

**RULES
OF
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
WATER SUPPLY DIVISION**

**CHAPTER 0400-45-06
UNDERGROUND INJECTION CONTROL**

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0400-45-06-.01 AUTHORITY AND PURPOSE.

The purpose of these regulations is to protect the ground water resources of the State. The authority for this rule is included in the authority given the board to protect waters of the State pursuant to T.C.A. § 69-3-105. As provided in T.C.A. § 69-3-103(29), "Waters" means any and all water, public or private, on or beneath the surface of the ground, which are contained within, flow through, or border upon Tennessee or any portion thereof except those bodies of water confined to and retained within the limits of private property in single ownership which do not combine or effect a junction with natural surface or underground waters.

Authority: T.C.A. §§ 69-3-101 et seq. and 4-5-201 et seq. **Administrative History:** Original rule filed September 12, 2012; effective December 11, 2012. Rule renumbered from 1200-04-06.

0400-45-06-.02 GENERAL.

(1) Use of Number and Gender

As used in these rules:

- (a) Words in the masculine gender also include the feminine and neuter genders; and
- (b) Words in the singular include the plural; and
- (c) Words in the plural include the singular.

(2) Rule Structure

These rules are organized, numbered, and referenced according to the following outline form:

- (1) paragraph
 - (a) subparagraph
 - 1. part

(Rule 0400-45-06-.02, continued)

- (i) subpart
 - (l) item
 - I. subitem
 - A. section
 - (A) subsection

(3) Definitions

For the purposes of the Underground Injection Control program established in this chapter, the definition of any word or phrase used in these regulations shall be the same as given in T.C.A. § 69-3-103 except the following words or phrases shall have the following meanings:

“Aquifer” means a formation, group of formations, or part of a formation that contains a sufficient quantity of permeable material to yield significant quantities of water for wells and springs.

“Area of Review” (AOR) means the area surrounding an injection well described according to the criteria set forth in paragraph (3) of Rule 0400-45-06-.09 or in the case of an area permit, the project area plus a circumscribing area the width of which is either a mile or a number calculated according to the criteria set forth in the formula for injection well AOR.

“Casing” means a tubular retaining structure which is installed in an excavated hole to maintain the well opening.

“Cementing” means the act of employing cementitious material in the annulus behind the well casing.

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

“Commissioner” means the Commissioner of environment and conservation or the commissioner’s duly authorized representative and, in the event of the commissioner’s absence or a vacancy in the office of commissioner, the deputy commissioner.

“Compatibility” means substances capable of being mixed or existing together.

“Composite sample” means a mixture of grab samples collected at the same sampling point at different times.

“Confining unit or zone” means a geological formation, group of formations, or part of a formation that limits fluid movement from an injection zone.

“Confining bed” means a layer of distinctly less permeable material stratigraphically adjacent to one or more aquifers.

“Contamination” means the addition of any substance or matter to water.

“Draft permit” means a document prepared under paragraph (7) of Rule 0400-45-06-.08 indicating the Commissioner’s tentative decision to issue or deny, modify, revoke and reissue, terminate, or reissue a “permit.” A notice of intent to terminate a permit, and a notice of intent to deny a permit, as discussed in paragraph (9) of Rule 0400-45-06-.08 are types of

(Rule 0400-45-06-.02, continued)

“draft permits.” A denial of a request for modification, revocation and reissuance, or termination, as discussed in paragraph (9) of Rule 0400-45-06-.08 is not a “draft permit.”

“Drilling mud” means a heavy suspension used in drilling an “injection well,” introduced down the drill pipe and through the drill bit.

“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.

“Enhanced recovery” means increased recovery from a pool achieved by artificial means or by the application of energy extrinsic to the pool.

“Emergency permit” means a UIC “permit” issued in accordance with paragraph (8) of Rule 0400-45-06-.07.

“Environmental Protection Agency” (“EPA”) means the United States Environmental Protection Agency.

“EPA” means the United States Environmental Protection Agency.

“Exempted aquifer” means an “aquifer” or its portion that meets the criteria in the definition of “underground source of drinking water” but which has been exempted according to the procedures in Rule 0400-45-06-.04.

“Existing injection well” means an “injection well” that began injection of fluids into the subsurface prior to the effective date of this rule.

“Facility or activity” means any waste facility or activity (including land or appurtenance thereto) that is subject to regulation under the Tennessee Solid Waste Disposal Act, T.C.A. §§ 68-211-101 et seq., the Tennessee Hazardous Waste Management Act, T.C.A. §§ 68-212-101 et seq., the Water Quality Control Act of 1977, T.C.A. §§ 69-3-101 et seq., or the Tennessee Safe Drinking Water Act of 1983, T.C.A. §§ 68-221-701 et seq.

“Fluids” means materials or substances that flow or move whether semi-solid, liquid, sludge, gas or any other form or state.

“Formation” means a body or stratum of rock characterized by a degree of lithologic homogeneity and is mappable on the earth’s surface or traceable in the subsurface.

“Formation fluid” means “fluid” present in a “formation” under natural conditions as opposed to fluids introduced into a formation by injection or emplacement by man. This term is synonymous with “native water.”

“Grab sample” means a sample collected at a particular time and place that represents the composition of the source at that time and place.

“Ground water” means water below the land surface and free to move under the influence of gravity.

“Grout” means a fluid mixture of cement and water or other cementitious material of a consistency that can be forced through a pipe under hydraulic pressure.

“Hazardous waste” means a hazardous waste as defined by rule subparagraph (1)(c) of Rule 0400-12-01-.02.

(Rule 0400-45-06-.02, continued)

“Hydrofracture” means the application of pressure sufficient to cause rupture of a subsurface formation.

“Improved Sinkhole” means a naturally occurring karst depression modified by man in such a manner that the chemical, physical, biological, radiological, or bacteriological properties of the water or fluids moving into the subsurface through it have been or will be altered.

“Infiltration cell” means an unlined man-made structure designed for the distribution of fluids into or above a “USDW.”

“Injection well” means structure or device which is used for the emplacement of fluids into a subsurface stratum including, but not limited to:

- (a) a well used for the emplacement of fluids;
- (b) a subsurface fluid distribution system;
- (c) an improved sinkhole; or
- (d) infiltration cell and any other structures or devices designed, constructed or used to emplace fluids into the subsurface, except as provided in paragraph (3) of Rule 0400-45-06-.03; or
- (e) modified recharge point.

“Injection zone” means the formation, group of formations, or part of a formation that receives fluids through an injection well.

“Injectivity index” means the rate of injection in gallons per minute per unit of applied injection pressure in pounds per square inch.

“Innovative technology” means an experimental or unproven procedure, which has not been demonstrated to be feasible under the conditions in which it is being tested.

“Lease” means real property upon which the right to extract oil and gas or other minerals has been granted under contract for a share of the value of the production or an annual rental for a specified period.

“Mechanical integrity” means mechanically complete, performs the function for which it was intended and is unimpaired.

“Modified recharge point” means a naturally occurring karst feature that has been modified by man with a structure or in any other manner that the chemical, physical, biological, radiological or bacteriological properties of the water or fluids moving into the subsurface through it or the ground water has been or will be altered.

“New injection well” means any well that begins injection of fluids into the subsurface after August 9, 1985.

“Owner or operator” means the owner or operator of any “facility or activity” subject to regulation under the UIC program.

“Packer” means a device placed in a well to produce a fluid-tight seal in a section of the well bore or the annulus between the well casing and the inner injection tubing.

(Rule 0400-45-06-.02, continued)

“Permit” means an authorization, license, or equivalent control document issued by EPA or the Commissioner to implement the requirements of these rules. “Permit” includes an area permit and an emergency permit. “Permit” as used in these UIC rules means an individual permit issued under the Water Quality Control Act and does not include an authorization by rule which is a type of general permit under the Water Quality Control Act.

“Person” means an individual, association, partnership, corporation, municipality, State, Federal, or Tribal agency, or an agency or employee thereof.

“Plugging” means the act or process of stopping the flow of water, oil, or gas into or out of a formation through a bore hole or well penetrating that formation.

“Point of Injection” means the last accessible point where a sample may be collected prior to waste fluids being released into the subsurface environment through a Class V injection well.

“Pollution” means such alteration of the physical, chemical, biological, bacteriological, or radiological properties of waters of this State including but not limited to changes in temperature, taste, color, turbidity, or odor of the waters:

- (a) as will result or will likely result in harm, potential harm or detriment of the public health, safety, or welfare;
- (b) as will result or will likely result in harm, potential harm or detriment to the health of animals, birds, fish, or aquatic life;
- (c) as will render or will likely render the waters substantially less useful to domestic, municipal, industrial, agricultural, recreational, or other reasonable uses; or
- (d) as will leave or will likely leave the waters in such condition as to violate any standards of water quality established by Water Quality Control Board.

“Project” means a group of wells in a single operation.

“Produced water” means those waters produced in conjunction with the production of crude oil or natural gas and commonly collected at field storage or disposal facilities including: lease tanks, commingled tank batteries, burn pits, and community or lease wastewater disposal systems.

“Public water system” means a system for the provision of piped water for human consumption if such system has at least fifteen (15) connections or regularly serves at least twenty five (25) individuals at least sixty (60) days out of the year.

“Radioactive material” means any material, solid, liquid, or gas, which emits radiation spontaneously.

