

**TRANSMITTAL SHEET FOR  
NOTICE OF INTENDED ACTION**

Control 335 Department or Agency Environmental Management

Rule No. 335-6-8-.22

Rule Title: Class VI Well Testing and Monitoring Requirements

X New          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? N/A

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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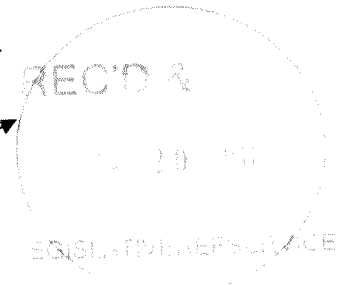
Certification of Authorized Official

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 Marilyn Elliott

Date May 20, 2011

Date Filed



APA-2  
11/96

**ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
WATER DIVISION**

**NOTICE OF INTENDED ACTION**

**AGENCY NAME:** Alabama Department of Environmental Management

<b>Rule NO.</b>	<b>Title</b>
335-6-8-.01	Purpose
335-6-8-.02	Definitions
335-6-8-.05	Prohibited Actions
335-6-8-.07	Permit Issuance Procedures
335-6-8-.08	Public Notice Requirements
335-6-8-.10	Class V Well Permit Application Requirements
335-6-8-.12	Class V Well Permit Requirements
335-6-8-.13	Class VI Well Applicability and General Requirements
335-6-8-.14	Class VI Well Permit Application and Application Review Requirements
335-6-8-.15	Class VI Well Minimum Criteria for Siting
335-6-8-.16	Class VI Well Area of Review and Area of Review Corrective Action
335-6-8-.17	Class VI Well Financial Responsibility Requirements
335-6-8-.18	Class VI Well Construction Requirements
335-6-8-.19	Class VI Well Logging, Sampling and Testing Requirements Prior to Injection Well Operation
335-6-8-.20	Class VI Well Operating Requirements
335-6-8-.21	Class VI Well Mechanical Integrity Requirements
335-6-8-.22	Class VI Well Testing and Monitoring Requirements
335-6-8-.23	Class VI Well Reporting Requirements
335-6-8-.24	Class VI Well Plugging Requirements
335-6-8-.25	Class VI Well Post-Injection Site Care and Site Closure Requirements
335-6-8-.26	Class VI Well Emergency and Remedial Response Requirements
335-6-8-.27	Class VI Well Permit Requirements
335-6-8-.28	Technical Submittals and Other Reports to the Department
335-6-8-.29	Coordination with EPA
335-6-8-.30	Confidentiality

**INTENDED ACTION:** Revise Division 6 of the ADEM Administrative Code with the addition or amendment of Rules 335-6-8-.01 (Purpose), 335-6-8-.02 (Definitions), 335-6-8-.05 (Prohibited Actions), 335-6-8-.07 (Permit Issuance Procedures), 335-6-8-.08

(Public Notice), 335-6-8-.10 (Class V Well Permit Application Requirements), 335-6-8-.12 (Permit Issuance Procedures), 335-6-8-.13 (Class VI Well Applicability and General Requirements), 335-6-8-.14 (Class VI Well Permit Application and Application Review Requirements), 335-6-8-.15 (Class VI Well Minimum Criteria for Siting), 335-6-8-.16 (Area of Review and Area of Review Corrective Action), 335-6-8-.17 (Class VI Well Financial Responsibility Requirements), 335-6-8-.18 (Class VI Well Construction Requirements), 335-6-8-.19 (Class VI Well Logging, Sampling and Testing Requirements Prior to Injection Well Operation), 335-6-8-.20 (Class VI Well Operating Requirements), 335-6-8-.21 (Class VI Well Mechanical Integrity Requirements), 335-6-8-.22 (Class VI Well Testing and Monitoring Requirements), 335-6-8-.23 (Class VI Well Reporting Requirements), 335-6-8-.24 (Class VI Well Plugging Plan), 335-6-8-.25 (Post-Injection Site Care and Site Closure Requirements), 335-6-8-.26 (Class VI Well Emergency and Remedial Response Requirements), 335-6-8-.27 (Class VI Well Permit Requirements), 335-6-8-.28 (Technical Submittals and Other Reports to the Department), 335-6-8-.29 (Coordination with EPA), and 335-6-8-.30 (Confidentiality).

**SUBSTANCE OF PROPOSED ACTION:**


Revisions to the Division 6 Code are being proposed to include requirements for Class VI injection wells, for geologic sequestration of carbon dioxide. The proposed additions and amendments are consistent with the federal regulations for Class VI wells published in the Federal Register on December 10, 2010.

**TIME, PLACE, MANNER OF PRESENTING VIEWS:**

Comments may be submitted in writing or orally at a public hearing to be held 1:00 p.m., July 11, 2011, in the ADEM Hearing Room, 1400 Coliseum Blvd., Montgomery, Alabama 36110.

