

APA-1  
07/04

**TRANSMITTAL SHEET FOR  
NOTICE OF INTENDED ACTION**

Control No. 335 Department or Agency Environmental Management

Rule No. 335-14-5-.06

Rule Title: Releases from Solid Waste Management Units

         New      X   Amend             Repeal             Adopt by Reference

Would the absence of the proposed rule significantly harm or endanger the public health, welfare, or safety?          YES

Is there a reasonable relationship between the state's police power and the protection of the public health, safety, or welfare?          YES

Is there another, less restrictive method of regulation available that could adequately protect the public?          NO

Does the proposed rule have the effect of directly or indirectly increasing the costs of any goods or services involved and, if so, to what degree?          NO

Is the increase in cost, if any, more harmful to the public than the harm that might result from the absence of the proposed rule?          NO

Are all facets of the rulemaking process designed solely for the purpose of, and so they have, as their primary effect, the protection of the public?          YES

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Does the proposed rule have an economic impact?          NO

If the proposed rule has an economic impact, the proposed rule is required to be accompanied by a fiscal note prepared in accordance with subsection (f) of section 41-22-23, Code of Alabama 1975.

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Certification of Authorized Official

I certify that the attached proposed rule has been proposed in full compliance with the requirements of Chapter 22, Title 41, Code of Alabama 1975, and that it conforms to all applicable filing requirements of the Administrative Procedure Division of the Legislative Reference Service.

Signature of certifying officer Mandy Elliott

Date October 20, 2017



APA-2  
11/96

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
LAND DIVISION

NOTICE OF INTENDED ACTION

AGENCY NAME: DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

<u>RULE NO. &amp; TITLE:</u>	335 14-5-.01	<u>General (Amend)</u>
	335-14-5-.02	<u>General Facility Standards (Amend)</u>
	335 14-5-.03	<u>Preparedness and Prevention (Amend)</u>
	335-14-5-.05	<u>Manifest System, Recordkeeping and Reporting (Amend)</u>
	335 14-5-.06	<u>Releases from Solid Waste Management Units (Amend)</u>
	335 14-5-.07	<u>Closure and Post Closure (Amend)</u>
	335 14-5-.08	<u>Financial Requirements (Amend)</u>
	335 14-5-.09	<u>Use and Management of Containers (Amend)</u>

INTENDED ACTION: Revise Division 14 of the ADEM Administrative Code.

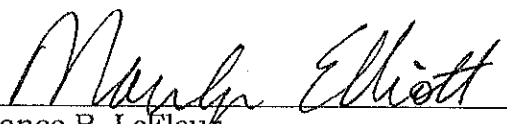
SUBSTANCE OR PROPOSED ACTION: Revise portions of Division 14 Regulations to incorporate changes to ensure consistency with State and Federal Statutes; to adopt certain State specific requirements; and to provide clarification of State requirements for the management of hazardous waste.

TIME, PLACE, MANNER OF PRESENTING VIEWS:

Comments may be submitted in writing or orally at a public hearing to be held December 6, 2017 at 1:30 PM in the Main Hearing Room at the ADEM Central Office located at 1400 Coliseum Boulevard, Montgomery, Alabama 36110.

FINAL DATE FOR COMMENT AND COMPLETION OF NOTICE: December 6, 2017

CONTACT PERSON AT AGENCY: Vernon H. Crockett, Chief of the Industrial Hazardous Waste Branch, ADEM Land Division (334/270-5627)

  
Lance R. Lefleur  
Director

**335-14-5-.06**

**Releases from Solid Waste Management Units.**

(1) Applicability.

(a)l. Except as provided in 335-14-5-.06(1)(b), the regulations in 335-14-5-.06 apply to owners or operators of facilities that treat, store, or dispose of hazardous waste. The owner or operator must satisfy the requirements identified in 335-14-5-.06(1)(a)(2) for all wastes (or constituents thereof) contained in solid waste management units at the facility regardless of the time at which waste was placed in such units.

2. All solid waste management units must comply with the requirements in 335-14-5-.06(12). A surface impoundment, waste pile, and land treatment unit or landfill that receives hazardous waste after July 26, 1982 (hereinafter referred to as a "regulated unit") must comply with the requirements of 335-14-5-.06(2) through (11) in lieu of 335-14-5-.06(12) for purposes of detecting, characterizing, and responding to releases to the uppermost aquifer. The financial responsibility requirements of 335-14-5-.06(12) apply to regulated units.

(b) The owner or operator's regulated unit or units are not subject to regulation for releases into the uppermost aquifer under 335-14-5-.06 if:

1. The owner or operator is exempted under 335-14-5-.01;
2. He operates a unit which the Department finds:
  - (i) Is an engineered structure,
  - (ii) Does not receive or contain liquid waste or waste containing free liquids,
  - (iii) Is designed and operated to exclude liquid, precipitation, and other run-on and run-off,
  - (iv) Has both inner and outer layers of containment enclosing the waste,
  - (v) Has a leak detection system built into each containment layer,
  - (vi) The owner or operator will provide continuing operation and maintenance of these leak detection systems during the active life of the unit and the closure and post-closure care periods, and
  - (vii) To a reasonable degree of certainty, will not allow hazardous constituents to migrate beyond the outer containment layer prior to the end of the post-closure care period.

