

15A NCAC 13B .1631 GROUNDWATER MONITORING SYSTEMS

(a) A groundwater monitoring system shall be installed that consists of no less than one background and three downgradient wells installed at locations and depths that yield groundwater samples from the uppermost aquifer that:

- (1) Represent the quality of the background groundwater that has not been affected by leakage from the unit. Determination of background groundwater quality shall 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:
 - (A) hydrogeologic conditions do not allow the owner or operator to determine which wells are hydraulically upgradient;
 - (B) hydrogeologic conditions do not allow the owner or operator to place a well in a hydraulically upgradient location; or
 - (C) sampling at other wells will provide an indication of background groundwater quality that is as representative as that provided by the upgradient well(s); and
 - (2) Represent the quality of groundwater passing the relevant point of compliance as approved by the Division. The downgradient monitoring system shall be installed at the relevant point of compliance to ensure detection of groundwater contamination in the uppermost aquifer. The relevant point of compliance shall be established no more than 250 feet from a waste boundary, and shall be at least 50 feet within the facility property boundary. In determining the relevant point of compliance, the Division shall consider recommendations made by the owner or operator based upon consideration of the following factors:
 - (A) the hydrogeologic characteristics of the facility and surrounding land;
 - (B) the volume and physical and chemical characteristics of the leachate;
 - (C) the quantity, quality, and direction of groundwater flow;
 - (D) the proximity and withdrawal rate of the groundwater users;
 - (E) the availability of alternative drinking water supplies;
 - (F) the existing quality of the groundwater, including other sources of contamination and their cumulative impacts on the groundwater, and whether the groundwater is currently used or expected to be used for drinking water;
 - (G) any potential effects on public health, safety, and welfare; and
 - (H) practicable capability of the owner or operator.
- (b) Monitoring wells shall be designed and constructed in accordance with 15A NCAC 02C.
- (1) Owner or operators shall obtain approval from the Division for the design, installation, development, and decommission of any monitoring well or piezometer. Documentation shall be placed in the operating record and provided to the Division in a timely manner.
 - (2) The monitoring wells and piezometers shall be operated and maintained so that they perform to design specifications throughout the life of the monitoring program.
- (c) The number, spacing, and depths of monitoring systems shall be determined based upon site-specific technical information that shall include investigation of:
- (1) aquifer thickness; groundwater flow rate; groundwater flow direction; and seasonal and temporal fluctuations in groundwater flow and water table; and
 - (2) unsaturated and saturated geologic units and any fill materials within the uppermost aquifer; including thicknesses, stratigraphy, lithology, hydraulic conductivities, porosities, and effective porosities.
- (d) The proposed monitoring system and the water quality monitoring plan required in Paragraph (f) of this Rule shall be capable of providing detection of any release of monitored constituents from any point in a disposal cell or leachate surface impoundment to the uppermost aquifer. If required by G.S. 89C or 89E, the proposed monitoring system and water quality monitoring plan shall be certified by a licensed professional engineer or a licensed geologist.
- (e) In addition to groundwater monitoring wells, the use of alternative monitoring systems may be:
- (1) required by the Division at sites where the owner or operator does not control the property from any landfill unit to the groundwater discharge feature(s); or
 - (2) allowed by the Division at sites where hydrogeologic conditions are favorable for detection monitoring by alternative methods.

(f) The owner or operator shall submit a water quality monitoring plan for review and approval by the Division as required by Rules .1603 and .1617 of this Section. The water quality monitoring plan shall contain information on the groundwater monitoring system(s) and locations, surface water sampling locations, sampling and analysis requirements, and monitoring required under Rules .1630 through .1637 of this Section. The Division shall date and stamp the water quality monitoring plan "approved" if the plan meets the conditions of this Rule. Upon approval by the Division, a copy of the approved water quality monitoring plan shall be placed in the operating record.

(g) Groundwater quality standards established under 15A NCAC 02L or groundwater protection standards established in accordance with Rule .1634(b) of this Section shall not be exceeded in the uppermost aquifer at the compliance boundary.

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