

APA-2
11/96

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
WATER DIVISION

NOTICE OF INTENDED ACTION

AGENCY NAME: Alabama Department of Environmental Management

Rule NO.	Title
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



Lance R. LeFleur
Director

335-6-8-.02 Definitions. Whenever used in this chapter, unless a different meaning clearly appears from the context or unless a different meaning is stated in a definition applicable to only a portion of this chapter, the following definitions shall apply:

(a) "Abandoned Well" means an injection well into which the injection has been terminated or a well in such a state of disrepair as to be unusable. A temporary abandonment shall be when injection has ceased but is expected to resume within one year. A permanent abandonment shall be when injection has ceased and no future injection is planned or when no injection has taken place for a period of one year or more.

(b) "Administrator" means the Administrator of the United States Environmental Protection Agency (EPA) or an authorized representative.

(c) "Area of Review" means the area around an injection well or well field in which migration of injected fluids and/or pollutants or formation fluids into an Underground Source of Drinking Water (USDW) may occur.

(d) "Area of Review Corrective Action" means the use of Department-approved methods to ensure that wells within the area of review do not serve as conduits for the movement of fluids into underground sources of drinking water (USDW).

(e) "Aquiclude" means a formation that stores water, but does not transmit significant quantities of water, and which is often referred to as a confining interval.

(f) "Aquifer" means a geological formation, group of formations or part of a formation that is capable of yielding a significant amount of water to a well or spring.

(g) "Best Management Practices" ("BMP's") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the state. BMP's also include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

(h) "Blow-out Preventer" means a mechanical device used to keep pressurized fluids in a well from leaving the well head, while allowing access to the well casing by drilling tools and well-logging tools.

(i) "Bypass" means the intentional diversion of waste streams from any portion of a waste treatment facility.

(j) "Carbon Dioxide Plume" means the extent underground, in three dimensions, of an injected carbon dioxide stream.

(k) "Carbon Dioxide Stream" means carbon dioxide that has been captured from an emission source (e.g., a power plant), plus incidental associated substances derived from the source materials and the capture process, and any substances added to the stream to enable or improve the injection process. This subpart does not apply to any carbon dioxide stream that meets the definition of a hazardous waste under 40 CFR part 261.

(l) "Casing" means a heavy pipe or tubing which is lowered into a borehole, during or after drilling in order to support the sides of a hole and prevent caving; to prevent loss of drilling mud into porous formations; or to prevent water, gas or other fluid from entering or leaving the hole.

(m) "Cementing" means the operation where a cement slurry is placed into a borehole and/or forced behind a casing or between casings.

(n) "Cesspool" means a drywell that receives untreated sanitary waste containing human excreta, and which sometimes has an open bottom and/or perforated sides.

(o) "Class I Well" means an injection well used to inject a fluid and/or pollutant beneath the lowermost formation which contains an underground source of drinking water within five miles of the borehole.

(p) "Class II Well" means an injection well which is used:

1. To inject brine or other fluids which are brought to the surface in connection with oil or natural gas production and which may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection;
2. For enhanced recovery of oil or natural gas; or
3. For storage of hydrocarbons which are liquid at standard temperature and pressure.

(q) "Class III Well" means an injection well which is used for extraction of minerals or energy, including mining of sulfur by the Frasch process, solution mining of minerals, in-situ combustion of fossil fuel and recovery of geothermal energy to produce electricity. Fossil fuels include coal, tar sands, oil shale and any other fossil fuel which can be mined by in-situ combustion. Geothermal recovery wells used for heating and aquaculture are not considered Class III wells and are classified as Class V wells.

(r) "Class IV Well" means an injection well which is used for injection of a hazardous or radioactive waste into or above a formation which contains an USDW. A Class IV well does not include injection of treated contaminated ground water into the same formation from which it was drawn as a result of a cleanup of a release under the Comprehensive Environmental Response,

Compensation, and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA), or the Alabama Hazardous Waste Minimization Act, Code of Alabama § 22-30-1 through 22-30-24.