3. The Department finds, pursuant to 335-14-5-.13(11)(d), that the treatment zone of a land treatment unit that qualifies as a regulated unit does not contain levels of hazardous constituents that are above background levels of those constituents by an amount that is statistically significant, and if an unsaturated zone

monitoring program meeting the requirements of 335-14-5-.13(9) has not shown a statistically significant increase in hazardous constituents below the treatment zone during the operating life of the unit. An exemption under 335-14-5-.06(1)(b) can only relieve an owner or operator of responsibility to meet the requirements of 335-14-5-.06 during the post-closure care period;

4. The Department finds that there is no potential for migration of liquid from a regulated unit to the uppermost aquifer during the active life of the regulated unit (including the closure period) and the post-closure care period specified under 335-14-5-.07(8). This demonstration must be certified by a licensed professional geologist and/or registered professional engineer. In order to provide an adequate margin of safety in the prediction of potential migration of liquid, the owner or operator must base any predictions made under 335-14-5-.06(1)(b) on assumptions that maximize the rate of liquid migration; or

5. He designs and operates a pile in compliance with 335-14-5-.12(1)(c).

(c) The requirements under 335-14-5-.06 apply during the active life of the regulated unit (including the closure period). After closure of the regulated unit, the requirements of 335-14-5-.06:

1. Do not apply if all waste, waste residues, contaminated containment system components, and contaminated subsoils are removed or decontaminated at closure;

2. Apply during the post-closure care period under 335-14-5-.07(8) if the owner or operator is conducting a detection monitoring program under 335-14-5-.06(9); or

3. Apply during the compliance period under 335-14-5-.06(7) if the owner or operator is conducting a compliance monitoring program under 335-14-5-.06(10) or a corrective action program under 335-14-5-.06(11).

(d) Requirements in 335-14-5-.06 may apply to miscellaneous units when necessary to comply with 335-14-5-.24(2) through (4).

(e) The regulations of 335-14-5-.06 apply to all owners and operators subject to the requirements of 335-14-8-.01(1)(c)7., when the Department issues either a post-closure permit or an enforceable document (as defined in 335-14-8-.01(1)(c)7.) to the facility. When the Department issues an enforceable document, references in 335-14-5-.06 to "in the permit" mean "in the enforceable document".

(f) The Department may replace all or part of the requirements of 335-14-5-.06(2) through (11) applying to a regulated unit with alternative requirements for groundwater monitoring and corrective action for releases to groundwater set out in the permit [or in an enforceable document as defined in 335-14-8-.01(1)(c)7.] where the Department determines that:

1. The regulated unit is situated among solid waste management units (or areas of concern), a release has occurred, and both the regulated unit and one or more solid waste management unit(s) (or areas of concern) are likely to have contributed to the release; and

2. It is not necessary to apply the groundwater monitoring and corrective action requirements of 335-14-5-.06(2) through (11) because alternative requirements will protect human health and the environment.

(2) Required programs.

(a) Owners and operators subject to 335-14-5-.06 must conduct a monitoring and response program as follows:

1. Whenever hazardous constituents under 335-14-5-.06(4) from a regulated unit are detected at the compliance point under 335-14-5-.06(6), the owner or operator must institute a compliance monitoring program under 335-14-5-.06(10). Detected is defined as statistically significant evidence of contamination as described in 335-14-5-.06(9)(f);

2. Whenever the groundwater protection standard under 335-14-5-.06(3) is exceeded, the owner or operator must institute a corrective action program under 335-14-5-.06(11). Exceeded is defined as statistically significant evidence of increased contamination as described in 335-14-5-.06(10)(d);

3. Whenever hazardous constituents under 335-14-5-.06(4) from a regulated unit exceed concentration limits under 335-14-5-.06(5) in groundwater between the compliance point under 335-14-5-.06(6) and the downgradient facility property boundary, the owner or operator must institute a corrective action program under 335-14-5-.06(11); or

4. In all other cases, the owner or operator must institute a detection monitoring program under 335-14-5-.06(9).

(b) The Department will specify in the facility permit the specific elements of the monitoring and response program. The Department may include one or more of the programs identified in 335-14-5-.06(2)(a) in the facility permit as may be necessary to protect human health and the environment and will specify the circumstances under which each of the programs will be required. In deciding whether to require the owner or operator to be prepared to institute a particular program, the Department will consider the potential adverse effects on human health and the environment that might occur before final administrative action on a permit modification application to incorporate such a program could be undertaken.

(3) Groundwater protection standard. The owner or operator must comply with conditions specified in the facility permit that are designed to ensure that hazardous constituents under 335-14-5-.06(4) detected in the groundwater from a regulated unit do not exceed the concentration limits under 335-14-5-.06(5) in the uppermost aquifer underlying the waste management area beyond the point of compliance under 335-14-5-.06(6) during the compliance period under 335-14-5-.06(7).

The Department will establish this groundwater protection standard in the facility permit when hazardous constituents have been detected in the groundwater.

(4) Hazardous constituents.

(a) The Department will specify in the facility permit the hazardous constituents to which the groundwater protection standard of 335-14-5-.06(3) applies. Hazardous constituents are constituents identified in 335-14-2 - Appendix VIII that have been detected in groundwater in the uppermost aquifer underlying a regulated unit and that are reasonably expected to be in or derived from waste contained in a regulated unit, unless the Department has excluded them under 335-14-5-.06(4)(b).