“Radioactive waste” means any waste which contains radioactive material in concentrations which exceed those listed in Rule 0400-20-05-.161, Schedule RHS 8-30, Table II, Column 2.

“Recharge point” means a naturally occurring sinkhole or other karst feature that accepts stormwater runoff from unimproved properties.

“Regional rock deformation” means folded, faulted, sheared, compressed or extended rocks which result from various earth forces.

“Sanitary waste” means liquid or solid wastes originating solely from humans and human activities, such as wastes from toilets, showers, wash basins, cleaning, clothes washing, or

(Rule 0400-45-06-.02, continued)

food preparation, together with any waters mixed with or used to convey such wastes, and provided that the waste or water is not mixed with industrial waste.

“Schedule of compliance” means a schedule of remedial measures included in a “permit,” including an enforceable sequence of interim requirements (for example: actions, operations, or milestone events) leading to compliance with the “appropriate Act and regulations.”

“Septic system” means a “well” that is used to emplace sanitary waste below the surface and is typically comprised of a septic tank and subsurface fluid distribution system or disposal system.

“Sewage” means water-carried waste or discharges from human beings or animals, from residences, public or private buildings, or industrial establishments, or boats, together with such other wastes and ground, surface, storm, or other water as may be present; (T.C.A. § 69-3-103(27)).

“Sinkhole” means a naturally occurring closed depression in a karst area characterized by inward drainage (inlets) accepting runoff from the surrounding area and having no visible surface outlet.

“Site” means the land or water area where any facility or activity is physically located or conducted including adjacent land used in connection with the facility or activity.

“Stratum” (plural strata) means a single sedimentary bed or layer, regardless of thickness, that consists of generally the same kind of rock material.

“Subsurface fluid distribution system” (SFDS) means an assemblage of perforated pipes, drain tiles, or mechanisms intended to distribute fluids below the surface of the ground.

“Total Dissolved Solids” means a material that passes through a standard glass fiber filter disk and remains after evaporation and drying to constant weight at 180°C.

“Transferee” means the owner or operator receiving ownership and/or operational control of the well.

“Transferor” means the owner or operator transferring ownership and/or operational control of the well.

“Tremie pipe” means a device, usually small diameter pipe, that carries grouting materials to the bottom of a drill hole and allows the emplacement of the grout from the bottom up without the introduction of appreciable air pockets.

“UIC” means the Underground Injection Control program.

“Underground injection” means a “well injection.”

“Underground source of drinking water” (USDW) means an aquifer or its part that:

- (a) currently supplies any public water system; or
- (b) contains a sufficient quantity of ground water to supply a public water system; and
 1. currently supplies drinking water for human consumption; or
 2. contains fewer than 10,000 mg/L total dissolved solids; and

(Rule 0400-45-06-.02, continued)

- (c) which is not a portion of an aquifer which has been designated by the Commissioner as an Exempted Aquifer.

“Well” means a bored, drilled, driven or dug shaft or hole whose depth is greater than the largest surface dimension or an improved sinkhole; or a subsurface fluid distribution system.

“Well injection” means the subsurface emplacement of fluids through a “well.”

Authority: T.C.A. §§ 69-3-101 et seq. and 4-5-201 et seq. **Administrative History:** Original rule filed September 12, 2012; effective December 11, 2012. Rule renumbered from 1200-04-06.

0400-45-06-.03 INJECTION PROHIBITED.

- (1) Unless excluded under paragraph (3) of this rule, the construction of an injection well, the conversion of a well into an injection well, and the use or operation of an injection well is prohibited unless authorized by an injection well permit or by rule of the Commissioner.
- (2) Wells may not be used for the disposal of radioactive or hazardous waste.
- (3) The following activities are not within the scope of paragraph (1) of this rule:
 - (a) Operation of domestic subsurface fluid distribution systems disposing exclusively of sanitary waste with the capacity of serving less than 20 persons;
 - (b) Operation of facilities injecting natural gas for the purpose of storage; or
 - (c) Operation of wastewater treatment ponds or lagoons permitted to discharge to surface waters under the National Pollutant Discharge Elimination System (NPDES) permitting program.
- (4) These rules do not limit the authority of the Commissioner to abate and prevent pollution of surface or ground water resulting from any injection activity, or other discharge of pollutants, by requiring a permit, by instituting any type of enforcement action under the Water Quality Control Act of 1977, T.C.A. §§ 69-3-101 et seq. or other environmental statute, or by contracting for clean-up under the Tennessee Hazardous Waste Management Act, T.C.A. §§ 68-212-201 et seq., or by other appropriate action.
- (5) The use of any well to dispose of water carrying human waste, household or business waste, raw sewage or the effluent from any septic tank or other sewer system of any kind, unless such well is a subsurface fluid distribution system (SFDS) which is part of a Subsurface Sewage Disposal System (SSDS) permitted under provisions of Rule 0400-48-01-.05 (T.C.A. § 68-221-401 et seq.).
- (6) After the effective date of this rule all classes of new injection wells located within Zone 1 of a community water system’s wellhead protection area as defined in Rule 0400-45-01-.34 under T.C.A. §§ 68-221-701 et seq., the Tennessee Safe Drinking Water Act are prohibited.

Authority: T.C.A. §§ 69-3-101 et seq. and 4-5-201 et seq. **Administrative History:** Original rule filed September 12, 2012; effective December 11, 2012. Rule renumbered from 1200-04-06.

0400-45-06-.04 PREVENTION OF POLLUTION OF GROUND WATER AND IDENTIFICATION OF UNDERGROUND SOURCES OF DRINKING WATER AND EXEMPTED AQUIFERS.

- (1) No owner or operator shall construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant

(Rule 0400-45-06-.04, continued)

may cause a violation of any primary drinking water regulation or may otherwise adversely affect the health of persons. The applicant for a permit shall have the burden of showing that the requirements of this paragraph are met.

- (2) For Class I, II and III wells, if any water quality monitoring of an underground source of drinking water indicates the movement of any contaminant into the underground source of drinking water, except as authorized under this rule, the Commissioner shall prescribe such additional requirements for construction, corrective action, operation, monitoring, or reporting (including closure of the injection well) as are necessary to prevent such movement. In the case of wells authorized by permit, the Commissioner may impose additional requirements by modifying the permit in accordance with Rule paragraph (8) of Rule 0400-45-06-.08 or may terminate the permit in accordance with paragraph (9) of Rule 0400-45-06-.08. Additionally, the Commissioner may assess civil penalties for all permit or rule violations in accordance with T.C.A § 69-3-115.
- (3) For class V wells, if at any time the Commissioner learns that a Class V well may cause a violation of primary drinking water regulations he or she shall:
 - (a) Require the injector to obtain an individual permit; and/or
 - (b) Order the injector to take such actions (including, where required, closure of the injection well) as may be necessary to prevent the violation; and/or
 - (c) Take enforcement action.
- (4) Whenever the Commissioner learns that a Class V well may be otherwise adversely affecting the health of persons, he or she may prescribe such actions as may be necessary to prevent the adverse effect, including any action authorized under paragraph (3) of this rule and assess civil penalties in accordance with T.C.A § 69-3-115.
- (5) Notwithstanding any other provision of this rule, the Commissioner may take emergency action upon receipt of information that a contaminant which is present in or likely to enter a public water system or underground source of drinking water may present an imminent and substantial endangerment to the health of persons. The Commissioner must first determine that local authorities have not taken appropriate action to protect the health of such persons, before taking emergency action.
- (6) Identification of Underground Sources of Drinking Water
 - (a) The Commissioner may identify (by narrative description, illustrations, maps, or other means) and shall protect, except where exempted under subparagraph (b) of this paragraph, as an underground source of drinking water, all aquifers or parts of aquifers which meet the definition of an "underground source of drinking water" in Rule 0400-45-06-.02. Even if an aquifer has not been specifically identified by the commissioner, it is an underground source of drinking water if it meets the definition in Rule 0400-45-06-.02.
 - (b)
 1. The Commissioner may identify (by narrative description, illustrations, maps, or other means) and describe in geographic and/or geometric terms (such as vertical and lateral limits and gradient) which are clear and definite, all aquifers or parts thereof which the Commissioner proposes to designate as exempted aquifers using the criteria in paragraph (7) of this rule.
 2. No designation of an exempted aquifer submitted as part of a UIC Program shall be final until approved by the EPA Administrator.

(Rule 0400-45-06-.04, continued)

3 Subsequent to program approval or promulgation by the EPA, the Commissioner may, after notice and opportunity for a public hearing, identify additional exempted aquifers.

(i) Exemption of aquifers identified under subparagraph (7)(b) of this Rule shall be treated as a program revision under 40 CFR 145.32.

(Note: 40 CFR 145.32 provides that:

(a) Either EPA or the approved state may initiate program revision. Program revision may be necessary when the controlling federal or state statutory or regulatory authority is modified or supplemented. The state shall keep EPA fully informed of any proposed modifications to its basic statutory or regulatory authority, its forms, procedures, or priorities.

(b) Revision of a state program shall be accomplished as follows:

(1) The state shall submit a modified program description, Attorney General's statement, Memorandum of Agreement, or such other documents as EPA determines to be necessary under the circumstances.