(ps) "Class V Well" means an injection well not included in Classes I, II, III, IV or VI. Class V wells include but are not limited to:

1. Injection wells used to inject treated ground water as part of a ground water corrective action system;
2. Injection wells used to return the water used for heating or cooling in a heat pump to the supply aquifer (air conditioning return flow wells);
3. Cesspools, drywells, or other similar systems designed for injection;
4. Injection wells used for the injection of water previously used for cooling (cooling water return flow wells);
5. Injection wells used to drain surface fluid, primarily storm runoff into a subsurface formation (drainage wells);
6. Injection wells used to replenish the water in an aquifer (recharge wells);
7. Injection wells used for the injection of water into a fresh water aquifer to prevent the intrusion of salt water into the fresh water (salt water intrusion barrier wells);
8. Injection wells used for the injection of a mixture of water and sand, mill tailings or other solids into mined out portions of subsurface mines or injection wells used for the injection of wastewater from a coal washing operation into subsurface mines;
9. Injection wells used for the injection of any treated sanitary waste from business establishment, multiple dwelling, community or regional septic tank or other treatment system;
10. Injection wells (not used for the purpose of oil or natural gas production) used for injection into a non-oil or gas producing zone to reduce or eliminate subsidence associated with the overdraft of fresh water (subsidence control wells);
11. Injection wells used in heating, aquaculture and production of electric power (geothermal wells);
12. Injection wells used for injection of treated commercial or industrial fluids or pollutants, such as motor vehicle waste disposal wells, which are not hazardous or toxic;

13. Injection wells used for solution mining of conventional mines such as stopes leaching;

14. Injection wells used to inject spent brine into the same formation from which it was withdrawn after extraction of halogens or their salts;

15. Injection wells used for in situ recovery of lignite, coal, tar sands, and oil shale;

16. Injection wells used in experimental technologies.

(t~~e~~) "Class VI Well" means a well that is not experimental in nature that is used for geologic sequestration of carbon dioxide beneath the lowermost formation containing a USDW.

(u~~f~~) "Class VI Well Area of Review" means the region surrounding the geologic sequestration project where USDWs may be endangered by the injection activity. The area of review is delineated using computational modeling that accounts for the physical and chemical properties of all phases of the injected carbon dioxide stream and displaced fluids, and is based on available site characterization monitoring, and operational data as set forth in 335-6-8-.16.

(v~~e~~) "Completion" means the subsurface preparation of an injection well as approved by the Department.

(w) "Confining Zone" means a geologic formation, group of formations, or part of a formation stratigraphically overlying the injection zone(s) that acts as a barrier to fluid movement.

(x~~f~~) "Construction" means that the owner or operator has:

1. Entered into a binding contractual obligation for the purpose of placement, assembly, or installation of facilities or equipment which are intended to be used in its operation within a reasonable time. Options to purchase or contracts which can be terminated or modified without substantial loss, and contracts for feasibility, engineering, and design studies do not constitute a contractual obligation under the paragraph; or

2. Begun, or caused to begin as part of a continuous on-site construction program:

(i) Any placement, assembly, or installation of facilities or equipment; or

(ii) Significant site preparation work including clearing, excavation, or removal of existing buildings, structures, or facilities which is necessary for the placement, assembly, or installation of new source facilities or equipment.

(s~~y~~) "Corrective Action" means remedial action taken to mitigate or correct the introduction of pollutants to ground water, surface water or soils.

the discharge from which could result in the introduction of pollutants to ground water or surface water.

(zs) "Department" means the Alabama Department of Environmental Management, established by the Alabama Environmental Management Act, Code of Alabama 1975, §§ 22-22A-1 to 22-22A-16.

(aat) "Director" means the Director of the Department or an authorized representative.

(bb*) "Discharge" means the addition, introduction, leaking, spilling or emitting of any sewage, industrial waste, pollutant or other wastes into the waters of the state.

(ccv) "Draft Permit" means a document indicating the Department's tentative decision to issue, modify and issue, revoke and reissue, or reissue a permit. A denial of a request for issuance, modification and issuance, revocation and reissuance, or termination is not a draft permit.

(ddw) "Drywell" means a well, other than an improved sinkhole or subsurface fluid distribution system, completed above the water table so that its bottom and sides are typically dry except when receiving fluids and/or pollutants.

(ee*) "Existing Injection Well" means a permitted injection well that is in operation or under construction on the effective date of this chapter.

(ffy) "Facility or Activity" means any injection well or other facility or activity that is subject to regulation under the UIC program.

(ggz) "Fluid" means a material or substance which flows or moves whether in a semi-solid, liquid, sludge, gas or any other form or state.