(b) The Department will exclude 335-14-2 - Appendix VIII constituent from the list of hazardous constituents specified in the facility permit if it finds that the constituent is not capable of posing a substantial present or potential hazard to human health or the environment. In deciding whether to grant an exemption, the Department will consider the following:

1. Potential adverse effects on groundwater quality, considering:
  - (i) The physical and chemical characteristics of the waste in the regulated unit, including its potential for migration;
  - (ii) The hydrogeological characteristics of the facility and surrounding land;
  - (iii) The quantity of groundwater and the direction of groundwater flow;
  - (iv) The proximity and withdrawal rates of groundwater users;
  - (v) The current and future uses of groundwater in the area;
  - (vi) The existing quality of groundwater, including other sources of contamination and their cumulative impact on the groundwater quality;
  - (vii) The potential for health risks caused by human exposure to waste constituents;
  - (viii) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents;
  - (ix) The persistence and permanence of the potential adverse effects;and
2. Potential adverse effects on hydraulically- connected surface water quality, considering:
  - (i) The volume and physical and chemical characteristics of the waste in the regulated unit;

- (ii) The hydrogeological characteristics of the facility and surrounding land;
  - (iii) The quantity and quality of groundwater, and the direction of groundwater flow;
  - (iv) The patterns of rainfall in the region;
  - (v) The proximity of the regulated unit to surface waters;
  - (vi) The current and future uses of surface waters in the area and any water quality standards established for those surface waters;
  - (vii) The existing quality of surface water, including other sources of contamination and their cumulative impact on surface water quality;
  - (viii) The potential for health risks caused by human exposure to the waste constituents;
  - (ix) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and
  - (x) The persistence and permanence of the potential adverse effects.
- (c) In making any determination under 335-14-5-.06(4)(b) about the use of groundwater in the area around the facility, the Department will consider any identification of underground sources of drinking water and exempted aquifers made by the Department.

(5) Concentration limits.

- (a) The Department will specify in the facility permit concentration limits in the groundwater for hazardous constituents established under 335-14-5-.06(4). The concentration of a hazardous constituent:
1. Must not exceed the background level of that constituent in the groundwater at the time that limit is specified in the permit; or
  2. Must not exceed the maximum contaminant levels for inorganic and organic chemicals in drinking water listed in 335-7-2-.03(1) or 335-7-2-.04(1) or Table I below, if the background level of the constituent is below the value given in either rule; or

**TABLE 1  
MAXIMUM CONCENTRATION OF  
CONSTITUENTS FOR GROUNDWATER PROTECTION**

<u>Constituent</u>	<u>Maximum Concentration<sup>1</sup></u>
<u>Silver</u>	<u>.01</u>
<u>Constituent</u>	<u>Maximum Concentration<sup>1</sup></u>
Silver.....	0.01

<sup>1</sup>Milligrams per liter.

**[Note:** The standard for this parameter has been modified pursuant to the Federal Safe Drinking Water Act; however, this change has not been incorporated by EPA into the federal hazardous waste regulations under RCRA.]

3. Must not exceed an alternate limit established by the Department under 335-14-5-.06(5)(b).

(b) The Department will establish an alternate concentration limit for a hazardous constituent if it finds that the constituent will not pose a substantial present or potential hazard to human health or the environment as long as the alternate concentration limit is not exceeded. In establishing alternate concentration limits, the Department will consider the following factors:

1. Potential adverse effects on groundwater quality, considering:
  - (i) The physical and chemical characteristics of the waste in the regulated unit, including its potential for migration;
  - (ii) The hydrogeological characteristics of the facility and surrounding land;
  - (iii) The quantity of groundwater and the direction of groundwater flow;
  - (iv) The proximity and withdrawal rates of groundwater users;
  - (v) The current and future uses of groundwater in the area;
  - (vi) The existing quality of groundwater, including other sources of contamination and their cumulative impact on the groundwater quality;
  - (vii) The potential for health risks caused by human exposure to waste constituents;
  - (viii) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents;



and (ix) The persistence and permanence of the potential adverse effects;

2. Potential adverse effects on hydraulically- connected surface water quality, considering:

(i) The volume and physical and chemical characteristics of the waste in the regulated unit;

(ii) The hydrogeological characteristics of the facility and surrounding land;

(iii) The quantity and quality of groundwater and the direction of groundwater flow;

(iv) The patterns of rainfall in the region;

(v) The proximity of the regulated unit to surface waters;

(vi) The current and future uses of surface waters in the area and any water quality standards established for those surface waters;

(vii) The existing quality of surface water, including other sources of contamination and their cumulative impact on surface water quality;

(viii) The potential for health risks caused by human exposure to waste constituents;

(ix) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents;

(x) The persistence and permanence of the potential adverse effects.

(c) In making any determination under 335-14-5-.06(5)(b) about the use of groundwater in the area around the facility the Department will consider any identification of groundwater sources of drinking water and exempted aquifers made by the Department.

(6) Point of compliance.