(2) Whenever EPA determines that the proposed program revision is substantial, EPA shall issue public notice and provide an opportunity to comment for a period of at least 30 days. The public notice shall be mailed to interested persons and shall be published in the Federal Register and in enough of the largest newspapers in the state to provide statewide coverage. The public notice shall summarize the proposed revisions and provide for the opportunity to request a public hearing. Such a hearing will be held if there is significant public interest based on requests received.

(3) The Administrator shall approve or disapprove program revisions based on the requirements of this part and of the Safe Drinking Water Act.

(4) A program revision shall become effective upon the approval of the Administrator. Notice of approval of any substantial revision shall be published in the Federal Register. Notice of approval of non-substantial program revisions may be given by a letter from the Administrator to the State Governor or his designee.)

(ii) Exemption of aquifers identified under subparagraph (7)(c) of this Rule shall become final if the Commissioner submits the exemption in writing to the EPA Administrator and the EPA Administrator has not disapproved the designation within 45 days. Any disapproval by the EPA Administrator shall state the reasons and shall constitute final Agency action for purposes of judicial review.

(c) 1. For Class III wells, the Commissioner shall require an applicant for a permit which necessitates an aquifer exemption under part (7)(b)1 of this rule to furnish the data necessary to demonstrate that the aquifer is expected to be mineral or hydrocarbon producing. Information contained in the mining plan for the

(Rule 0400-45-06-.04, continued)

proposed project, such as a map and general description of the mining zone, general information on the mineralogy and geochemistry of the mining zone, analysis of the amenability of the mining zone to the proposed mining method, and a time-table of planned development of the mining zone shall be considered by the Commissioner in addition to the information required.

2. For Class II wells, a demonstration of commercial producibility shall be made as follows:
 - (i) For a Class II well to be used for enhanced oil recovery processes in a field or project containing aquifers from which hydrocarbons were previously produced, commercial producibility shall be presumed by the Commissioner upon a demonstration by the applicant of historical production having occurred in the project area or field; and
 - (ii) For Class II wells not located in a field or project containing aquifers from which hydrocarbons were previously produced, information such as logs, core data, formation description, formation depth, formation thickness and formation parameters such as permeability and porosity shall be considered by the Commissioner, to the extent such information is available.

(7) Exempted Aquifers

An aquifer or a portion thereof which meets the criteria for an "underground source of drinking water" may be determined to be an "exempted aquifer" if it meets the following criteria:

- (a) It does not currently serve as a source of drinking water; and
- (b) It cannot now and will not in the future serve as a source of drinking water because:
 1. It is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible;
 2. It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;
 3. It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; or
 4. It is located over a Class III well mining area subject to subsidence or catastrophic collapse;

or
- (c) The total dissolved solids content of the ground water is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system.

Authority: T.C.A. §§ 69-3-101 et seq. and 4-5-201 et seq. **Administrative History:** Original rule filed September 12, 2012; effective December 11, 2012. Rule renumbered from 1200-04-06.

0400-45-06-.05 INJECTED FLUID STANDARDS.

- (1) Any fluid injected into or above a USDW shall meet the following standards unless specific alternate standards are established by the Commissioner for the individual discharge based on hydrogeologic setting, character of the injectate, risk to the environment and persons utilizing the ground water resource and compliance with subparagraph (j) of this paragraph:

(a) Dissolved oxygen

The injected fluid shall contain dissolved oxygen in at least the amount that naturally occurs in that portion of the aquifer where the injection occurs.

(b) Oils and grease

The injected fluid shall contain no oil and grease other than that of natural origin in that portion of the aquifer where the injection occurs.

(c) Color and turbidity

The injected fluids shall contain no color or turbidity other than that of natural origin in that portion of the aquifer where the injection occurs.

(d) Coliform bacteria

The concentration of a fecal coliform group shall not exceed 200 per 100 ml. as a geometric mean based on a minimum of 10 samples collected from a given sampling point over a period of not more than 30 consecutive days with individual samples being collected at intervals of not less than 12 hours. For the purposes of determining the geometric mean, individual samples having a fecal coliform group concentration of less than 1 per 100 ml. shall be considered as having a concentration of 1 per 100 ml. In addition, the concentration of the fecal coliform group in any individual sample shall not exceed 1,000 per 100 ml.

(e) Taste and odor

The injected fluids shall have no taste or odor other than that which naturally occurs in that portion of the aquifer where the injection occurs.

(f) pH

The injected fluids shall have a pH level as naturally occurs in that portion of the aquifer where the injection occurs or as may result from normal agricultural, or silviculture activity provided all reasonable controls are used.

(g) Chemical constituents

The injected fluids shall be free from chemical constituents, other than those of natural origin, in that portion of the aquifer where the injection occurs, in concentrations specified in Rule 0400-45-01-.19 or combinations which would be harmful to human, animal or aquatic life or detrimental to the most sensitive and governing water use. Criteria for chemical constituents contained in guidelines published by the US Environmental Protection Agency shall be considered.

(h) Solids, floating materials and deposits

(Rule 0400-45-06-.05, continued)

The injected fluid shall be free of distinctly visible solids, scum, foam, or oily sleek other than those of natural origin in that portion of the aquifer where the injection occurs.

(i) Other pollutants

The injected fluid shall contain no other pollutants that may be detrimental to public health or impair the usefulness of the water for the most sensitive and governing water use.

(j) The operation of an underground injection system shall not cause any aquifer designated as a USDW to contain any substances, whether alone or in combination with other substances, that are toxic, carcinogenic, mutagenic, or teratogenic, other than those of natural origin, at levels and conditions which violate primary drinking water standards as given in Chapter 0400-45-01 or adversely affect health of persons.

Authority: T.C.A. §§ 69-3-101 et seq. and 4-5-201 et seq. **Administrative History:** Original rule filed September 12, 2012; effective December 11, 2012. Rule renumbered from 1200-04-06.

0400-45-06-.06 CLASSIFICATION OF INJECTION WELLS.

Injection wells within the jurisdiction of the Commissioner are classified as follows:

(1) Class I

- (a) Wells used by generators of hazardous waste or owners or operators of hazardous waste management facilities to inject hazardous waste, beneath the lowermost formation containing within a radius of one mile of the well bore, a USDW; or
- (b) Other industrial and municipal disposal wells which inject fluids beneath the lowermost formation containing, within a radius of one mile of the well bore, a USDW.
- (c) Radioactive waste disposal wells which inject fluids below the lowermost formation containing an underground source of drinking water within one mile of the well bore.

(2) Class II

Wells that inject fluids:

- (a) Which are brought to the surface in connection with conventional oil or natural gas production and 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;
- (b) For enhanced recovery of oil or natural gas; and
- (c) For storage of hydrocarbons which are liquid at standard temperature and pressure.

(3) Class III

Wells that inject fluids for extraction of minerals including:

- (a) Mining of sulfur by the Frasch process;
- (b) In-situ production of uranium or other metals. This category includes only in-situ production from ore bodies which have not been conventionally mined. Solution mining of conventional mines such as stope leaching is included in Class V; or

(Rule 0400-45-06-.06, continued)

- (c) Solution mining of salts or potash.
- (4) Class IV
- (a) Wells used by generators of hazardous waste or of radioactive waste, by owners or operators of hazardous waste management facilities, or by owners or operators of radioactive waste disposal sites, to dispose of hazardous waste or radioactive waste into a formation which within one mile of the well contains a USDW; or
 - (b) Wells used by generators of hazardous waste or of radioactive waste, by owners or operators of hazardous waste management facilities, or by owners or operators of radioactive waste disposal sites, to dispose of hazardous waste or radioactive waste above a formation which within one mile of the well contains a USDW.
 - (c) Wells used by generators of hazardous waste or owners or operators of hazardous waste management facilities to dispose of hazardous waste, which cannot be classified under subparagraph (1)(a) of this rule or subparagraphs (a) and (b) of this paragraph.

(5) Class V

Injection wells or systems not included in Classes I, II, III, or IV. Class V wells include:

- (a) Air conditioning return flow wells used to return to the supply aquifer the water used for heating or cooling in a heat pump;
- (b) Drainage wells used to drain surface fluid, primarily storm runoff, into a subsurface formation;
- (c) Cooling water return flow wells used to inject water previously used for cooling;
- (d) Recharge wells used to replenish the water in an aquifer;
- (e) Sand backfill and other backfill wells used to inject a mixture of water and sand, mill tailings or other solids into mined-out portions of subsurface mines whether what is injected is a radioactive waste or not;
- (f) Subsidence control wells (not used for the purpose of oil or natural gas production) used to inject fluids into a non-oil or gas producing zone to reduce or eliminate subsidence associated with the overdraft of fresh water;
- (g) Injection systems associated with remedial activity. This subparagraph does not allow the injection of hazardous waste into a Class V well. Systems used to inject contaminated ground water that has been treated and is being reinjected into the same formation from which it was drawn are not prohibited by this rule if such injection is approved by state or federal agencies operating under the Tennessee Hazardous Waste Management Act, Part 1 or Part 2, T.C.A. §§ 68-212-101 et seq. or 68-212-201 et seq., Tennessee Petroleum Underground Storage Tank Act, T.C.A. §§ 68-215-101 et seq., Water Quality Control Act of 1977, T.C.A. §§ 69-3-101 et seq., Resource Conservation and Recovery Act (RCRA); 42 U.S.C. §§6901-6992k, or Comprehensive Environmental Response and Liability Act of 1980; 42 U.S.C. §§9601-9675;
- (h) Injection wells associated with the recovery of geothermal energy for heating, aquaculture and production of electric power;
- (i) Wells used for solution mining of conventional mines such as stopes leaching;

(Rule 0400-45-06-.06, continued)

- (j) Injection wells used in innovative or experimental technologies;
- (k) Injection wells used for in site recovery of lignite, coal, tar sands, and oil shale; and
- (l) Wells used to inject spent brine into the same formation from which it was withdrawn after extraction of halogens or their salts.
- (m) Large capacity subsurface fluid distribution systems with the capacity to serve more than 20 persons per day.
- (n) Infiltration cells.
- (o) Subsurface fluid distribution systems disposing of waste other than sanitary waste.
- (p) Dry wells used for the injection of wastes into a subsurface formation;
- (q) Modification of a recharge point or the area where the recharge originates; and
- (r) Improved sinkholes.

