15A NCAC 13B .0544 MONITORING PLANS AND REQUIREMENTS FOR C&DLF FACILITIES

(a) A Monitoring Plan must be submitted that contains the following information and must apply to all C&DLF units. The Monitoring Plan must be prepared in accordance with this Rule.

(b) Ground-water monitoring plan. A ground-water monitoring plan, including information on the proposed ground-water monitoring system(s), sampling and analysis requirements, and detection monitoring requirements that fulfills the requirements of Part (1)(A) through (1)(E) of this Paragraph, must be submitted.

(1) A ground-water monitoring system must be installed that consists of a sufficient number of wells, installed at appropriate locations and depths, to yield ground-water samples from the aquifer that:

(A) Represent the quality of the background ground water that has not been affected by leakage from the unit. Normally, determination of background water quality will be based on sampling of a well or wells that are hydraulically upgradient of the waste management area. However, the determination of background water quality may include sampling of wells that are not hydraulically upgradient of the waste management area where hydrogeologic conditions do not allow the owner and operator to determine which wells are hydraulically upgradient, or hydrogeologic conditions do not allow the owner and operator to place a well in a hydraulically upgradient location, or sampling at other wells will provide an indication of background ground-water quality that is as representative as that provided by the upgradient well(s); and

(B) Represent the quality of ground water passing the relevant point of compliance as approved by the Division. The downgradient monitoring system must be installed at the relevant point of compliance so as to ensure detection of ground-water contamination in the uppermost aquifer. The relevant point of compliance must be established no more than 250 feet from a waste boundary, or must be at least 50 feet within the facility property boundary, whichever point is closer to the waste boundary. In determining the relevant point of compliance, the Division shall consider recommendations made by the owner and operator based upon consideration of at least the hydrogeologic characteristics of the facility and surrounding land; the quantity, quality, and direction of flow of the ground water; the proximity and withdrawal rate of the ground-water users; the existing quality of the ground water, including other sources of contamination and their cumulative impacts on the ground water, and whether the ground water is currently used or reasonably expected to be used for drinking water; public health, safety, and welfare effects; and practicable capability of the owner and operator.

(C) The ground-water monitoring programs must include consistent sampling and analysis procedures that are designed to ensure monitoring results that provide an accurate representation of ground-water quality at the background and downgradient wells. The plan must include procedures and techniques for sample collection; sample preservation and shipment; chain-of-custody control; and quality assurance and quality control.

(D) Detection ground-water monitoring program. The monitoring programs must include sampling and analytical methods that are appropriate for ground-water sampling and that accurately measure target constituents and other monitoring parameters in ground-water samples. Detection monitoring is required at C&DLF units at all ground-water monitoring wells that are part of the detection monitoring system as established in the approved monitoring plan. At a minimum, the detection monitoring program must include monitoring for the constituents listed in Appendix I of 40 CFR Part 258, Mercury, Chloride, Manganese, Sulfate, Iron, specific conductance, pH, temperature, Alkalinity, and Total Dissolved Solids. The monitoring frequency for all detection monitoring constituents must be at least semiannual during the active life of the facility, and during the closure and post-closure periods. A minimum of one sample from each well, background and downgradient, must be collected and analyzed for the constituents before waste placement in each cell or phase. At least one sample from each well, background and downgradient, must be collected and analyzed during subsequent semiannual sampling events. The Classifications and Water Quality Standards Applicable to the Groundwaters of North Carolina (15A NCAC 02L) are incorporated by reference, including subsequent amendments and editions. Copies of this material may be inspected or obtained at the Department of Environment and Natural Resources or on the Department website.

(E) The sampling procedures and frequency must be protective of human health and the environment.

(F) Each time ground-water is sampled elevations must be measured in each well immediately prior to purging. Ground-water elevations in wells which monitor the same waste management area must be measured within a 24 hour period of time to avoid temporal variations in ground-water flow which could preclude accurate determination of ground-water flow rate and direction. In order to accurately determine ground-water elevations for each monitoring well, the wells must have been accurately surveyed by a North Carolina Registered Land Surveyor. The survey of the wells must conform to at least the following levels of accuracy: horizontal location to the nearest 0.1 foot, vertical control for the ground surface elevation to the nearest 0.01 foot, and vertical control for the measuring reference point on the top of the inner well casing to the nearest 0.01 foot. In order to determine the rate of ground-water flow, the owner or operator must provide data for hydraulic conductivity and porosity for the formation materials at each of the well locations.

(G) The owner or operator must establish existing conditions of ground-water quality in hydraulically upgradient or background well(s) for each of the monitoring parameters or constituents required in the particular ground-water monitoring program that applies to the C&DLF unit.

(H) Within 120 days of completing a ground-water sampling event, the owner or operator must submit to the Division a report, with one copy in electronic format, that includes information from the sampling event; including: field observations relating to the condition of the monitoring wells; field data; summary of the laboratory data; field sampling quality assurance and quality control data; information on ground-water flow direction; ground-water flow rate for each well with constituents that exceed ground-water standards over background levels; and any other pertinent information related to the sampling event.

(I) The owner or operator may demonstrate that a source other than the C&DLF unit or a natural variation in ground-water quality has caused contamination, or an error in sampling or analysis of data has resulted in false reporting of contamination. A report documenting this demonstration must be certified by a Licensed Geologist or Professional Engineer and must be submitted to the Division for review. The Division shall date and stamp the demonstration "approved" if the conditions of this Paragraph are met. A copy of the approved report must also be placed in the operating record.

