

15A NCAC 13B .0545 ASSESSMENT AND CORRECTIVE ACTION PROGRAM FOR C&DLF FACILITIES AND UNITS

(a) Assessment Program. Assessment monitoring shall be required if, in any sampling event, one or more constituents being monitored in any monitoring well are detected above the groundwater quality standards established in accordance with 15A NCAC 02L .0202, or the groundwater protection standards established in accordance with Paragraph (c) of this Rule. The owner and operator shall:

- (1) within 30 days of obtaining the results of any sampling event, notify all persons who own land or reside on land that directly overlies any part of the plume of contamination if contaminants have migrated off-site or are thought to have migrated off-site; and
- (2) within 90 days of triggering an assessment monitoring program in accordance with this Paragraph, the owner and operator shall submit an assessment monitoring work plan for Division review. The Division shall date and stamp the assessment monitoring plan "approved" if the requirements in Paragraph (b) of this Rule are met. The owner and operator shall place the approved program in the operation record, and notify appropriate local government officials, such as the county manager, city manager, and county health department.

(b) Assessment Monitoring Work Plan. The assessment monitoring work plan shall be in accordance with the following:

- (1) Install additional wells downgradient of the compliance wells where exceedances have been detected to characterize the nature and extent of the contamination. The additional wells shall include no less than one additional groundwater monitoring well or methane gas monitoring well at the facility's property boundary or the compliance boundary, as defined in 15A NCAC 02L .0102, in the direction of contaminant migration most likely to show impact based on the established geology and hydrogeology. The additional monitoring wells shall characterize the nature and extent of the release by determining the following factors:
 - (A) lithology of the aquifer and unsaturated zone;
 - (B) hydraulic conductivity of the aquifer and unsaturated zone;
 - (C) groundwater flow rates;
 - (D) horizontal and vertical extent of the release;
 - (E) resource value of the aquifer; and
 - (F) nature, fate, and transport of any detected constituents.
- (2) No less than one sample from each monitoring well, including any well installed in accordance with Subparagraph (1) of this Paragraph, shall be collected and analyzed for the constituents listed in 40 CFR 258 Appendix II during the initial sampling event for assessment monitoring. After the initial sampling event, for any constituent detected in the downgradient wells as the result of the Appendix II analysis, no less than three additional independent samples from each background and downgradient monitoring well shall be collected and analyzed to establish a baseline for the new detected constituents. Once determined, baseline data for the new detected constituents shall be reported to the Division.

(c) For constituents that do not have a groundwater quality standard established in accordance with 15A NCAC 02L .0202, the Division shall establish a groundwater protection standard as follows:

- (1) The groundwater protection standard shall be the most protective of the following:
 - (A) for constituents for which a maximum contaminant level (MCL) has been promulgated under 40 CFR 141, the MCL for that constituent;
 - (B) for constituents for which a public water quality standard has been established under 15A NCAC 18C, the public water quality standard for that constituent;
 - (C) for constituents for which no MCLs or public water quality standards have been promulgated, the background concentration for the constituent established from the monitoring wells required in accordance with Rule .0544(b)(1)(A), (b)(4), and (b)(5) of this Section; or
- (2) The Division may establish an alternative groundwater protection standard for constituents for which no MCL or water quality standard have been established. These groundwater protection standards shall be health-based levels that satisfy the following criteria:
 - (A) The level is derived in a manner consistent with U.S. E.P.A. guidelines provided in 40 CFR 258.55(i)(1) for assessing the health risks of environmental pollutants;
 - (B) The level is based on scientifically valid studies conducted in accordance with 40 CFR 792, or equivalent;