(a) The Department will specify in the facility permit the point of compliance at which the groundwater protection standard of 335-14-5-.06(3) applies and at which monitoring must be conducted. The point of compliance is a vertical surface located at the hydraulically downgradient limit of the waste management area that extends down into the uppermost aquifer underlying the regulated units.

(b) The waste management area is the limit projected in the horizontal plane of the area on which waste will be placed during the active life of a regulated unit.

1. The waste management area includes horizontal space taken up by any liner, dike, or other barrier designed to contain waste in a regulated unit.

2. If the facility contains more than one regulated unit, the waste management area is described by an imaginary line circumscribing the several regulated units.

(7) Compliance period.

(a) The Department will specify in the facility permit the compliance period during which the groundwater protection standard of 335-14-5-.06(3) applies. The compliance period is the number of years equal to the active life of the waste management area (including any waste management activity prior to permitting and the closure period).

(b) The compliance period begins when the owner or operator initiates a compliance monitoring program meeting the requirements of 335-14-5-.06(10).

(c) If the owner or operator is engaged in a corrective action program at the end of the compliance period specified in 335-14-5-.06(7)(a), the compliance period is extended until the owner or operator can demonstrate that the groundwater protection standard of 335-14-5-.06(3) has not been exceeded for a period of three consecutive years.

(8) General groundwater monitoring requirements. The owner or operator must comply with the following requirements for any groundwater monitoring program developed to satisfy 335-14-5-.06(9), (10), or (11):

(a) The groundwater monitoring system must consist of a sufficient number of wells, installed at appropriate locations and depths, to yield groundwater samples from the uppermost aquifer that:

1. Represent the quality of background groundwater that has not been affected by leakage from a regulated unit;

(i) A determination of background groundwater quality may include sampling of wells that are not hydraulically upgradient of the waste management area where:

(I) Hydrogeologic conditions do not allow the owner or operator to determine what wells are hydraulically upgradient; and

(II) Sampling at other wells will provide an indication of background groundwater quality that is representative or more representative than that provided by the upgradient wells; and

2. Represent the quality of groundwater passing the point of compliance; and

3. Allow for the detection of contamination when hazardous waste or hazardous constituents have migrated from the waste management area to the uppermost aquifer.

(b) If a facility contains more than one regulated unit, separate groundwater monitoring systems are not required for each regulated unit provided that provisions for sampling the groundwater in the uppermost aquifer will enable detection and measurement at the compliance point of hazardous constituents from the regulated units that have entered the groundwater in the uppermost aquifer.

(c) All monitoring wells must be cased in a manner that maintains the integrity of the monitoring well bore hole. This casing must be screened or perforated and packed with gravel or sand, where necessary, to enable collection of groundwater samples. The annular space (i.e., the space between the bore hole and well casing) above the sampling depth must be sealed to prevent contamination of samples and the groundwater. Monitoring wells must be operated and maintained in a manner to prevent soil, surface water, and/or groundwater contamination. This requirement includes the installation of protective barriers around monitoring wells where necessary to prevent damage to the well from traffic or other causes or as required on a case-by-case basis by the Department. All monitoring wells must have functional key or combination locks on the wellhead covers to prevent unauthorized access. All monitoring wells must be assigned an identifying number by the facility, and such numbers must be permanently affixed to the outer casing of each monitoring well.

(d) The groundwater monitoring program must include consistent sampling and analysis procedures that are designed to ensure monitoring results that provide a reliable indication of groundwater quality below the waste management area. At a minimum the program must include procedures and techniques for:

1. Sample collection;
2. Sample preservation and shipment;
3. Analytical procedures; and
4. Chain of custody control.

(e) The groundwater monitoring program must include sampling and analytical methods that are appropriate for groundwater sampling and that accurately measure hazardous constituents in groundwater samples.

(f) The groundwater monitoring program must include a determination of the groundwater surface elevation each time groundwater is sampled.

(g) In detection monitoring or where appropriate in compliance monitoring, data on each hazardous constituent specified in the permit will be collected from background wells and wells at the compliance point(s). The number and kinds of samples collected to establish background shall be appropriate for the form of statistical test employed, following generally accepted statistical principles. The sample size shall be as large as necessary to ensure with reasonable confidence that a contaminant

release to groundwater from a facility will be detected. The owner or operator will determine an appropriate sampling procedure and interval for each hazardous constituent listed in the facility permit which shall be specified in the permit upon approval by the Department. This sampling procedure shall be:

1. A sequence of at least four samples, taken at an interval that assures, to the greatest extent technically feasible, that an independent sample is obtained, by reference to the uppermost aquifer's effective porosity, hydraulic conductivity, and hydraulic gradient, and the fate and transport characteristics of the potential contaminants, or

2. An alternate sampling procedure proposed by the owner or operator and approved by the Department.

(h) The owner or operator will specify one of the following statistical methods to be used in evaluating groundwater monitoring data for each hazardous constituent which, upon approval by the Department, will be specified in the permit. The statistical test chosen shall be conducted separately for each hazardous constituent in each well. Where practical quantification limits (pqls) are used in any of the following statistical procedures to comply with 335-14-5-.06(8)(i)5., the pql must be proposed by the owner or operator and approved by the Department. Use of any of the following statistical methods must be protective of human health and the environment and must comply with the performance standards outlined in 335-14-5-.06(8)(i).