Authority: T.C.A. §§ 69-3-101 et seq. and 4-5-201 et seq. **Administrative History:** Original rule filed September 12, 2012; effective December 11, 2012. Rule renumbered from 1200-04-06.

0400-45-06-.07 PERMIT REQUIRED.

- (1) Except for exclusions specified in paragraph (3) of Rule 0400-45-06-.03, all injection wells and activities must be authorized by permit or by rule.
- (2) For new injection wells, a permit must be obtained before construction commences, unless the injection is authorized by rule as described in paragraph (2) of Rule 0400-45-06-.14.
- (3) The owner or operator of an existing Class II or III injection well shall complete, sign and submit to the Commissioner an application for permit in conformance with this Chapter within six (6) months from the date of approval of these rules. The owner or operator must demonstrate to the satisfaction of the Commissioner that the existing well complies with all applicable rules of this Chapter.
- (4) Continued injection into existing Class V Wells is authorized by virtue of this rule provided compliance with paragraph (1) of Rule 0400-45-06-.05 and any other applicable rules of this Chapter are maintained. Owners/operators of existing Class V wells that fail to maintain compliance shall immediately cease operation and submit an application. An application must be submitted within the appropriate time frame for each grand division as specified in this rule. Within six (6) months of the effective date of this rule, owner/operators of injection wells within the Western Grand Division must submit an application. Within twelve (12) months of the effective date of this rule, owner/operators of injection wells within the Central Grand Division must submit an application. Within eighteen (18) months of the effective date of this rule, owner/operators of injection wells within the Eastern Grand Division must submit an application. If an application for an existing Class V well is not submitted within the specified timeframe, the owner/operator shall be subject to an application fee for a new well as specified in paragraph (1) of Rule 0400-45-06-.18.
- (5) The Commissioner may require the owner or operator of a Class V injection well authorized by rule to apply for and obtain an injection well permit. Cases for which a permit may be required include:

(Rule 0400-45-06-.07, continued)

- (a) The injection well is not in compliance with the standards required by this Chapter.
 - (b) Compliance with standards in addition to those listed in this Chapter is required to protect USDWs from pollution.
- (6) Reserved.
- (7) Class V wells utilizing innovative or experimental technologies may not be authorized by rule, but only by a permit. The permit shall require a surety bond.
- (8) Emergency permits.
- (a) Coverage

Notwithstanding any other provision of this rule the Commissioner may temporarily permit a specific underground injection if:

1. An imminent and substantial endangerment to the health of persons will result unless a temporary emergency permit is granted, provided the injection will not result in the movement of fluids into underground sources of drinking water; or
2.
 - (i) A substantial and irretrievable loss of oil or gas resources will occur unless a temporary emergency permit is granted to a Class II well; and
 - (ii) Timely application for a permit could not be practically made; and
 - (iii) The injection will not result in the movement of fluids into underground sources of drinking water; or
3. A substantial delay in production of oil or gas resources will occur unless a temporary emergency permit is granted to a new Class II well and the temporary authorization will not result in the movement of fluids into an underground source of drinking water.

(b) Requirements for issuance

1. Any temporary permit under part (a)1 of this paragraph shall be for no longer term than required to prevent the hazard.
2. Any temporary permit under part (a)2 of this paragraph shall be for no longer than 90 days, except that if a permit application has been submitted prior to the expiration of the 90-day period, the Commissioner may extend the temporary permit until final action on the application.
3. Any temporary permit under part (a)3 of this paragraph shall be issued only after a complete permit application has been submitted and shall be effective until final action on the application.
4. Notice of any temporary permit under this paragraph shall be published in accordance with paragraph (7) of Rule 0400-45-06-.08 within ten days of the issuance of the permit.
5. The temporary permit under this paragraph may be either verbal, or written. If verbal authorization, it must be followed within 5 calendar days by a written temporary emergency permit.

(Rule 0400-45-06-.07, continued)

6. The Commissioner shall condition the permit in any manner he or she determines is necessary to ensure that the injection will not result in the movement of fluids into an underground source of drinking water.

Authority: T.C.A. §§ 69-3-101 et seq. and 4-5-201 et seq. **Administrative History:** Original rule filed September 12, 2012; effective December 11, 2012. Rule renumbered from 1200-04-06.

0400-45-06-.08 AUTHORIZATION BY PERMIT

For Injection Wells Not Authorized By Rule.

(1) Permit Application

All permit applicants for injection wells not authorized by rule shall provide the following information to the Commissioner, using a form provided by the Commissioner:

- (a) The activities conducted by the applicant which require it to obtain a UIC permit.
- (b) Name, mailing address, and location of the facility for which the application is submitted.
- (c) Up to four North American Industry Classification System (NAICS) codes which best reflect the principal products or services provided by the facility.
- (d) The operator's name, address, telephone number, ownership status, and status as Federal, State, private, public, or other entity.
- (e) Whether the facility is located on Indian lands.
- (f) A listing of all permits or construction approvals received or applied for under any of the following programs:
 1. Hazardous Waste Management program under federal or state law.
 2. UIC program under federal or state law.
 3. NPDES program under federal or state law.
 4. Prevention of Significant Deterioration (PSD) program under federal or state law.
 5. Nonattainment program under federal or state law.
 6. National Emission Standards for Hazardous Pollutants (NESHAPS) preconstruction approval under federal or state law.
 7. Ocean dumping permits under the Marine Protection Research and Sanctuaries Act.
 8. Dredge and fill permits under section 404 of the Clean Water Act, 33 U.S.C. Section 1344.
 9. Other relevant environmental permits.
- (g) A topographic map (or other map if a topographic map is unavailable) extending one mile beyond the property boundaries of the source depicting the facility and each of its intake and discharge structures; each of its hazardous waste treatment, storage, or

(Rule 0400-45-06-.08, continued)

disposal facilities; each well where fluids from the facility are injected underground; and those wells, springs, surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant within a quarter mile of the facility property boundary.

- (h) A brief description of the nature of the business.
- (2) A permit application will be processed when:
- (a) A completed application form, all information required by these rules and any supplemental information, as may be required, is submitted to the Commissioner. The application shall identify (by narrative description, illustrations, maps, or other suitable means) and describe by geographic or geometric terms (including lateral and vertical limits and gradients) the area intended to be used as an injection zone.
 - (b) The feasibility requirements that apply to the proposed injection well have been satisfied.
- (3) Duration of permits
- (a) Permits for Class I and V wells and authorizations for Class V wells shall be effective for a fixed term not to exceed five (5) years. Permits for Class II and III wells may be issued for a period up to the operating life of the facility. Each Class II or III well permit shall be reviewed at least once every five (5) years to determine whether it should be modified, revoked and reissued, or revoked as provided in paragraphs (7) and (8) of this rule.
 - (b) Except as provided by the Uniform Administrative Procedures Act, T.C.A. §§ 4-5-101 et seq., the term of a permit shall not be extended by modification beyond the maximum duration specified in this rule.
 - (c) The Commissioner may issue any permit for a duration that is less than the full allowable term under this rule.
- (4) Schedules of compliance
- (a) The permit may when appropriate specify a schedule of compliance.
 - (b) Time for compliance

Any schedule of compliance shall require compliance as soon as possible but in no case later than three (3) years after the effective date of the permit.
 - (c) Interim dates

Except as provided in this subparagraph, if a permit establishes a schedule of compliance which exceeds one (1) year from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievements.

 1. The time between interim dates shall not exceed one (1) year.
 2. If the time necessary for completion of any interim requirement (such as the construction of a control facility) is more than one (1) year and is not readily divisible into stages for completion, the permit shall specify interim dates for the submission of reports of progress toward completion of the interim requirements and indicate a projected completion date.

(Rule 0400-45-06-.08, continued)

(d) Reporting

Progress reports shall be submitted no later than thirty (30) days following each interim date and the final date of compliance.

(5) Effect of a permit

(a) A permit may be revoked, suspended or modified during its term for cause, under T.C.A. § 69-3-108(f).

(b) The issuance of a permit does not convey any property rights of any sort, or any exclusive privilege.

(c) The issuance of a permit does not authorize any injury to persons or property or invasion of other property rights, or any infringement of other State, Federal or local laws or regulations. In particular, the issuance of a permit does not relieve a Class I, Class IV or Class V permittee from any applicable requirement he may be subject to under the Tennessee Hazardous Waste Management Act (T.C.A. §§ 68-212-101 et seq.)