- (C) For carcinogens, the level represents a concentration associated with an excess lifetime cancer risk level due to continuous lifetime exposure of 1×10^{-6} ;
 - (D) For systemic toxicants, the level represents a concentration to which the human population, including sensitive subgroups, could be exposed on a daily basis that is likely to be without appreciable risk of deleterious effects during a lifetime. For the purposes of this Rule, systemic toxicants include toxic chemicals that cause effects other than cancer or mutation.
- (3) In establishing groundwater protection standards under this Paragraph the Division may consider the following:
- (A) multiple contaminants in the groundwater;
 - (B) exposure threats to sensitive environmental receptors; and
 - (C) other site-specific exposure or potential exposure to groundwater.
- (4) The owner or operator may request the Division approve a background level for the unit that is higher than the standard established in 15A NCAC 02L .0202, or the standard established in Subparagraph (1) of this Paragraph, or health-based levels identified under Subparagraph (2) of this Paragraph. The background level shall be established in accordance with Rule .0544(b)(1)(A), (b)(4), and (b)(5) of this Section. The approved background level shall be the established groundwater protection standard.
- (d) Assessment Monitoring. After obtaining the results from the initial sampling event required in Subparagraph (b)(2) of this Rule, the owner and operator shall perform assessment monitoring in accordance with the following:
- (1) For each assessment monitoring event, including the sampling required in Subparagraph (b)(2) of this Rule, the owner or operator shall submit an assessment monitoring report to the Division that complies with Rule .0544(b)(6) of this Section. If required by G.S. 89E, the report shall be certified by a licensed geologist.
 - (2) Within 14 days of receipt of analytical results, the owner or operator shall submit notice to the Division in writing and place the notice in the operating record identifying the 40 CFR 258 Appendix II constituents that have not previously been detected and reported to the Division.
 - (3) Within 90 days, and no less than semiannually thereafter until the Division approves a return to detection monitoring in accordance with Subparagraphs (6) or (7) of this Paragraph, the owner or operator shall sample all of the monitoring wells for the unit in the detection monitoring system established in Rule .0544 of this Section for all constituents listed in 40 CFR 258 Appendix I and for those constituents in Appendix II not listed in Appendix I that have been detected. Any well with a reported groundwater standard exceedance shall be sampled for all constituents in 40 CFR 258 Appendix II at least annually unless otherwise approved in accordance with Subparagraphs (4) or (5) of this Paragraph. A report from each sampling event shall be submitted to the Division as specified in Subparagraph (1) of this Paragraph and placed in the facility operating record.
 - (4) The Division may approve a subset of wells to be sampled and analyzed during assessment monitoring if the owner or operator demonstrates that the proposed wells to be sampled meet the requirements for assessment monitoring in accordance with this Paragraph. The Division may remove any of the additional monitoring parameters not listed in Rule .0544(b)(1)(D) of this Section from the monitoring list for a C&DLF unit if the owner or operator can show that the constituents proposed for removal are not expected to be in or derived from the waste contained in the unit.
 - (5) The Division may approve an alternate frequency or subset of wells for repeated sampling and analysis for 40 CFR 258 Appendix II constituents, not listed in Appendix I, required during the active life and post-closure care of the unit considering all of the following factors:
 - (A) lithology of the aquifer and unsaturated zone;
 - (B) hydraulic conductivity of the aquifer and unsaturated zone;
 - (C) groundwater flow rates;
 - (D) minimum distance between the upgradient edge of the C&DLF unit and the downgradient monitor well screened interval;
 - (E) resource value of the aquifer; and
 - (F) nature, fate, and transport of any detected constituents.
 - (6) During assessment monitoring, the owner or operator may demonstrate, in accordance with Rule .0544(b)(7) of this Section for any constituent not previously reported to have a groundwater standard exceedance, that a source other than a C&DLF unit caused the exceedance of the

groundwater quality standards established in accordance with 15A NCAC 02L .0202 or the groundwater protection standards established in accordance with Paragraph (c) of this Rule, or that the exceedance resulted from error in sampling, analysis, or natural variation in groundwater quality. If a successful demonstration is made for each exceedance, the owner or operator shall continue the existing assessment monitoring that was required by this Paragraph unless and until the requirements of Subparagraph (7) of this Paragraph are met.

(7) The Division shall give approval to the owner or operator to return to detection monitoring in accordance with Rule .0544(b)(1)(D) of this Section if all of the following are met:

(A) for two consecutive sampling events, the concentrations of the constituents are shown to be at or below groundwater quality standards established in accordance with 15A NCAC 02L .0202, or the groundwater protection standards established in accordance with Paragraph (c) of this Rule;

(B) the plume is not migrating horizontally or vertically; and

(C) the plume has not exceeded the compliance boundary.