1. A parametric analysis of variance (ANOVA) followed by multiple comparisons procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's mean and the background mean levels for each constituent.

2. An analysis of variance (ANOVA) based on ranks followed by multiple comparisons procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's median and the background median levels for each constituent.

3. A tolerance or prediction interval procedure in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the upper tolerance or prediction limit.

4. A control chart approach that gives control limits for each constituent.

5. Another statistical test method submitted by the owner or operator and approved by the Department.

(i) Any statistical method chosen under 335-14-5-.06(8)(h) for specification in the permit shall comply with the following performance standards, as appropriate:

1. The statistical method used to evaluate groundwater monitoring data shall be appropriate for the distribution of chemical parameters or hazardous constituents. If the distribution of the chemical parameters or hazardous constituents is shown by the owner or operator to be inappropriate for a normal theory test, then the data should be transformed or a distribution-free theory test should be used. If the distributions for the constituents differ, more than one statistical method may be needed.

2. If an individual well comparison procedure is used to compare an individual compliance well constituent concentration with background constituent concentrations or a groundwater protection standard, the test shall be done at a Type I error level no less than 0.01 for each testing period. If a multiple comparisons procedure is used, the Type I experiment wise error rate for each testing period shall be no less than 0.05; however, the Type I error of no less than 0.01 for individual well comparisons must be maintained. This performance standard does not apply to tolerance intervals, prediction intervals or control charts.

3. If a control chart approach is used to evaluate groundwater monitoring data, the specific type of control chart and its associated parameter values shall be proposed by the owner or operator and approved by the Department if it finds it to be protective of human health and the environment.

4. If a tolerance interval or a prediction interval is used to evaluate groundwater monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval must contain, shall be proposed by the owner or operator and approved by the Department if it finds these parameters to be protective of human health and the environment. These parameters will be determined after considering the number of samples in the background database, the data distribution, and the range of the concentration values for each constituent of concern.

5. The statistical method shall account for data below the limit of detection with one or more statistical procedures that are protective of human health and the environment. Any practical quantification limit (pql) approved by the Department under 335-14-5-.06(8)(h) that is used in the statistical method shall be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility.

6. If necessary, the statistical method shall include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.

(j) Groundwater monitoring data collected in accordance with 335-14-5-.06(8)(g) including actual levels of constituents must be maintained in the facility operating record. The Department will specify in the permit when the data must be submitted for review.

(9) Detection monitoring program. An owner or operator required to establish a detection monitoring program under 335-14-5-.06 must, at a minimum, discharge the following responsibilities:

(a) The owner or operator must monitor for indicator parameters (e.g., pH, specific conductance, total organic carbon, or total organic halogen), waste constituents, or reaction products that provide a reliable indication of the presence of hazardous constituents in groundwater. The Department will specify the parameters or constituents to be monitored in the facility permit, after considering the following factors:

1. The types, quantities, and concentrations of constituents in wastes managed at the regulated unit;

2. The mobility, stability, and persistence of waste constituents or their reaction products in the unsaturated zone beneath the waste management area;

3. The detectability of indicator parameters, waste constituents, and reaction products in groundwater; and

4. The concentrations or values and coefficients of variation of proposed monitoring parameters or constituents in the groundwater background;

(b) The owner or operator must install a groundwater monitoring system at the compliance point as specified under 335-14-5-.06(6). The groundwater monitoring system must comply with 335-14-5-.06(8)(a)2., (8)(b), and (8)(c);

(c) The owner or operator must conduct a groundwater monitoring program for each chemical parameter and hazardous constituent specified in the permit pursuant to 335-14-5-.06(9)(a) in accordance with 335-14-5-.06(8)(g). The owner or operator must maintain a record of groundwater analytical data as measured and in a form necessary for the determination of statistical significance under 335-14-5-.06(8)(h).

(d) The Department will specify the frequencies for collecting samples and conducting statistical tests to determine whether there is statistically significant evidence of contamination for any parameter or hazardous constituent specified in the permit conditions under 335-14-5-.06(9)(a) in accordance with 335-14-5-.06(8)(g).

(e) The owner or operator must determine the groundwater flow rate and direction in the uppermost aquifer at least annually;

(f) The owner or operator must determine whether there is statistically significant evidence of contamination for any chemical parameter or hazardous constituent specified in the permit pursuant to 335-14-5-.06(9)(a) at a frequency specified under 335-14-5-.06(9)(d).

1. In determining whether statistically significant evidence of contamination exists, the owner or operator must use the method(s) specified in the permit under 335-14-5-.06(8)(h). These method(s) must compare data collected at the compliance point(s) to the background groundwater quality data.

2. The owner or operator must determine whether there is statistically significant evidence of contamination at each monitoring well at the compliance point within a reasonable period of time after completion of sampling. The Department will specify in the facility permit what period of time is reasonable, after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of groundwater samples.

(g) If the owner or operator determines pursuant to 335-14-5-.06(9)(f) that there is statistically significant evidence of contamination for chemical parameters or hazardous constituents specified pursuant to 335-14-5-.06(9)(a) at any monitoring well at the compliance point, he or she must:

1. Notify the Department of this finding in writing within seven days. The notification must indicate what chemical parameters or hazardous constituents have shown statistically significant evidence of contamination;

2. Immediately sample the groundwater in all monitoring wells and determine whether constituents in the list of 335-14-5 - Appendix IX are present, and if so, in what concentration. However, the Department, on a discretionary basis, may allow sampling for a site-specific subset of constituents from the 335-14-5 - Appendix IX list and other representative/related waste constituents.