(6) Transfer of permits

A permit may be transferred by the permittee to a new owner or operator as a minor modification if the permit has been modified or revoked and reissued.

(7) Public notice of permit actions and public comment period.

(a) Scope

The Commissioner shall give public notice that the following actions have occurred:

1. A draft permit has been prepared. A draft permit shall contain:

(i) All permit conditions

(ii) All compliance schedules for corrective action; and

(iii) All monitoring requirements

(b) Upon request, the Commissioner shall send to the requestor copies of the foregoing documents.

(c) Timing

1. Public notice of the preparation of a draft permit shall allow at least thirty (30) days for public comment.

2. Public notice of a public hearing shall be given at least thirty (30) days before the hearing. (Public notice of the hearing may be given at the same time as public notice of the draft permit and the two notices may be combined.)

(d) Methods

Public notices of permit actions shall be given by the following methods:

(Rule 0400-45-06-.08, continued)

1. By mailing a copy of a notice to the following persons (any person otherwise entitled to receive notice under this paragraph may waive his or her rights to receive notice for any classes and categories of permits):
 - (i) the applicant;
 - (ii) any other agency which the Commissioner knows has issued or is required to issue a RCRA, PSD, NPDES or 404 permit for the same facility or activity;
 - (iii) federal, state and local agencies with jurisdiction over fish, shellfish, and wildlife resources; the Advisory Council on Historic Preservation, state historic preservation officers, and other appropriate government authorities, including any affected States;
 - (iv) persons on a mailing list developed by:
 - (I) notifying the public of the opportunity to be put on the mailing list through periodic publication in the public press and in other publications such as regional and state funded newsletters, environmental bulletins, or State law journals; and
 - (II) including those who request in writing to be on the list. (The Commissioner may update the mailing list from time to time by requesting written indication of continued interest from those listed. The Commissioner may delete from the list the name of any person who fails to respond to such a request.)
2. By publication of a notice in a daily or weekly newspaper within the area to be affected by the facility or activity;
3. Any other method reasonably calculated to give actual notice of the action in question to the persons potentially affected by it, including press releases or any other forum or medium to elicit public participation.

(e) Contents

All public notices of permit actions shall contain the following minimum information:

1. Name and address of the Commissioner office processing the permit action for which notice is being given;
2. Name and address of the permittee or permit applicant and, if different, of the facility or activity regulated by the permit;
3. A brief description of the business conducted at the facility or activity described in the permit application;
4. A description of the type and quantity of wastes, fluids, or pollutants which are proposed to be injected;
5. A brief summary of the basis for the permit conditions;
6. Reasons why any requested variances do or do not appear justified;

(Rule 0400-45-06-.08, continued)

7. Name, address, and telephone number of a person from whom interested persons may obtain further information including copies of the draft permit, fact sheet when prepared, and the application;
8. A brief description of the applicable comment procedures including, the beginning and ending dates of the comment period, procedures for requesting a hearing, and any other procedures by which the public may participate in the final decision;
9. Reference to the date of previous public notices relating to the permit;
10. Date, time, and place of the hearing;
11. A brief description of the nature and purpose of the hearing including the applicable rules and procedures; and
12. Any additional information considered necessary or proper.

(f) Public comments and requests for public hearings

During the public comment period, any interested person may submit written comments on the permit application or draft permit and may request a public hearing. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised.

(g) Public hearings

The Commissioner shall hold a public hearing whenever, as evidenced by requests, there is public interest in a draft permit. A public hearing may also be held at the Commissioner's discretion to clarify issues in the permit.

(h) Consideration of comments and response

1. All comments submitted during the public comment period and all hearing testimony shall be considered in making the final decision.
2. If a decision is reached to issue a final permit, the Commissioner shall respond to comments when the permit is issued. This response shall:
 - (i) Be made available to the public;
 - (ii) Specify which provisions, if any, of the draft permit have been changed in the final permit, and the reasons for the change; and
 - (iii) Briefly describe and respond to all significant comments on the draft permit raised during the public comment period, or during any hearing.

(i) Notice of final permit decision

1. After the close of the comment period, the Commissioner shall notify the applicant and each person who has submitted written comments, or requested notice, of the final permit decision. This notice shall contain reference to the procedures for appealing a permit decision.
2. A final permit decision shall become effective thirty (30) days after service of notice on the applicant of the final permit decision, unless a later date is specified

(Rule 0400-45-06-.08, continued)

in the notice, or a petition is filed pursuant to subparagraph (j) or (k) of this paragraph.

- (j) Within thirty (30) days of receipt of notice of a final permit decision, or prior to any later date specified in the notice, any person other than the applicant who has filed comments on that permit, or its drafts, may petition the Board for a hearing on the permit or any condition of the permit. The petition shall include a statement of all of the permit conditions which are challenged and the reasons supporting the challenge. This hearing shall be legislative in nature and shall not be a contested case within the meaning of T.C.A. § 4-5-102 of the Uniform Administrative Procedures Act. The Board shall make a recommendation on issuance or denial of the permit or permit conditions to the Commissioner that shall become final and effective in thirty (30) days if the Commissioner takes no action.
 - (k) Within thirty (30) days of receipt of notice of a final permit decision, the permit applicant may file a petition with the Board for a contested case hearing pursuant to T.C.A. §§ 69-3-105 and 4-5-301 et seq.
- (8) Modification or revocation and reissuance of permits

When the Commissioner determines that one or more causes exist for modification or revocation and reissuance of a permit, the Commissioner may modify or revoke and reissue the permit accordingly, subject to the limitations of subparagraph (c) of this paragraph, and may request an updated application if necessary. When a permit is modified, only the conditions subject to modification are reopened. If a permit is revoked and reissued, the entire permit is reopened and subject to revision and the permit is reissued for a new term. If a permit modification satisfies the criteria for minor modifications, the permit may be modified without a draft permit or public review. Otherwise, a draft permit must be prepared and public review procedures as set out herein must be followed.

(a) Causes for modification

The following are causes for modification and may be causes for revocation and reissuances.

1. Alterations

There are material and substantial alterations or additions to the permitted facility or activity which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit.

2. Information

The Commissioner has received information that was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and would have justified the application of different permit conditions at the time of issuance. This cause shall include any information indicating that cumulative effects on the environment are unacceptable.

3. New regulations

The standard or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued. Permits other than for Class II or III wells may be modified during their terms for this cause, only as follows:

(Rule 0400-45-06-.08, continued)

- (i) For promulgation of amended standards or regulations, when:
 - (I) The permit condition requested to be modified was based on a Departmental regulation;
 - (II) The Commissioner has revised withdrawn, or modified that portion of the regulation on which the permit condition was based; and
 - (III) A permittee requests modification within thirty (30) days after public notice of the action on which the request is based.
- (ii) For judicial decisions, a court of competent jurisdiction has remanded and stayed Department promulgated regulations if the remand and stay concern that portion of the regulations on which the permit condition was based and a request is filed by the permittee in accordance with these regulations within thirty (30) days of judicial remand.

4. Compliance schedules

The Commissioner determines good cause exists for modification of a compliance schedule, such as an act of God, strike, flood, or materials shortage or other events over which the permittee has little or no control and for which there is no reasonably available remedy.

(b) Causes for modification or revocation and reissuance

The following are causes to modify or, alternatively, revoke and reissue a permit:

1. Cause exists for revocation and the Commissioner determines that modification or revocation and reissuance is appropriate; and
2. The Commissioner has received notification of a proposed transfer of the permit.

(c) Facility siting

Suitability of the Facility location will not be considered at the time of permit modification or revocation and reissuance unless new information or standards indicate that a threat to human health or the environment exists which was unknown at the time of permit issuance.

(9) Revocation of permits or denial of renewal application

- (a) The Commissioner may revoke a permit during term, or deny a permit renewal application for the following causes:
 1. Noncompliance by the permittee with any condition of the permit;
 2. The permittee's failure in the application or during the permit issuance process to disclose fully all relevant facts, or the permittee's misrepresentation of any relevant facts at any time; or
 3. A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or revocation.

(Rule 0400-45-06-.08, continued)

- (b) Notice of intent to revoke and reissue, or terminate. If the Commissioner tentatively decides to revoke and reissue a permit, a notice of intent to revoke and reissue, or notice of intent to terminate shall be issued.

(10) Minor Modifications

Upon the consent of the permittee, the Commissioner may modify a permit to make the corrections or allowances for changes in the permitted activity listed in this paragraph without following the entire permitting procedure. Minor modifications may only:

- (a) Correct typographical errors;
- (b) Require more frequent monitoring or reporting by the permittee;
- (c) Change an interim compliance date in a schedule of compliance, provided the new date is not more than 120 days after the date specified in the existing permit and does not interfere with attainment of the final compliance date requirement;
- (d) Change quantities or types of fluids injected which are injected within the capacity of the facility as permitted and, in the judgment of the Commissioner would not interfere with the operation of the facility or its ability to meet conditions described in the permit and would not change its classification;
- (e) Change a construction requirement approved by the Commissioner, provided that any such alteration shall comply with all requirements of this rule;
- (f) Amend a plugging and abandonment plan; or
- (g) Allow for a change in ownership or operational control of a facility where the Commissioner determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittees has been submitted to the commissioner.