(8) After completion of Paragraphs (a) and (b) of this Rule and if one or more constituents are detected for two consecutive semiannual sampling events above background, the groundwater quality standards established in 15A NCAC 02L .0202, or the groundwater protection standards established in accordance with Paragraph (c) of this Rule, the owner or operator shall initiate within 90 days an Assessment of Corrective Measures in accordance with Paragraph (e) of this Rule, and shall continue to monitor in accordance with the approved assessment monitoring program.

(e) Assessment of Corrective Measures. If the assessment of corrective measures is required in accordance with Subparagraph (d)(8) of this Rule, the assessment of corrective measures shall include an analysis of the effectiveness of potential corrective measures in meeting all of the requirements and objectives of the remedy as described under this Rule. An assessment of corrective measures document shall be completed within 120 days, or as approved by the Division, and shall address the following:

(1) the performance, reliability, ease of implementation, and potential impacts of potential remedies, including safety impacts, cross-media impacts, and control of exposure to any residual contamination;

(2) the time required to begin and to complete the remedy;

(3) the costs of remedy implementation; and

(4) the institutional requirements such as State and local permit requirements or other environmental or public health requirements that may affect implementation of the remedy(s).

(f) Within 120 days of completion of the assessment of corrective measures in accordance with Paragraph (e) of this Rule, the owner and operator shall discuss the results of the assessment of corrective measures, prior to the selection of the remedy, in a public meeting with interested and affected parties. The owner and operator shall provide a public notice of the meeting at least 30 days prior to the meeting. The notice shall include the time, place, date, and purpose of the public meeting. A copy of the public notice shall be forwarded to the Division at least five days prior to publication. The owner and operator shall mail a copy of the public notice to those persons requesting notification. Public notice shall be in accordance with Rule .0533(c)(4) of this Section.

(g) Selection of Remedy. Based on the results of the Assessment of Corrective Actions, the owner and operator shall select a remedy as follows:

(1) Within 30 days of selecting a remedy, the permittee shall submit an application to modify the permit describing the selected remedy to the Division for evaluation and approval. The application shall be subject to the processing requirements set forth in Rule .0533(c) of this Section. The application shall include the demonstrations necessary to comply with the financial assurance requirements in accordance with Rule .0546 of this Section and Section .1800 of this Subchapter.

(2) Remedies shall:

(A) be protective of human health and the environment;

(B) attain the approved groundwater protection standards in accordance with Rule .0544(b)(12) of this Section;

(C) control the source(s) of releases to reduce or eliminate, to the maximum extent practicable, further releases of 40 CFR 258 Appendix II constituents into the environment; and

(D) comply with standards for management of wastes as specified in Paragraph (n) of this Rule.