3. For any 335-14-5 - Appendix IX compounds found in the analysis pursuant to 335-14-5-.06(9)(g)2., the owner or operator may resample within one month or at an alternative site-specific schedule approved by the Director and repeat the analysis for those compounds detected. If the results of the second analysis confirm the initial results, then these constituents will form the basis for compliance monitoring. If the owner or operator does not resample for the compounds in 335-14-5-.06(9)(g)2., the hazardous constituents found during this initial 335-14-5 - Appendix IX analysis will form the basis for compliance monitoring.

4. Within 90 days, submit to the Department an application for a permit modification to establish a compliance monitoring program meeting the requirements of 335-14-5-.06(10). The application must include the following information:

(i) An identification of the concentration of any 335-14-5 - Appendix IX constituent detected in the groundwater at each monitoring well at the compliance point;

(ii) Any proposed changes to the groundwater monitoring system at the facility necessary to meet the requirements of 335-14-5-.06(10).

(iii) Any proposed additions or changes to the monitoring frequency, sampling and analysis procedures or methods, or statistical methods used at the facility necessary to meet the requirements of 335-14-5-.06(10).

(iv) For each hazardous constituent detected at the compliance point, a proposed concentration limit under 335-14-5-.06(5)(a)1. or 2. or a notice of intent to seek an alternate concentration limit under 335-14-5-.06(5)(b).

5. Within 180 days, submit to the Department:
- (i) All data necessary to justify an alternate concentration limit sought under 335-14-5-.06(5)(b); and
  - (ii) An engineering feasibility plan for a corrective action program necessary to meet the requirements of 335-14-5-.06(11), unless:
    - (I) All hazardous constituents identified under 335-14-5-.06(9)(g)2. are listed in 335-7-2-.03(1), 335-7-2-.04(1), or Table 1 of 335-14-5-.06(5) and their concentrations do not exceed the respective values given in those Tables; or
    - (II) The owner or operator has sought an alternate concentration limit under 335-14-5-.06(5)(b) for every hazardous constituent identified under 335-14-5-.06(9)(g)2.

6. If the owner or operator determines, pursuant to 335-14-5-.06(9)(f), that there is a statistically significant difference for chemical parameters or hazardous constituents specified pursuant to 335-14-5-.06(9)(a) at any monitoring well at the compliance point, he or she may demonstrate that a source other than a regulated unit caused the contamination or that the detection is an artifact caused by an error in sampling, analysis, or statistical evaluation or natural variation in the groundwater. The owner or operator may make a demonstration under 335-14-5-.06(9)(g) in addition to, or in lieu of, submitting a permit modification application under 335-14-5-.06(9)(g)4.; however, the owner or operator is not relieved of the requirement to submit a permit modification application within the time specified in 335-14-5-.06(9)(g)4. unless the demonstration made under 335-14-5-.06(9)(g) successfully shows that a source other than a regulated unit caused the increase, or that the increase resulted from error in sampling, analysis, or evaluation. In making a demonstration under 335-14-5-.06(9)(g), the owner or operator must:

- (i) Notify the Department in writing within seven days of determining statistically significant evidence of contamination at the compliance point that he intends to make a demonstration under 335-14-5-.06(9)(g);
  - (ii) Within 90 days, submit a report to the Department which demonstrates that a source other than a regulated unit caused the contamination or that the contamination resulted from error in sampling, analysis, or evaluation;
  - (iii) Within 90 days, submit to the Department an application for a permit modification to make any appropriate changes to the detection monitoring program facility; and
  - (iv) Continue to monitor in accordance with the detection monitoring program established under 335-14-5-.06(9).
- (h) If the owner or operator determines that the detection monitoring program no longer satisfies the requirements of 335-14-5-.06(9), he or she must, within



90 days, submit an application for a permit modification to make any appropriate changes to the program.

(10) Compliance monitoring program. An owner or operator required to establish a compliance monitoring program under 335-14-5-.06 must, at a minimum, discharge the following responsibilities:

(a) The owner or operator must monitor the groundwater to determine whether regulated units are in compliance with the groundwater protection standard under 335-14-5-.06(3). The Department will specify the groundwater protection standard in the facility permit, including:

1. A list of the hazardous constituents identified under 335-14-5-.06(4);
2. Concentration limits under 335-14-5-.06(5) for each of those hazardous constituents;
3. The compliance point under 335-14-5-.06(6); and
4. The compliance period under 335-14-5-.06(7);

(b) The owner or operator must install a groundwater monitoring system at the compliance point as specified under 335-14-5-.06(6). The groundwater monitoring system must comply with 335-14-5-.06(8)(a)2., (8)(b), and (8)(c);

(c) The Department will specify the sampling procedures and statistical methods appropriate for the constituents and the facility, consistent with 335-14-5-.06(8)(g) and (h).

1. The owner or operator must conduct a sampling program for each chemical parameter or hazardous constituent in accordance with 335-14-5-.06(8)(g).