(hhaa) "Formation" means a body of consolidated or unconsolidated rock characterized by a degree of lithologic homogeneity which is prevailingly but not necessarily, tabular and is mappable on the earth's surface or traceable in the subsurface.

(iibb) "Formation Fluid" means a fluid present naturally as opposed to a fluid introduced into a formation from drilling or well injection.

(jje) "General Permit" means a permit that may be issued to an owner or operator of Class V wells with same or similar facilities and activities that generate similar fluids and or pollutants for well injection when in the opinion of the Department, the injection is more appropriately controlled by this type of permit.

(kk) "Geologic Sequestration" means the long-term containment of a gaseous, liquid, or supercritical carbon dioxide stream in subsurface geologic formations. This term does not apply to carbon dioxide capture or transport.

(ll) "Geologic Sequestration Project" means an injection well or wells used to emplace a carbon dioxide stream beneath the lowermost formations containing a USDW.

(~~lmm~~) "Ground Water" means water below the land surface in a zone of saturation.

(~~nee~~) "Hazardous Waste" means a hazardous waste as defined by Code of Alabama § 22-30-3(5).

(~~oof~~) "Improved Sinkhole" means a naturally occurring karst depression or other natural crevice found in volcanic terrain and other geologic settings which have been modified by man for the purpose of injection.

(~~ppgg~~) "Industrial Wastes" means liquid or other wastes resulting from any process of industry, manufacture, trade or business or from the development of natural resources.

(~~qqhh~~) "Injection" means the subsurface emplacement of fluids and/or pollutants through a well.

(~~rrh~~) "Injection Well" means a well that is used for well injection.

(~~ssj~~) "Injection Zone" means the formation, group of formations or part of a formation receiving fluids and/or pollutants through an injection well.

(~~tt~~) "Injection Zone Class VI" means a geologic formation, group of formations, or part of a formation that is of sufficient areal extent, thickness, porosity, and permeability to receive carbon dioxide through a well or wells associated with a geologic sequestration project.

(~~uuuk~~) "Modification of a Well" means any operation requiring reworking of an injection well causing a change in the physical construction of the well after its initial completion, and not requiring a permit modification. Such reworking operations include, but are not limited to, squeezing, reperforating, setting a liner, and side tracking of a well into the same injection zone. Routine maintenance where the physical construction and/or operations are not changed does not constitute modification of a well. Modifications resulting in new injection zones are not allowed except by permit modification.

(~~vvh~~) "Motor Vehicle Waste Disposal Well" means an injection well that receives or has received fluids from motor vehicular repair or maintenance activities, such as an auto body repair shop, automotive repair shop, new and used car dealership, specialty repair shop (e.g., transmission and muffler repair shop), or any facility that does any vehicular repair work.

(~~wwmm~~) "New Injection Well" means an injection well other than an existing injection well.

(~~xxhh~~) "Operator" means the person responsible for the operation of a treatment system and/or an injection well.

(yyee) "Other Wastes" means all other substances, whether liquid, gaseous, or solid, or energy in the form of heat from all other sources including but not limited to, any vessels or other conveyances traveling or using the waters of this state, except industrial wastes or sewage.

(zzff) "Owner" means a person that owns a facility or activity subject to regulation under the UIC Program.

(aaaqq) "Packer" means a mechanical or physical device used to seal off certain sections of an injection well.

(bbbtt) "Permit" means any issued permit under the UIC Program.

(cccss) "Permittee" means a person to whom a permit has been issued under this chapter.

(dddtt) "Person" means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

(eeett) "Plugging" means the act or process of permanently stopping anythe flow of any pollutants, water, oil, gas, formation fluids or surface waters into or out of a borehole or well-or-out-of-a-borehole-or-well-into-formations-or-to-the-surface.

(ffft) "Point of Injection" means the last accessible sampling point prior to fluids and/or pollutants being injected into an injection well.

(gggww) "Pollutant" includes but is not limited to any physical, chemical, biological, sanitary, industrial, radioactive substance, matter, or waste, or other waste.

(hhhxx) "Pollution" means the discharge of a pollutant or combination of pollutants.