- (3) In selecting a remedy that meets the standards of Subparagraph (2) of this Paragraph, the owner and operator shall consider the following factors:
 - (A) The long-term and short-term effectiveness and protectiveness of the potential remedy(s), along with the degree of certainty that the remedy will prove successful based on consideration of the magnitude of reduction of existing risks; magnitude of residual risks in terms of likelihood of further releases due to wastes remaining following implementation of a remedy; the type and degree of long-term management required, including monitoring, operation, and maintenance; short-term risks that might be posed to the community, to workers, or to the environment during implementation of such a remedy, including potential threats to human health and the environment associated with excavation, transportation, and redisposal or containment; time until full protection is achieved; potential for exposure of humans and environmental receptors to remaining wastes, considering the potential threat to human health and the environment associated with excavation, transportation, redisposal, or containment; long-term reliability of the engineering and institutional controls; and potential need for replacement of the remedy.
 - (B) The effectiveness of the remedy in controlling the source to reduce further releases, based on consideration of the extent to which containment practices will reduce further releases, and the extent to which treatment technologies may be used.
 - (C) The ease or difficulty of implementing a potential remedy, based on consideration of the degree of difficulty associated with constructing the technology; the expected operational reliability of the technologies; the need to coordinate with and obtain necessary approvals and permits from other agencies; the availability of necessary equipment and specialists; and available capacity and location of needed treatment, storage, and disposal services.
 - (D) The practicable capability of the owner and operator, including a consideration of the technical and economic capability.
- (4) The owner and operator shall specify as part of the selected remedy a schedule for initiating and completing remedial activities included in a corrective action plan. This schedule shall be submitted to the Division for review and approval to determine compliance with this Rule. The owner and operator shall consider the following factors in determining the schedule of remedial activities:
 - (A) nature and extent of contamination;
 - (B) practical capabilities of remedial technologies in achieving compliance with the approved groundwater protection standards and other objectives of the remedy;
 - (C) availability of treatment or disposal capacity for wastes managed during implementation of the remedy;
 - (D) desirability of utilizing technologies that are not currently available, but which may offer advantages over already available technologies in terms of effectiveness, reliability, safety, or ability to achieve remedial objectives;
 - (E) potential risks to human health and the environment from exposure to contamination prior to completion of the remedy;
 - (F) resource value of the aquifer, including current and future uses; proximity and withdrawal rate of users; groundwater quantity and quality; the potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to contaminants; the hydrogeologic characteristics of the facility and surrounding land; groundwater removal and treatment costs; the costs and availability of alternative water supplies; and
 - (G) practical capability of the owner and operator.
- (h) The Division may determine that active remediation of a release of any detected constituent from a C&DLF unit is not necessary if the owner or operator demonstrates to the Division that:
 - (1) the groundwater is contaminated by substances that have originated from a source other than a C&DLF unit and those substances are present in concentrations such that active cleanup of the release from the C&DLF unit would provide no reduction in risk to actual or potential receptors;
 - (2) the constituent or constituents are present in groundwater that is not currently or expected to be a source of drinking water and is not hydraulically connected with water to which the constituents are migrating or are likely to migrate in concentrations that would exceed the approved groundwater protection standards;
 - (3) remediation of the release is technically impracticable; or

- (4) remediation results in unacceptable cross-media impacts.
- (i) A determination by the Division pursuant to this Paragraph shall not affect the authority of the State to require the owner and operator to undertake source control measures or other measures that may be necessary to eliminate or minimize further releases to the groundwater, to prevent exposure to the groundwater, or to remediate groundwater to concentrations that are technically practicable and reduce threats to human health or the environment.
- (j) Implementation of the Corrective Action Program. Based on the approved schedule for initiation and completion of remedial activities, the owner and operator shall:
- (1) within 120 days after the approval of the selected remedy or as approved by the Division, submit a corrective action plan that establishes and implements a corrective action groundwater monitoring program that:
 - (A) meets the requirements of an assessment monitoring program under Paragraphs (a), (b), and (d) of this Rule;
 - (B) indicates the effectiveness of the corrective action remedy; and
 - (C) demonstrates compliance with groundwater quality standards established in accordance with 15A NCAC 02L .0202 and groundwater protection standards established in accordance with Paragraph (c) of this Rule, pursuant to Paragraph (o) of this Rule;
 - (2) implement the approved corrective action remedy; and
 - (3) take any interim measures necessary to ensure the protection of human health and the environment. Interim measures shall be consistent with the objectives of and contribute to the performance of any remedy that may be required. The following factors shall be considered by an owner and operator in determining whether interim measures are necessary:
 - (A) time required to develop and implement a final remedy;
 - (B) actual or potential exposure of nearby populations or environmental receptors to constituents;
 - (C) actual or potential contamination of drinking water supplies or sensitive ecosystems;
 - (D) further degradation of the groundwater that may occur if remedial action is not initiated;
 - (E) weather conditions that may cause constituents of concern to migrate or be released;
 - (F) risks of fire or explosion, or potential for exposure to constituents of concern resulting from an accident or failure of a container or handling system; and
 - (G) other situations that may pose threats to human health or the environment.
- (k) The owner or operator shall submit a corrective action evaluation report to the Division in an electronic format that is accessible and viewable by the Division no less than once every five calendar years until the owner and operator are released from the corrective action program in accordance with Paragraph (q) of this Rule. The report shall contain a description of the corrective measure remedies that have been implemented or completed since the initiation of the corrective action program; and an evaluation of the effectiveness of the corrective action program. The owner or operator may request to submit the corrective action evaluation report to the Division on an alternate schedule. The owner or operator shall submit the request in writing to the Division, and the request shall include a justification for the alternate schedule. In making the determination on approval of the request, the Division shall consider the following factors:
- (1) the schedules for corrective action established in the corrective action plan and changes to corrective actions;
 - (2) the justification submitted by the owner or operator;
 - (3) the size, direction, and rate of travel of the contaminant plume;
 - (4) the circumstances and use of properties, groundwater, and surface water downgradient of the contaminant plume; and
 - (5) whether the alternate schedule complies with Article 9 of Chapter 130A of the General Statutes and the rules adopted thereunder.
- (l) The owner or operator or the Division may determine, based on information developed after implementation of the remedy has begun or other information, that compliance with requirements of Subparagraph (f)(2) of this Rule are not being achieved through the remedy selected. In such cases, the owner and operator shall implement other methods or techniques to comply with Paragraph (g) of this Rule unless the Division determines that active remediation is not necessary in accordance with Paragraph (h) of this Rule.
- (m) If the owner or operator determines that compliance with requirements of Subparagraph (g)(2) of this Rule cannot be achieved with any currently available methods, the owner and operator shall:

- (1) obtain certification of a licensed professional engineer or licensed geologist, if required by G.S. 89C or 89E, and approval from the Division that compliance with the requirements under Subparagraph (g)(2) of this Rule cannot be achieved with any currently available methods;
 - (2) implement alternate measures to control exposure of humans or the environment to residual contamination, as necessary to protect human health and the environment;
 - (3) implement alternate measures for control of the sources of contamination, or for removal or decontamination of equipment, units, devices, or structures that are technically practicable and consistent with the overall objective of the remedy; and
 - (4) submit a report justifying the alternative measures to the Division for review. The Division shall date and stamp the report "approved" if the conditions of this Paragraph are satisfied. The approved report shall be placed in the operating record prior to implementing the alternative measures.
- (n) All solid wastes that are managed pursuant to a remedy required under Paragraph (g) of this Rule, or an interim measure required under Paragraph (g) of this Rule, shall be managed in a manner that is protective of human health and the environment, and that complies with applicable State and federal requirements.
- (o) Remedies selected pursuant to Paragraph (g) of this Rule shall be considered complete when:
- (1) the owner and operator complies with the groundwater quality and groundwater protection standards at all points within the plume of contamination that lie beyond the relevant point of compliance;
 - (2) compliance with the groundwater quality and groundwater protection standards has been achieved by demonstrating that concentrations of constituents have not exceeded these standards for a period of three consecutive years, consistent with performance standards in Subparagraph (g)(2) of this Rule; and
 - (3) all actions required to complete the remedy have been satisfied.
- (p) Upon completion of the remedy, the owner and operator shall submit a report to the Division documenting that the remedy has been completed in compliance with Paragraph (o) of this Rule. If required by G.S. 89C or 89E, a licensed professional engineer or licensed geologist shall prepare and sign these documents. This report shall also be signed by the owner or operator. Upon approval by the Division, this report shall be placed in the operating record.
- (q) When, upon completion of the certification, the Division determines that the corrective action remedy has been completed in accordance with Paragraph (o) of this Rule, the owner and operator shall be released from the requirements for financial assurance for the corrective action program under Rule .0546 of this Section and Section .1800 of this Subchapter. Nothing in this Paragraph shall release the owner or operator from the requirements for financial assurance for closure, post-closure care, or potential assessment and corrective action in accordance with Rule .0546 of this Section and Section .1800 of this Subchapter.

*History Note: Authority G.S. 130A-294;
Eff. January 1, 2007;
Readopted Eff. September 16, 2021;
Amended Eff. March 15, 2023.*