2. The owner or operator must record groundwater analytical data as measured and in form necessary for the determination of statistical significance under 335-14-5-.06(8)(h) for the compliance period of the facility.

(d) The owner or operator must determine whether there is statistically significant evidence of increased contamination for any chemical parameter or hazardous constituent specified in the permit, pursuant to 335-14-5-.06(10)(a), at a frequency specified under 335-14-5-.06(10)(f).

1. In determining whether statistically significant evidence of increased contamination exists, the owner or operator must use the method(s) specified in the permit under 335-14-5-.06(8)(h). The method(s) must compare data collected at the compliance point(s) to a concentration limit developed in accordance with 335-14-5-.06(5).

2. The owner or operator must determine whether there is statistically significant evidence of increased contamination at each monitoring well at the compliance point within a reasonable time period after completion of sampling. The Department will specify that time period in the facility permit, after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of groundwater samples.

(e) The owner or operator must determine the groundwater flow rate and direction in the uppermost aquifer at least annually.

(f) The Department will specify the frequencies for collecting samples and conducting statistical tests to determine statistically significant evidence of increased contamination in accordance with 335-14-5-.06(8)(g).

(g) Annually, the owner or operator must determine whether additional hazardous constituents from 335-14-5-Appendix IX, which could possibly be present but are not on the detection-monitoring list in the permit, are actually present in the uppermost aquifer and, if so, at what concentration, pursuant to procedures in 335-14-5-.06(9)(f). To accomplish this, the owner or operator must consult with the Department to determine on a case-by-case basis: which sample collection event during the year will involve enhanced sampling; the number of monitoring wells at the compliance point to undergo enhanced sampling; the number of samples to be collected from each of these monitoring wells; and the specific constituents from 335-14-5-Appendix IX for which these samples must be analyzed. If the enhanced sampling event indicates that 335-14-5-Appendix IX constituents are present in the groundwater that are not already identified in the permit as monitoring constituents, the owner or operator may resample within one month or at an alternative site-specific schedule approved by the Department, and repeat the analysis. If the second analysis confirms the presence of new constituents, the owner or operator must report the concentration of these additional constituents to the Department within seven days after the completion of the second analysis and add them to the monitoring list. If the owner or operator chooses not to resample, then he or she must report the concentrations of these additional constituents to the Department within seven days after completion of the initial analysis and add them to the monitoring list.

(h) If the owner or operator determines, pursuant to 335-14-5-.06(10)(d) that any concentration limits under 335-14-5-.06(5) are being exceeded at any monitoring well at the point of compliance, he or she must:

1. Notify the Department of this finding in writing within seven days. The notification must indicate what concentration limits have been exceeded.

2. Submit to the Department an application for a permit modification to establish a corrective action program meeting the requirements of 335-14-5-.06(11) within 180 days, or within 90 days if an engineering feasibility study has been previously submitted to the Department under 335-14-5-.06(9)(g)5. The application must at a minimum include the following information:

(i) A detailed description of corrective actions that will achieve compliance with the groundwater protection standard specified in the permit under 335-14-5-.06(10)(a); and

(ii) A plan for a groundwater monitoring program that will demonstrate the effectiveness of the corrective action. Such a groundwater monitoring program may be based on a compliance monitoring program developed to meet the requirements of 335-14-5-.06(10).

(i) If the owner or operator determines, pursuant to 335-14-5-.06(10)(d), that the groundwater concentration limits under 335-14-5-.06(10) are being exceeded at any monitoring well at the point of compliance, he or she may demonstrate that a source other than a regulated unit caused the contamination or that the detection is an artifact caused by an error in sampling, analysis, or statistical evaluation or natural variation in the groundwater. In making a demonstration under 335-14-5-.06(10)(i), the owner or operator must:

1. Notify the Department in writing within seven days that he intends to make a demonstration under 335-14-5-.06(10);

2. Within 90 days, submit a report to the Department which demonstrates that a source other than a regulated unit caused the standard to be exceeded or that the apparent noncompliance with the standards resulted from error in sampling, analysis, or evaluation;

3. Within 90 days, submit to the Department an application for a permit modification to make any appropriate changes to the compliance monitoring program at the facility; and

4. Continue to monitor in accord with the compliance monitoring program established under 335-14-5-.06(10).

(j) If the owner or operator determines that the compliance monitoring program no longer satisfies the requirements of this section, he must, within 90 days, submit an application for a permit modification to make any appropriate changes to the program.

(11) Corrective action program. An owner or operator required to establish a corrective action program under 335-14-5-.06 must, at a minimum, discharge the following responsibilities:

(a) The owner or operator must take corrective action to ensure that regulated units are in compliance with the groundwater protection standard under 335-14-5-.06(3). The Department will specify the groundwater protection standard in the facility permit, including:

1. A list of the hazardous constituents identified under 335-14-5-.06(4);

2. Concentration limits under 335-14-5-.06(5) for each of those hazardous constituents;

3. The compliance point under 335-14-5-.06(6); and

4. The compliance period under 335-14-5-.06(7).

(b) The owner or operator must implement a corrective action program that prevents hazardous constituents from exceeding their respective concentration limits at the compliance point by removing the hazardous waste constituents or treating them in place. The permit will specify the specific measures that will be taken.