(iii-) "Post-Injection Site Care" means appropriate monitoring and other actions (including corrective action) needed following cessation of injection to ensure that USDWs are not endangered, as required under 335-6-8-.25

(jjj-) "Pressure Front" means the zone of elevated pressure that is created by the injection of carbon dioxide into the subsurface. For the purposes of this chapter, the pressure front of a carbon dioxide plume refers to a zone where there is a pressure differential sufficient to cause the movement of injected fluids or formation fluids into a USDW.

(kkkyy) "Radioactive Waste" means any waste which contains radioactive materials in concentrations which exceed those listed in 10 CFR Part 20, Appendix B, Table II, Column 2.

(lll~~zz~~) "Sanitary Waste" means liquid or solid wastes originating solely from humans and human activities, such as wastes collected from toilets, showers, wash basins, sinks used for cleaning domestic areas, sinks used for food preparation, clothes washing operations, and sinks or washing machines where food and beverage serving dishes, glasses, and utensils are cleaned. Sources of these wastes may include single or multiple residences, hotels and motels, restaurants, bunkhouses, schools, ranger stations, crew quarters, guard stations, campgrounds, picnic grounds, day-use recreation areas, other commercial facilities, and industrial facilities provided the waste is not mixed with industrial waste.

(mmm~~aaa~~) "Schedule of Compliance" means a schedule of remedial measures included in a permit including an enforceable sequence of interim requirements leading to compliance with the appropriate regulations.

(nnn~~bbb~~) "Septic System" means a treatment tank and injection well that is used to treat and inject sanitary waste and is typically comprised of a septic tank and subsurface fluid distribution system.

(ooo~~eee~~) "Sewage" means water-carried human wastes from residences, buildings, industrial establishments or other places, together with such ground, surface, storm or other wastes as may be present.

(ppp~~ddd~~) "Site" means the area where any facility or activity is physically located or conducted, including adjacent land used in connection with the facility or activity.

(qqq) "Site Closure" means the point/time, as determined by the Department following the requirements under 335-6-8-.25, at which the owner or operator of a geologic sequestration site is released from post-injection site care responsibilities.

(eee~~rrr~~) "State/EPA UIC Memorandum of Agreement" means an official document signed by the Director and Administrator which describes the functions and responsibilities of the Department and EPA in the conduct or management of the UIC Program.

(fff~~sss~~) "Subsurface Fluid Distribution System" means an assemblage of perforated pipes, drain tiles, or other similar mechanisms intended to distribute and inject fluids and/or pollutants below the surface of the ground.

(eee~~ttt~~) "Total Dissolved Solids (TDS)" means the total dissolved solids as determined by use of the method specified in 40 CFR Part 136.

(uuu) "Transmissive Fault or Fracture" means a fault or fracture that has sufficient permeability and vertical extent to allow fluids to move between formations.

(vvv~~hhh~~) "Underground Injection Control (UIC)" means the regulatory management and control of well injection.

(###www) "UIC Program" means the EPA approved state program for management and regulation of well injection.

(xxx###) "Underground Source of Drinking Water (USDW)" means an aquifer or portion thereof:

1. Which currently supplies drinking water for human consumption; or
2. In which the ground water contains fewer than 10,000 mg/l of total dissolved solids.

(yyvkkk) "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the owner or operator. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

(zzz###) "Vertical Well" means a bored, drilled, or driven shaft whose depth is greater than the largest surface dimension; or, a dug hole whose depth is greater than the largest surface dimension.

(aaaa#####) "Waters of the state" means all waters of any river, stream, watercourse, pond, lake, coastal, ground or surface water, wholly or partially within the state, natural or artificial. This does not include waters which are entirely confined and retained completely upon the property of a person unless such waters are used in interstate commerce.

(bbbb###) "Well" means a borehole; or, drilled or driven shaft; or, a dug hole; or, an improved sinkhole; or, a subsurface fluid distribution system; or a cesspool; or a drywell; or, any other system which results in subsurface emplacement of fluids and/or pollutants.

(ccccooo) "Well Field" means a well or group of wells of similar construction which are used for the same purpose, penetrate essentially the same geological formations and are located in the same area.

(ddddppp) "Well Injection" means injection.

(eeeeqqq) "Well Log" means a recording obtained from a well, showing such information as resistivity, radioactivity, spontaneous potential, acoustic velocity, and other information as a function of depth and/or time.

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

History: Adopted June 19, 1982; **Repealed:** April 11, 2002. **Readopted:** May 16, 2002.

Amended: July 28, 2009; XXXXXX, 2011.