to the model and/or predictive calculations.

(4) Contaminant migration will not result in any violation of groundwater standards at any existing or foreseeable receptor. All existing and foreseeable receptors must be identified on the base map, and the basis for this determination provided. Receptors may include but are not limited to utility lines, basements, elevator shafts, public and domestic supply wells, surface waters, and regions of groundwater that have been identified for planned resource development by State or local governments. If a property is to be developed in the future but is served by a public water supply, planned domestic supply wells will not be considered as receptors. In addition, utilities will not be considered receptors unless they are predicted to be adversely impacted.

(5) Migration of contaminants onto adjacent properties. In .0106(1)(5) the term "served" means connected to an approved public water supply. The CAP must demonstrate that at least one of the three conditions described in subsection (1)(5) is true. In addition, the base map must show the plume boundary as well as all adjacent property owners and all supply wells within 1500 feet of the plume. A tax map of the area would be ideal for this purpose. Documentation, preferably, a letter from the utility company, should be provided indicating which households are on public water supply. An indication of which properties are likely to be impacted and the technical basis for this determination should also be provided.

The CAP must certify that the public water supply is dependent on surface waters or hydraulically isolated groundwater (where applicable). Additionally, documentation of property owner's written consent must also be included in the CAP when applicable under .0106(1)(5)(B).

(6) Groundwater discharge may not result in the violation of a surface water quality standard specified in 15A NCAC 2B .0200. If the groundwater plume is predicted to discharge to surface waters, the CAP must document the technical basis for predicting that such discharge will not result in the violation of a surface water quality standard.

If the plume is already discharging to surface waters, the CAP should include laboratory analytical results from recent sampling of that water body. Analyses should include samples from upstream and downstream of the discharge area, if applicable. All surface water quality data should be provided in table format with a description of sampling locations, lab reports and chain of custody forms also included.

(7) Groundwater monitoring program. A groundwater monitoring program sufficient to track the migration, degradation and attenuation of contaminants and contaminant by-products must be included in the CAP. Refer to .0106(h) of this document and Rule .0110 for additional guidance on

the requirements of monitoring plans and monitoring reports. Proposed monitoring well locations must include well(s) at one of the locations below, whichever is closer to the source of contamination.

- one year of groundwater travel time upgradient of an existing or foreseeable receptor, or
- five years of groundwater travel time downgradient of the edge of the plume boundary at the time the CAP is submitted.

Groundwater parameters that may be appropriate to monitor at natural remediation sites include: contaminant concentrations, intermediate compounds formed by degradation of contaminants, dissolved carbon dioxide, iron, manganese, and oxygen and other terminal electron acceptors (nitrate, sulfate, etc.).

(8) Access agreements. Documents must be included with the CAP documenting that all necessary access agreements needed to monitor groundwater quality have been or can be obtained.

(9) Public notice provided in accordance with 15A NCAC 2L .0114(b). The Groundwater Section of the DEM has developed a standard format to assist the regulated community in preparing the notification letters required in .0106 and .0114. It contains several key elements which must be included in any notification letter if it is to satisfy the requirements of the 2L Rule. Copies of this shell document are available from the ROs or from PCB.

A list of individuals notified along with copies of the notification letters and the certified mail receipts ("green cards") must be included with the CAP. Therefore, the notification letters must be sent out and "green cards" received back by the sender before the CAP may be submitted to the Division.

If approval of a CAP submitted under .0106(1) is granted, the applicant is required to notify all parties specified under .0114(b) of the decision within 30 days via certified mail.

(m) The purpose of paragraph (m) is to provide a mechanism whereby a responsible party may seek approval to terminate corrective action. It is preferred that information be submitted in the order requested in the rules.

Reasonable and necessary costs for activities performed to support the request to terminate corrective action at eligible sites under .0106(m) may be reimbursed by the State UST Trust Fund. However, these costs would not be reimbursable if data existed prior to the request that clearly indicated that the site conditions did not meet the requirements specified in .0106(m).

Each CAP must have a properly executed (GW-100(m) form, entitled Certification for the Submittal of a Corrective Action Plan Under 15A NCAC 2L .0106(m), attached to the front. Either an original or a legible photocopy of an original form must be used. A CAP will not be accepted if it is submitted with a retyped version of the GW-100 form. Each item on the certification must be initialed by hand and the form must bear the seal and signature of a North Carolina-licensed professional (see implementation guidance on .0103(e) for clarification on the professional jurisdictions of PEs and LGs). The CAP must display the seal and signature of the certifying licensed professional on the title page. The GW-100 forms have been revised since the original November, 1993 printing. Copies are available from the Groundwater Section's regional offices (ROs) and from the Pollution Control Branch (PCB).

The term 'prepared' as it appears on the GW-100(m) certification form should be construed to mean that the CAP has been prepared under the responsible charge of the certifying licensed professional pursuant to North Carolina Statutes. The term is included on the form because PEs and LGs are prohibited from certifying plans prepared by individuals not working under their direct control and supervision.

(1) Considered to be self-explanatory.

(2)(A) Demonstrate the asymptotic nature slope of the curve of decontamination over time. The asymptotic slope described in in this paragraph is used as a means of determining the rate at which remediation is progressing. In order to qualify for the provisions in .0106(m), a showing must be made that current remedial efforts have produced their maximum result in terms of lowering the concentration of contaminant compounds in groundwater.