(c) The owner or operator must begin corrective action within a reasonable time period after the groundwater protection standard is exceeded. The Department will specify that time period in the facility permit. If a facility permit includes a corrective action program in addition to a compliance monitoring program, the permit will specify when the corrective action will begin and such a requirement will operate in lieu of 335-14-5-.06(10)(i)2.

(d) In conjunction with a corrective action program, the owner or operator must establish and implement a groundwater monitoring program to demonstrate the effectiveness of the corrective action program. Such a monitoring program may be based on the requirements for a compliance monitoring program under 335-14-5-.06(10) and must be as effective as that program in determining compliance with the groundwater protection standard under 335-14-5-.06(3) and in determining the success of a corrective action program under 335-14-5-.06(11)(e), where appropriate.

(e) In addition to the other requirements of 335-14-5-.06(11), the owner or operator must conduct a corrective action program to remove or treat in place any hazardous constituents under 335-14-5-.06(4) that exceed concentration limits under 335-14-5-.06(5) in groundwater:

1. Between the compliance point under 335-14-5-.06(6) and the downgradient property boundary;

2. Beyond the facility boundary, where necessary to protect human health and the environment, unless the owner or operator demonstrates to the satisfaction of the Department that, despite the owner's or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake such action. The owner/operator is not relieved of all responsibility to clean up a release that has migrated beyond the facility boundary where off-site access is denied. On-site measures to address such releases will be determined on a case-by-case basis.

3. Corrective action measures under 335-14-5-.06(11)(e) must be initiated and completed within a reasonable period of time considering the extent of contamination; and

4. Corrective action measures under 335-14-5-.06(11)(e) may be terminated once the concentrations of hazardous constituents under 335-14-5-.06(4) are reduced to levels below their respective concentration limits under 335-14-5-.06(5).

(f) The owner or operator must continue corrective action measures during the compliance period to the extent necessary to ensure that the groundwater protection standard is not exceeded. If the owner or operator is conducting corrective action at the end of the compliance period, he must continue that corrective action for as long as necessary to achieve compliance with the groundwater protection standard. The owner or operator may terminate corrective action measures taken beyond the period equal to the active life of the waste management area (including the closure period) if he can demonstrate, based on data from the groundwater monitoring program under 335-14-5-.06(11)(d), that the groundwater protection standard of 335-14-5-.06(3) has not been exceeded for a period of three consecutive years. After such demonstration has been determined adequate by the Department, the owner or operator shall implement a monitoring plan under 335-14-5-.06(9) or (10) as specified by the Department.

(g) The owner or operator must report in writing to the Department on the effectiveness of the corrective action program. The owner or operator must submit these reports annually.

(h) If the owner or operator determines that the corrective action program no longer satisfies the requirements of this section, he must, within 90 days, submit an application for a permit modification to make any appropriate changes to the program.

(i) The owner or operator must provide financial assurance for corrective action in compliance with 335-14-5-.06(12)(e).

(12) Corrective action for solid waste management units.

(a) The owner or operator of a facility seeking a permit for the treatment, storage, or disposal of hazardous waste must institute corrective action as necessary to protect human health and the environment for all releases of hazardous waste or constituents from any solid waste management unit at the facility, regardless of the time at which waste was placed in such unit.

(b) Corrective action will be specified in the permit in accordance with 335-14-5-.06 and 335-14-5-.19. The permit will contain schedules of compliance for such corrective action (where such corrective action cannot be completed prior to issuance of the permit) and land use controls as required by 335-14-5-.06(12)(f).

(c) The owner or operator must implement corrective actions beyond the facility property boundary, where necessary to protect human health and the environment, unless the owner or operator demonstrates to the satisfaction of the Department that, despite the owner's or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake such actions. The owner/operator is not relieved of all responsibility to clean up a release that has

migrated beyond the facility boundary where off-site access is denied. On-site measures to address such releases will be determined on a case-by-case basis.

(d) 335-14-5-.06(12) does not apply to remediation waste management sites unless they are part of a facility subject to a permit for treating, storing or disposing of hazardous wastes that are not remediation wastes.

(e) The owner or operator must maintain a detailed estimate of the cost of corrective action required by 335-14-5-.06(11), 335-14-5-.06(12)(b), and 335-14-5-.06(12)(c). The cost estimate must be in accordance with 335-14-5-.08(10). Financial assurance must be provided in accordance with 335-14-5-.08(11).

(f) Where corrective actions will result in hazardous constituents remaining in place at a facility in concentrations exceeding those appropriate for unrestricted use, the owner or operator must:

1. Establish appropriate land-use controls designed to minimize exposure to hazardous constituents remaining in place and to limit inappropriate uses of the contaminated areas of the facility; and

2. include the following notice in any deed, mortgage, deed to secure debt, lease, rental agreement, or other instrument given or caused to be given by the owner or operator which creates an interest in the facility or the contaminated area of the facility: "This property has been cleaned up to standards less stringent than those required for unrestricted use due to the presence of substances regulated under state law. Certain uses of this property may require additional cleanup. Contact the property owner or the Alabama Department of Environmental Management for further information concerning this property"; and

3. submit documentation of compliance with the requirements of the Uniform Environmental Covenants Program in ADEM Admin. Code Rule 335-5.

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