(2) Monitoring wells must be designed and constructed in accordance with the applicable North Carolina Well Construction Standards as codified in 15A NCAC 02C.

(A) Owners and operators must obtain approval from the Division for the design, installation, development, and decommission of any monitoring well or piezometer. Documentation must be placed in the operating record and provided to the Division.

(B) The monitoring wells and piezometers must be operated, maintained, and accessible so that they perform to design specifications throughout the life of the monitoring program.

(3) The number, spacing, and depths of monitoring points must be determined based upon site-specific technical information that must include investigation of:

(A) aquifer thickness, ground-water flow rate, and ground-water flow direction, including seasonal and temporal fluctuations in ground-water flow; and

(B) unsaturated and saturated geologic units (including fill materials) overlying and comprising the uppermost aquifer, including thickness, stratigraphy, lithology, hydraulic conductivities, porosities and effective porosities.

(4) The Division may require or allow the use of alternative monitoring systems in addition to ground-water monitoring wells:

(A) at sites where the owner and operator does not control the property from any landfill unit to the ground-water discharge feature(s); or

(B) at sites with hydrogeologic conditions favorable to detection monitoring by alternative methods.

(5) Owners and operators of C&DLF units must comply with the ground-water monitoring, assessment and corrective action requirements under Rules .0544 through .0545 of this Section according to the following schedule:

(A) new C&DLF units must be in compliance with the requirements before waste can be placed in the unit; and

(B) lateral expansions to existing C&DLF units must be in compliance with the requirements before waste can be placed in the expansion area.

(c) Surface water monitoring plan. The Surface Water Monitoring System must be as follows:

(1) The Division shall require a solid waste management facility to provide such surface water monitoring capability as the Division determines to be necessary to detect the effects of the facility on surface water in the area. In making such a determination, the Division shall consider the following factors:

(A) the design of the facility, the nature of the process it will use, and the type of waste it will handle;

(B) drainage patterns and other hydrological conditions in the area;

(C) proximity of surface water to the facility;

(D) uses that are being or may be made of any surface water that may be affected by the facility; and

(E) any other factors that reasonably relate to the potential for surface water effects from the facility.

(2) Responsibility for sample collection and analysis must be defined as a part of the monitoring plan.

(d) Gas control plan.

(1) Owners and operators of all C&DLF units must ensure that:

(A) the concentration of methane gas or other explosive gases generated by the facility does not exceed 25 percent of the lower explosive limit in on-site facility structures (excluding gas control or recovery system components);

(B) the concentration of methane gas or other explosive gases does not exceed the lower explosive limit for methane or other explosive gases at the facility property boundary; and

(C) the facility does not release methane gas or other explosive gases in any concentration that can be detected in offsite structures.

(2) Owners and operators of all C&DLF units must implement a routine methane monitoring program to ensure that the standards of this Paragraph are met.

(A) The type of monitoring must be determined based on soil conditions, the hydrogeologic conditions under and surrounding the facility, hydraulic conditions on and surrounding the facility, the location of facility structures and property boundaries, and the location of all off-site structures adjacent to property boundaries.

(B) The frequency of monitoring shall be quarterly or as approved by the Division.

(3) If methane or explosive gas levels exceeding the limits specified in Subparagraph (d)(1) of this Rule are detected, the owner and operator must:

(A) immediately take all steps necessary to ensure protection of human health and notify the Division;

(B) within seven days of detection, place in the operating record the methane or explosive gas levels detected and a description of the steps taken to protect human health; and

(C) within 60 days of detection, implement a remediation plan for the methane or explosive gas releases, place a copy of the plan in the operating record, and notify the Division that the plan has been implemented. The plan must describe the nature and extent of the problem and the proposed remedy.

(4) Based on the need for an extension demonstrated by the operator, the Division may establish alternative schedules for demonstrating compliance with Parts (3)(B) and (3)(C) of this Paragraph.

(5) For purposes of this Item, "lower explosive limit" means the lowest percent by volume of a mixture of explosive gases in air that will propagate a flame at 25 C and atmospheric pressure.

(e) A waste acceptability program. Owners and operators of all C&DLF units must implement a program at the facility for detecting and preventing the disposal of industrial, hazardous, liquid, municipal solid waste and excluded wastes in accordance with the Operating Plan or the effective permit. This program must include, at a minimum:

(1) random inspections of incoming loads or other comparable procedures;

(2) records of any inspections;

(3) training of facility personnel to recognize industrial, hazardous, liquid, municipal and excluded waste; and

(4) development of a contingency plan to properly manage any identified industrial hazardous, liquid, municipal or excluded waste. The plan must address identification, removal, storage and final disposition of the waste.

(f) The Monitoring Plan must include any other monitoring plan or program which is necessary according to the Operating Plan or the effective permit.

(g) Monitoring plans must be prepared under the responsible charge of and bear the seal of a Licensed Geologist or Professional Engineer in accordance with G.S. 89E or 89C, respectively.

(h) Monitoring plans must be certified by a Licensed Geologist or Professional Engineer to be effective in providing early detection of any release of hazardous constituents from any point in a disposal cell or leachate surface impoundment to the uppermost aquifer, air, surface waters, or proximal area, so as to be protective of public health and the environment.

(i) Monitoring plans must be submitted to the Division for review. The Division shall date and stamp the monitoring plans "approved" if they meet the conditions of this Rule. A copy of the approved monitoring plan must be placed in the operating record.

(j) Once established at a C&DLF facility, all monitoring must be conducted throughout the active life and post-closure care period for all C&DLF units.

History Note: *Authority G.S. 130A-294;*
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