**FINAL DATE FOR COMMENT AND COMPLETION OF NOTICE:** July 11, 2011

**CONTACT PERSON AT AGENCY:** Sonja Massey (334) 271-7832

  
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Lance R. LeFleur  
Director

**335-6-8-.22 Class VI Well Testing and Monitoring Requirements.**

(1) The owner or operator of a Class VI well must prepare, maintain, and comply with a testing and monitoring plan to verify that the geologic sequestration project is operating as permitted and is not endangering USDWs. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. The testing and monitoring plan must be submitted with the permit application, for Department approval, and must include a description of how the owner or operator will meet the requirements of this rule, including accessing sites for all necessary monitoring and testing during the life of the project. Testing and monitoring associated with geologic sequestration projects must, at a minimum include:

(a) Analysis of the carbon dioxide stream with sufficient frequency to yield data representative of its chemical and physical characteristics;

(b) Installation and use, except during well workovers as defined in 335-6-8-.20(4), of continuous recording devices to monitor injection pressure, rate, and volume; the pressure on the annulus between the tubing and the long string casing; and the annulus fluid volume added;

(c) Corrosion monitoring of the well materials for loss of mass, thickness, cracking, pitting, and other signs of corrosion, which must be performed on a quarterly basis to ensure that the well components meet the minimum standards for material strength and performance set forth in 335-6-8-.18(2), by:

1. Analyzing coupons of the well construction materials placed in contact with the carbon dioxide stream; or

2. Routing the carbon dioxide stream through a loop constructed with the material used in the well and inspecting the materials in the loop; or

3. Using an alternative method approved by the Department;

(d) Periodic monitoring of the ground water quality and geochemical changes above the confining zone(s) that may be a result of carbon dioxide movement through the confining zone(s) or additional identified zones including:

1. The location and number of monitoring wells based on specific information about the geologic sequestration project, including injection rate and volume, geology, the presence of artificial penetrations, and other factors; and

2. The monitoring frequency and spatial distribution of monitoring wells based on baseline geochemical data that has been collected under 335-6-8-.14(1)(f) and on any modeling results in the area of review evaluation required by 335-6-8-.16(3).

(e) A demonstration of external mechanical integrity pursuant to 335-6-8-.21(3) at least once per year until the injection well is plugged; and, if required by the Department, a casing inspection log pursuant to requirements at 335-6-8-.21(4) at a frequency established in the testing and monitoring plan;

(f) A pressure fall-off test at least once every five years unless more frequent testing is required by the Department based on site-specific information;

(g) Testing and monitoring to track the extent of the carbon dioxide plume and the presence or absence of elevated pressure (e.g., the pressure front) by using:

1. Direct methods in the injection zone(s); and,

2. Indirect methods (e.g., seismic, electrical, gravity, or electromagnetic surveys and/or down-hole carbon dioxide detection tools), unless the Department determines, based on site-specific geology, that such methods are not appropriate;

(h) The Department may require surface air monitoring and/or soil gas monitoring to detect movement of carbon dioxide that could endanger a USDW.

1. Design of Class VI surface air and/or soil gas monitoring must be based on potential risks to USDWs within the area of review;

2. The monitoring frequency and spatial distribution of surface air monitoring and/or soil gas monitoring must be decided using baseline data, and the monitoring plan must describe how the proposed monitoring will yield useful information on the area of review delineation and/or compliance with standards under 335-6-8-.05 of this chapter;

3. If an owner or operator demonstrates that monitoring employed under §§ 98.440 to 98.449 (Clean Air Act, 42 U.S.C. 7401 *et seq.*) accomplishes the goals of paragraphs (h)(1) and (2) of this section, and meets the requirements pursuant to 335-6-8-.23(1)(c)(5), the Department must approve the use of monitoring employed under §§ 98.440 to 98.449 if surface air/soil gas monitoring is required by the Department. Compliance with §§ 98.440 to 98.449 pursuant to this provision is considered a condition of the Class VI permit;

(i) Any additional monitoring, as required by the Department, necessary to support, upgrade, and improve computational modeling of the area of review evaluation required under 335-6-8-.16(3) and to determine compliance with standards under 335-6-8-.05 of this chapter;

(j) The owner or operator shall periodically review the testing and monitoring plan to incorporate monitoring data collected under any requirements for Class VI wells of this chapter, operational data collected under 335-6-8-.20, and the most recent area of review reevaluation performed under 335-6-8-.16(5). In no case shall the owner or operator review the testing and monitoring plan less often than once every five years. Based on this review, the owner or operator shall submit an amended testing and monitoring plan or

demonstrate to the Department that no amendment to the testing and monitoring plan is needed. Any amendments to the testing and monitoring plan must be approved by the Department, must be incorporated into the permit, and are subject to the permit modification requirements at 335-6-8-.08 of this chapter, as appropriate. Amended plans or demonstrations shall be submitted to the Department as follows:

1. Within one year of an area of review reevaluation;
  2. Following any significant changes to the facility, such as addition of monitoring wells or newly permitted injection wells within the area of review, on a schedule determined by the Department; or
  3. When required by the Department.
- (k) A quality assurance and surveillance plan for all testing and monitoring requirements.

**Author:** Sonja Massey.

**Statutory Authority:** Code of Alabama 1975, §§ 22-22-9, 22-22A-5, 22-22A-6, 22-22A-8.

**History:** XXXXXX, 2011.