(11) Confidentiality of information

The handling of confidential information shall be governed by T.C.A. § 69-3-113.

(12) Signatories to applications and reports

(a) Applications

All permit applications, shall be signed as follows:

1. For a corporation: by a responsible corporate officer. For the purpose of this part, a responsible corporate officer means:
 - (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function or any other person who performs similar policy or decision making functions for the corporation, or
 - (ii) The manager of one or more manufacturing, production or operation facilities employing more than 250 persons or having gross annual sales or expenditures exceeding 25 million dollars (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(Rule 0400-45-06-.08, continued)

(Note: The Commissioner does not require specific assignments or delegations of authority to responsible corporate officers identified in this part. The Commissioner will presume that these responsible corporate officers have the requisite authority to sign permit applications unless the corporation has notified the Commissioner to the contrary. Corporate procedures governing authority to sign permit applications may provide for assignment or delegation to applicable corporate positions under subpart (ii) of this part rather than the specific individuals.)

2. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
3. For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

(b) Reports

All reports required by permits, and other information requested by the Commissioner, shall be signed by a person described in subparagraph (a) of this paragraph or by a duly authorized representative of that person. A person is a duly authorized representative only if:

1. The authorization is made in writing by a person described in subparagraph (a) of this paragraph;
2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or well field, superintendent, or position of equivalent responsibility (A duly authorized representative may thus be either a named individual or any individual occupying a named position.); and
3. The written authorization is submitted to the Commissioner.

(c) Changes to authorization

If an authorization under subparagraph (b) of this paragraph is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of subparagraph (b) of this paragraph must be submitted to the Commissioner prior to or at the time any reports, information, or applications signed by an authorized representative are submitted.

(d) Certification

Any person signing a document under this paragraph shall make the following certification.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

(Rule 0400-45-06-.08, continued)

(13) Permit Requirements

All UIC permits shall contain permit conditions established by the Commissioner as necessary to fulfill the purposes of the Tennessee Water Quality Control Act, T.C.A. §§ 69-3-101 et seq., a description of the injection zone being permitted, and any necessary corrective action as stated under paragraph (5) of Rule 0400-45-06-.09. The permit conditions shall be set at levels to prevent adverse effects to persons utilizing the ground water resource after consideration of at least the following factors: any guidelines set for certain pollutants by U.S.E.P.A., the flow characteristics of ground water, risk to humans and the risk of migration. The requirements of subparagraphs (a) through (n) of this paragraph apply to all UIC permits. All conditions applicable to all permits shall be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to these regulations must be given in the permit.

- (a) The permittee must comply with all conditions of this permit and all applicable laws and regulations. Any permit noncompliance constitutes a violation of the Tennessee Water Quality Control Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.
- (b) If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit prior to expiration of this permit.
- (c) It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- (d) The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from non-compliance with this permit.
- (e) The permittee shall at all times properly operate and maintain all facilities and systems of related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.
- (f) This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.
- (g) This permit does not convey any property rights of any sort, or any exclusive privilege.
- (h) The permittee shall furnish to the Commissioner, within a time specified, any information which the Commissioner may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Commissioner, upon request, copies of records required to be kept by this permit.
- (i) The permittee shall allow the Commissioner, or an authorized representative of the Commissioner, upon the presentation of credentials to:

(Rule 0400-45-06-.08, continued)

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
 2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
 3. Inspect at reasonable times any facility, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
 4. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Tennessee Water Quality Control Act, any substances or parameters at any location.
- (j) Monitoring and records
1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The permittee shall monitor injection fluids, injection operations, and local ground water supplies, in accordance with the requirements for the applicable class of well stated in Rules 0400-45-06-.10 through 0400-45-06-.14.
 2. The permittee shall retain records of all monitoring information, including the following:
 - (i) Calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of the Commissioner at any time; and
 - (ii) The nature and composition of all injected fluids until three years after the completion of any plugging and abandonment procedures. The Commissioner may require the owner or operator to deliver the records to the Department at the conclusion of the retention period.
 3. Records of monitoring information shall include:
 - (i) The date, exact place, and time of sampling or measurements;
 - (ii) The individual(s) who performed the sampling or measurements;
 - (iii) The date(s) analyses were performed;
 - (iv) The individual(s) who performed the analyses;
 - (v) The analytical techniques or methods used; and
 - (vi) The results of such analyses.
- (k) All applications, reports, or information submitted to the Commissioner shall be signed and certified.
- (l) Reporting requirements

(Rule 0400-45-06-.08, continued)

1. Planned Changes

The permittee shall give notice to the Commissioner as soon as possible of any planned physical alterations or additions to the permitted facility.

2. Anticipated noncompliance

The permittee shall give advance notice to the Commissioner of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfers

See paragraphs (5), (7), (8) and (9) of this rule.

4. Monitoring reports

Monitoring results shall be reported at the intervals specified elsewhere in this permit.

5. Compliance schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 30 days following each schedule date.

6. Twenty-four hour reporting

The permittee shall report any noncompliance which may endanger health or the environment, including:

- (i) Any monitoring or other information which indicates that any contaminant may cause an endangerment to USDWs; or
- (ii) Any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between USDWs.

Any such information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 72 hours of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance.

7. Other noncompliance

The permittee shall report all instances of noncompliance not reported under parts 1, 4, 5, and 6 of this subparagraph, at the time monitoring reports are submitted. The reports shall contain the information listed in part 6 of this subparagraph.

8. Other information

(Rule 0400-45-06-.08, continued)

Where the permittee becomes aware that it failed to submit any relevant acts in a permit application, or submitted incorrect information in a permit application or in any report to the Commissioner, it shall promptly submit such facts or information.

(m) Requirements prior to commencing injection

Except for all new wells authorized by an area permit under Rules 0400-45-06-.11 and 0400-45-06-.12, a new injection well may not commence injection until construction is complete, and

1. The permittee has submitted notice of completion of construction to the Commissioner; and
2. (i) The Commissioner has inspected or otherwise reviewed the new injection well and finds it is in compliance with the conditions of the permit; or
(ii) The permittee has not received notice from the Commissioner of his or her intent to inspect or otherwise review the new injection well within 13 days of the date of the notice in part 1 of this subparagraph, in which case prior inspection or review is waived and the permittee may commence injection. The Commissioner shall include in his notice a reasonable time period in which he shall inspect the well.

(n) The permittee shall notify the Commissioner at such times as the permit requires before conversion or abandonment of the well, or in the case of area permits, before closure of the project.

(o) The permittee shall at all times maintain sufficient financial resources to allow for the proper plugging and abandonment of the well. In the event of a change of ownership or other transfer of permit, the transferee shall provide proof of financial responsibility before continued operation.

1. For Class I and III wells, a surety bond or cash bond shall be filed with the Commissioner prior to permit issuance. At the Commissioner's discretion, other forms of financial assurance for Class I wells may be acceptable.
2. Class II wells shall have a surety bond or cash bond for a total of \$4,000 per well. If there is an existing \$2,000 bond with the Tennessee Oil and Gas Board, the bond under this rule shall be \$2,000. If no bond currently exists, the bond shall be for \$4,000.
3. At the Commissioner's discretion, a bond may be required for Class V wells.

(p) The owner or operator of a Class I, II or III well permitted under this part shall establish prior to commencing injection or on a schedule determined by the Commissioner, and thereafter maintain mechanical integrity for the well. When the Commissioner determines that a Class I, II, or III well lacks mechanical integrity, the Commissioner shall give written notice of the determination to the owner or operator. Unless the Commissioner requires immediate cessation, the owner or operator shall cease injection into the well within 48 hours of receipt of the Commissioner's determination. The Commissioner may allow plugging of the well pursuant to the requirements of this rule or require the permittee to perform such additional construction, operation, monitoring, reporting and corrective action as is necessary to prevent the movement of fluid into or between USDWs caused by the lack of mechanical integrity. The owner or operator may resume injection upon written notification from the Commissioner that the

(Rule 0400-45-06-.08, continued)

owner or operator has demonstrated mechanical integrity pursuant to this rule. The Commissioner may allow the owner or operator of a well which lacks mechanical integrity to continue or resume injection, if the owner or operator has made a satisfactory demonstration that there is no movement of fluid into or between USDWs.

- (q) A Class I, II or III permit shall include and a Class V permit may include, conditions to insure that plugging and abandonment of the well will not allow the movement of fluids into or between USDWs. Where the Commissioner's review of an application indicates that the permittee's plan is inadequate, the Commissioner may require the applicant to revise the plan, prescribe conditions meeting the requirements of this paragraph, or deny the permit.

Authority: T.C.A. §§ 69-3-101 et seq. and 4-5-201 et seq. **Administrative History:** Original rule filed September 12, 2012; effective December 11, 2012. Rule renumbered from 1200-04-06.

0400-45-06-.09 GENERAL STANDARDS AND METHODS.

(1) Applicability

The provisions of this rule set forth standards and requirements that apply to all classes of injection wells unless specifically excluded or contradicted by provisions applicable to a particular class of well.

(2) Supervisory Standard

All phases of well construction, testing and operation shall be supervised by a person who is knowledgeable and experienced in practical drilling engineering and who is familiar with the special conditions and requirements of injection well construction.