The asymptotic slope is determined by graphing and calculating the slope of the curve representing the concentration of the contaminants over time. The contaminant concentrations must be in milligrams per liter. The time scale must be months. If, after plotting the data, the slope is calculated to be equal to or less than one unit of chemical contamination remediated during the course of 40 months, then the stipulations of .0106(m)(2)(A) have been met.

A minimum of 12 months of monitoring data must be used to graph and calculate the curve of decontamination. Using the ratio of one milligram per liter over 40 months, the decrease in contaminant concentration in groundwater cannot exceed 300 micrograms per liter in the last 12 month period to be considered for approval under .0106(m). If a "best fit" curve is used to fit the data, the CAP must include an explanation of the type of statistical analysis performed.

It should be noted that data from improperly designed or constructed remediation systems may render that site ineligible for the provisions under paragraph (m).

Groundwater samples used for the above determinations must be collected from properly constructed monitoring wells. Data from remediation wells are not acceptable. Additionally, the determination of slope must be performed for every contaminated monitoring well and for each compound detected in concentrations exceeding the groundwater standards listed in .0202 in those wells.

(B) Migration of contaminants onto adjacent properties. In .0106(m)(2)(B) the term "served" means connected to an approved public water supply. The CAP must demonstrate that at least one of the three conditions described in the subsection is true.

The base map must show the plume boundary as well as all adjacent property owners and all supply wells within 1500 feet of the plume. A tax map of the area would be ideal for this purpose. Documentation, preferably, a letter from the utility company, should be provided indicating which households are on public water supply. An indication of which properties are likely to be impacted and the technical basis for this determination should also be provided.

The CAP must certify that the public water supply is dependent on surface waters or hydraulically isolated groundwater (where applicable). Additionally, documentation of the property owner's written consent must also be included in the CAP when applicable under .0106(m)(2)(B).

(C) Groundwater discharge will not result in the violation of a surface water quality standard specified in 15A NCAC 2B .0200. If the groundwater plume is predicted to discharge to surface waters, the CAP must document the technical basis for predicting that such discharge will not result in the violation of a surface water quality standard.

If the plume is already discharging to surface waters, the CAP should include laboratory analytical results of recent sampling of that water body. Analyses should include samples from upstream and downstream of the discharge area, if applicable. All surface water quality data should be provided in table format with a description of sampling locations, lab reports and chain of custody forms also included.

(D) Public notice provided in accordance with 15A NCAC 2L .0114(b). The Groundwater Section of the DEM has developed a standard format to assist the regulated community in preparing the notification letters required in .0106 and .0114. It contains several key elements which must be included in any notification letter if it is to satisfy the requirements of the 2L Rule. Copies of this shell document are available from the ROs or from PCB.

A list of individuals notified along with copies of the notification letters and the certified mail receipts ("green cards") must be included with the CAP. Therefore, the notification letters must be sent out and "green cards" received back by the sender before the CAP may be submitted to the Division.

If approval of a CAP submitted under .0106(m) is granted, the applicant is required to notify all parties specified under .0114(b) of the decision within 30 days via certified mail.

(3) Groundwater development not planned. Documentation stating that the groundwater in the area has not been identified by a State or local government planning process should be included in the CAP. This information may be available from the local county or municipal planning office or from the Department of Environment, Health and Natural Resources, Division of Water Resources.

(4) Groundwater monitoring program. A groundwater monitoring program sufficient to track the migration, degradation and attenuation of contaminants and contaminant by-products at a location at least one year time of travel upgradient of any existing or foreseeable receptor must be included in the CAP.

With regard to the monitoring requirements specified in .0106(m)(4), the text should be construed to mean that the migration of the contaminant plume must be restricted. The contaminant plume must conform to the groundwater standards specified in .0202 one year's predicted time of travel upgradient of any receptor.

It should be understood that this .0106(m)(4) defines the degree to which a contaminant must degrade or attenuate in order for termination of corrective action to be approved. If a contaminant plume does not have the capacity to achieve compliance within the defined time of travel, the site is not eligible for the provisions specified in .0106(m).

(n) Considered to be self-explanatory.

(o) Considered to be self-explanatory.

(p) Considered to be self-explanatory.

(q) Considered to be self-explanatory.

.0114 NOTIFICATION REQUIREMENTS

Purpose of Rule

Notification requirements are defined for contamination incidents not related to permitted facilities.

Although not specified in the Rule, the notice requirements contained in 15A NCAC .0114 have, as part of their authority, North Carolina General Statute 143.215.2.

(a) The Chief Administrative Officer is considered to be the Mayor, Chairman of the County Commissioners, the County Manager, the City Manager or other individual of equal or similar position as appropriate. Notification must be made by certified mail.

(b) The Chief Administrative Officer is considered to be the Mayor, Chairman of the County Commissioners, the County Manager, the City Manager or other individual of equal or similar position as appropriate. It is important to note that both the property owners and the occupants of those properties must be notified. The Groundwater Section of the DEM has developed a standard format to be used by the regulated community when preparing the notification letters as required under this subsection. It contains several key elements which must be included in any notification letter if it is to satisfy the requirements of the 2L Rule. Copies of this shell document are available from the Regional Offices (ROs) or from the Pollution Control Branch (PCB).

(c) Considered to be self-explanatory.