(3) Area of Review

- (a) Descriptions of the area of review are subject to approval by the Commissioner according to either subpart 4(i) or (ii) of this subparagraph. The Commissioner may solicit input from the owners and operators of injection wells within the State as to which method is most appropriate for each geographic area or field. In no event shall the boundary of an area of review be less than a radius of one (1) mile from any injection well covered by the appropriate authorization. The following factors are to be included in the description:

1. Chemistry of the injection and formation fluids;
2. Hydrogeology, including the direction of ground water movement;
3. Ground water use and dependence; past, present, and future, as documented by public record; and
4. The area of potential impact as determined by either subpart (i) of this part the calculated zone of endangering influence or subpart (ii) of this part a fixed radius.

(i) Zone of endangering influence

(l) The zone of endangering influence shall be:

- I. In the case of application(s) for well permit(s) under Rule 0400-45-06-.08, that area the radius of which is the lateral distance in which the pressures in the injection zone may

(Rule 0400-45-06-.09, continued)

cause the migration of the injection and/or formation fluid into an underground source of drinking water; or

- II. In the case of an application for an area permit, the project area plus a circumscribing area the width of which is the lateral distance from the perimeter of the project area, in which pressures in the injection zone may cause the migration of the injection and/or formation fluid into an underground source of drinking water.
- (II) Computation of the zone of endangering influence may be based upon the parameters listed below and should be calculated for an injection time period equal to the expected life of the injection well or pattern. The following modified Theis equation illustrates one form which the mathematical model may take.

$$r = \left(\frac{2.25KHt}{S10^x} \right)^{1/2}$$

where:

$$X = \frac{4\pi KH(h_w - h_{bo})X S_p G_b}{2.3Q}$$

r = Radius of endangering influence from injection well (length)

K = Hydraulic conductivity of the injection zone (length/time)

H = Thickness of the injection zone (length)

t = Time of injection (time)

S = Storage coefficient (dimensionless)

Q = Injection rate (volume/time)

h_{bo} = Observed original hydrostatic head of injection zone (length) measured from the base of the lowermost underground source of drinking water

h_w = Hydrostatic head of underground source of drinking water (length) measured from the base of the lowermost underground source of drinking water

$S_p G_b$ = Specific Gravity of fluid in the injection zone (dimensionless)

Π (pi) = 3.142 (dimensionless)

The above equation is based on the following assumptions:

- I. The injection zone is homogeneous and isotropic;
- II. The injection zone has infinite areal extent;
- III. The injection well penetrates the entire thickness of the injection zone;
- IV. The well diameter is infinitesimal compared to “r”; when injection time is longer than a few minutes; and

(Rule 0400-45-06-.09, continued)

V. The emplacement of fluid into the injection zone creates instantaneous increase in pressure.

(ii) Fixed radius

(I) In the case of application(s) for a well permit(s), a fixed radius around the well of not less than one mile may be used.

(II) In the case of an application for an area permit, a fixed width of not less than one mile for the circumscribing area may be used.

In determining the fixed radius, the following factors shall be taken into consideration: chemistry of the injected and formation fluids; hydrogeology; population and ground-water use and dependence; and historical practices in the area.

(b) The Commissioner may require an owner or operator of an existing or proposed injection well to submit information necessary to establish the area of review.

(4) Mechanical Integrity Standards

(a) An injection well has mechanical integrity if there is no significant leak in the casing, tubing or packer, and if there is no significant fluid movement into USDWs through vertical channels in and adjacent to the injection well bore hold.

(b) The following tests shall be used to evaluate the mechanical integrity of an injection well:

1. Monitoring of annulus pressure, or pressure test with liquid or gas to detect any leaks in casing, tubing, or packer;
2. Appropriate geophysical logs to detect any fluid movement through vertical channels in and adjacent to the injection well borehole.

(c) The Commissioner may allow the use of tests to evaluate mechanical integrity other than those listed in this rule if such tests have been approved in writing by the Commissioner and, if the Commissioner receives authority for an underground injection control program from the U.S. E.P.A., the E.P.A. Administrator or his designee.

(d) Methods and standards generally accepted in the industry shall be applied in conducting and evaluating the tests required by this paragraph.

(5) Corrective Action Standards

(a) Standards

1. Applicants for injection well permits shall identify the location of all known wells within the area of review which penetrate the injection zone, or in the case of Class II wells operating over the fracture pressure of the injection formation, all known wells within the area of review penetrating formations affected by the increase in pressure. For such wells which are improperly sealed, completed or abandoned, the applicant shall also submit a plan consisting of such steps or modifications as are necessary to prevent movement of fluids into USDWs.

(b) Requirements

(Rule 0400-45-06-.09, continued)

1. Any permit issued for an existing injection well (other than a Class II well) requiring corrective action shall include a compliance schedule requiring any corrective action accepted or prescribed shall be completed as soon as possible.
2. No permit for a new injection well may authorize injection until all required corrective action has been taken.

(c) Injection pressure limitation

The Commissioner may require as a permit condition that injection pressure be so limited that pressure in the injection zone does not exceed hydrostatic pressure at the site of any improperly completed or abandoned well within the area of review. This pressure limitation shall satisfy the corrective action requirement. Alternatively, such injection pressure limitation can be part of a compliance schedule and last until all other required corrective action has been taken.

(d) In determining the adequacy of corrective action to prevent fluid movement into or between formations containing USDWs, the following criteria and factors shall be considered by the Commissioner:

1. Nature and volume of the injected fluid;
2. Nature of native fluids, and by-products of injection;
3. Potentially affected population;
4. Geology;
5. Hydrology;
6. History of the injection operation;
7. Completion and plugging records;
8. Abandonment procedures in effect at the time the well was abandoned; and
9. Hydraulic connections with formations containing USDWs.

(e) Class III wells only

When setting corrective action requirements, the Commissioner shall consider the overall effect of the project on the hydraulic gradient in the potentially affected USDWs, and the corresponding changes in potentiometric surface(s) and flow direction(s) rather than the discrete effect of each well. If a decision is made that corrective action is not necessary based on the determinations of this paragraph, the monitoring program required in Rule 0400-45-06-.12 shall be designed to verify the validity of such determinations.

(6) Plugging and Abandonment Standards

- (a) An injection well, or a test or monitor well associated with an injection well, must be abandoned and plugged when:
 1. the well is no longer usable for its intended purpose or other purpose as approved by the Commissioner;

(Rule 0400-45-06-.09, continued)

2. the well poses a potential threat to the quality of the waters of the state; or
 3. the well has not been operated for two (2) years.
- (b) When it is necessary to plug and abandon a well covered by these regulations, an application for a plugging and abandonment permit will be submitted to the Commissioner on the form prescribed. The application will include:
1. Reasons for abandonment;
 2. A copy of the approved plugging and abandonment plan which was submitted with the application for construction or operation permits; and
 3. Any modifications deemed necessary to the previously approved plugging and abandonment plan.
- (c) The owner/operator of an abandoned injection well or facility may be required to submit all pertinent records of construction, operation and abandonment to the Commissioner within a period of not less than one year following the date of abandonment.
- (d) Any well that is to be permanently plugged and abandoned shall be completely filled and sealed in such a manner that vertical movement of fluid either into or between formation(s) containing USDWs through the bore hole is not allowed. The proposed method of filling and the type of material to be used shall be approved by the Commissioner.
- (e) As a minimum, permanent seals must be placed in the bore hole opposite (1) the lowermost confining bed, and (2) each intermediate confining bed between successive formation(s) containing USDWs.
- (f) Seals intended to prevent vertical movement of water in a well bore hole shall be composed of cement, sand-and-cement, or concrete or other sealing materials demonstrated to the satisfaction of the Commissioner to be effective.
- (g) The minimum length of a seal required in subparagraph (f), of this paragraph, shall be 20 feet.
- (h) The bore hole above the uppermost formation(s) containing a USDW shall be filled with materials less permeable than the surrounding undisturbed formations, the uppermost five (5) feet of the bore hole (at land surface) shall be filled with a material appropriate to the intended use of the land.
- (i) The materials used to fill spaces between well seals shall be filled with disinfected dimensionally stable materials, compacted mechanically if necessary to avoid later settlement except that cement, cement and sand, and concrete do not require disinfection. Disinfection of well filling materials shall be accomplished by using chlorine compounds such as sodium hypochlorite or calcium hypochlorite.
- (j) Temporary bridges may be used to avoid having to fill very deep holes below the deepest point at which a permanent seal is required. Temporary bridges used to provide a base for a permanent seal shall consist of materials approved by the Commissioner.
- (k) After a cessation of operations of two years, the owner or operator shall plug and abandon the well in accordance with the plan unless he:

(Rule 0400-45-06-.09, continued)

1. Provides notice to the Commissioner; and
 2. Describes actions or procedures, satisfactory to the Commissioner that the owner or operator will take to ensure that the well will not endanger USDWs during the period of temporary abandonment. These actions and procedures shall include compliance with the technical requirements applicable to active injection wells unless waived by the commissioner.
- (7) Placement of sealing materials
- (a) Approved sealing materials used in abandonment operations shall be introduced at the bottom of the well or interval to be sealed and placed progressively upward to the top of the well. All such sealing materials shall be placed in such a way as to avoid segregation or dilution of the sealing materials. The method of emplacing materials shall be approved by the Commissioner. Dumping sealing material from the top of the well shall not be allowed.
 - (b) Permanent seals shall be placed in wells or bore holes opposite confining beds between aquifers which are identifiable as, or are suspected of being, hydraulically separated under natural, undisturbed conditions. After the required seal has been installed, the remainder of the confining zone between formations containing USDWs may be filled with sand, sand and gravel, or other rock material acceptable to the Commissioner.
- (8) Special Conditions
- (a) The permanent sealing of flowing wells or wells that have a positive shut-in pressure head at the land surface shall be accomplished only after the wells have been prepared in such a way as to prevent any backflow of water or other fluids at the land surface. This can be accomplished by introducing high specific gravity fluids at the bottom of the bore hole and filling the hole with the fluid until all flow ceases or the shut-in pressure is reduced to zero. If the displaced fluid constitutes a contaminant, special handling will be required to avoid any threat to USDWs.
 - (b) Prior to abandonment, any Class I or Class III well or any monitoring well that extends to the top of the shallowest injection zone shall be sealed from the top of the shallowest injection zone to the land surface with neat cement grout or an approved equivalent cementitious material such as neat cement with a maximum of 5 percent by weight of commercially processed bentonite.
 - (c) The following shall be considered in determining the adequacy of a plugging and abandonment plan for injection wells:
 1. The type and number of plugs to be used;
 2. The placement of each plug including the elevation of the top and bottom;
 3. The type, grade and quantity of plugging material to be used;
 4. The method of placement of the plugs;
 5. The procedure used to plug and abandon the well;
 6. Any newly constructed or discovered wells, or information, including existing well data, within the area of review;

(Rule 0400-45-06-.09, continued)

7. Geologic formations present including but not limited to type of strata, structure and location of any aquifer;
 8. Economic conditions; and
 9. Such other factors that may affect the adequacy of the plan.
- (9) Verification of Procedures
- (a) Except under emergency conditions the Commissioner is to receive thirty (30) days advance notice of the intent to plug and abandon either an injection or monitoring well in order to permit Departmental personnel to witness the procedure.
 - (b) Within ninety (90) days after completion of plugging, the permittee shall provide to the Commissioner documentation that the well was adequately plugged and abandoned.
- (10) Evidence of financial responsibility shall be demonstrated to accomplish all actions required under these rules, including all plugging and abandonment activities. This financial responsibility requirement does not apply to those Class V wells which are permitted by rule.
- (11) The Commissioner may require, by written notice on a selective well-by-well basis, an owner or operator of an injection well to establish and maintain records, make reports, conduct monitoring, and provide other information as is deemed necessary to determine whether the owner or operator has acted or is acting in compliance with T.C.A. § 69-3-101 et seq., Tennessee Water Quality Control Act or its implementing regulations.
- (12) All injection wells must be placed on a plat with the Register of Deeds by the seller of the individual properties that the injection well is located on or the injection zone is beneath. The owner/operator of the injection well shall have contractual agreement for access to the injection well at all reasonable times.
- (13) Any person owning or operating an injection well shall keep the Commissioner advised of his or her current address and must readily accept all mail sent by the Commissioner. For the purposes of this rule, registered or certified mail sent with proper postage to the registered owner or operator's last known address shall be considered adequate notification regardless of whether the mail is accepted or returned unclaimed.

Authority: T.C.A. §§ 69-3-101 et seq. and 4-5-201 et seq. **Administrative History:** Original rule filed September 12, 2012; effective December 11, 2012. Rule renumbered from 1200-04-06.

0400-45-06-.10 CLASS I WELLS.

- (1) The following are prohibited:
 - (a) Subsurface emplacement of fluids containing hazardous waste into ground water.
 - (b) Subsurface emplacement of waste fluids into ground water in a location containing extractable energy-related resources including but not limited to oil, gas, oilshale, coal and lignite. (See attached Appendix A)
 - (c) Subsurface emplacement of waste fluids into ground water in areas characterized by regional rock deformation such as of the magnitude that occurs in eastern Tennessee. (See attached Appendix A)
 - (d) Subsurface emplacement of waste fluids into or beneath aquifers composed of uncemented sand such as occurs in western Tennessee. (See attached Appendix A)

(Rule 0400-45-06-.10, continued)

- (e) The application of pressures sufficient to initiate new fractures or propagate existing fractures in the injection or confining zone.

(2) Permit Application for Class I Wells

- (a) Three separate and independent permits will be needed for Class I Wells. They are:

1. Construction permits;
2. Operating permits; and
3. Abandonment and plugging permits.

- (b) The counties in the following list generally do not have the characteristics enumerated in paragraph (1) of this rule. However, if such characteristics do exist in a particular location the prohibitions in paragraph (1) of this rule would apply.

Bedford	Houston	Perry
Cannon	Humphreys	Robertson
Cheatham	Lawrence	Rutherford
Coffee	Lewis	Smith
Davidson	Lincoln	Stewart
DeKalb	Macon	Sumner
Dickson	Maury	Trousdale
Franklin	Marshall	Warren
Giles	Moore	Williamson
Hickman	Montgomery	Wilson

(3) Construction Permit Requirements

- (a) Feasibility Study

An application for a permit to construct a new Class I injection well or for a permit modification to inject a fluid which has not been authorized by the existing permit shall be considered only after a thorough evaluation of all reasonable disposal methods. This requirement shall be satisfied as follows:

1. Submission to the Commissioner of a technical report providing:
 - (i) a characterization of the fluid to be injected;
 - (ii) the source of the fluid to be injected;
 - (iii) an evaluation of all reasonable methods of disposal which may be used for each fluid to be injected;
 - (iv) a demonstration of the effect of the fluid on the host rock and the ground water; and
 - (v) documentation that underground injection is a feasible means of the permitting process or disapprove the proposed injection well.
2. After a review, the Commissioner, will either approve continuation of the permitting process or disapprove the proposed injection well.

(Rule 0400-45-06-.10, continued)

(b) Description of Area

If the Commissioner approves the feasibility study, a hydrogeologic description of the area surrounding the site of the proposed injection facility must be submitted. The study area shall extend for at least a two and one-half miles (2½) radius of the site. The description shall include but not be limited to the following:

1. A set of inventories and maps that shall provide the following information to the extent that such information is known to the applicant or is available in public records.
 - (i) A tabulation of data on all wells of public record (to include water wells) located within the study area, to include:
 - (I) method of construction,
 - (II) date drilled,
 - (III) location,
 - (IV) depth,
 - (V) record of plugging or completion, and
 - (VI) the present use of the well.
 - (ii) A tabulation of surface waters located within the study area to include:
 - (I) type
 - (II) location, and
 - (III) use.
 - (iii) A map(s) showing the location of:
 - (I) wells,
 - (II) surface waters, and
 - (III) other pertinent surface features such as roads, mines, quarries, residences and planned developments, within the study area.
2. Hydrogeological data including maps and cross sections showing local and regional geological structure, the horizontal and vertical extent of formation(s) containing a USDW, the proposed injection zone, and the direction of flow of water in each formation(s) containing a USDW and proposed injection zone.
3. After a review, the Commissioner will either approve continuation of the permitting process or disapprove the proposed injection well.

(c) Construction Plans

Application for a permit to construct a Class I Well shall contain a proposed step-by-step drilling plan. The drilling plan must specify the proposed drilling, sampling, coring, and testing program and adhere to the design criteria and construction standards

(Rule 0400-45-06-.10, continued)

provided in this rule. If the Commissioner determines that the construction permit application meets the requirements of subparagraphs (d), (e), and (f) of this paragraph, the construction permit shall be issued.

(d) Design Criteria

1. All Class I wells shall be designed and constructed in such a fashion they inject into a formation which is beneath the lowermost formation containing a USDW.
2. All Class I wells shall be cased and cemented to prevent the movement of fluids into or between formation(s) containing a USDW and to maintain the quality of aquifers above the injection zone that may be used for monitoring or other purposes.
3. A deviation survey will be run at sufficiently frequent intervals to ensure that the casing can be set and centered for cementing.
4. The Commissioner may require directional surveys, if, after an analysis of the well design and drilling program, it is deemed necessary.
5. The construction should be supervised by a person knowledgeable and experienced in drilling and completion of injection wells.
6. All Class I injection wells shall inject fluids through tubing with a packer set immediately above the injection zone, or tubing with an approved fluid seal as an alternative. The tubing, packer, and fluid seal shall be designed for the expected service.

(e) Casings

1. The casings used in the construction of each newly drilled Class I well shall be designed for the life expectancy of the well.
2. The number, thickness, type of materials, and length of casing shall be sufficient to protect the USDWs and the integrity of the well and the confining strata.
3. Exact setting depths for all casings shall be determined in the field, based on all available information, in order to best protect USDWs.

(f) Cementing

The applicant shall submit the proposed cementing program with the drilling plan. The proposed program should insure that an adequate bond can be achieved between the casing and the borehole.

1. The cementitious material used in the construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements, the following factors shall be considered:
 - (i) depth to the injection zone;
 - (ii) depth to the bottom of all formation(s) containing USDWs;
 - (iii) injection pressure, external pressure, internal pressure, and axial loading;
 - (iv) hole size;

(Rule 0400-45-06-.10, continued)

- (v) size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification and construction material);
 - (vi) corrosiveness of injected fluid, formation fluids, and temperatures;
 - (vii) lithology of injection and confining zones;
 - (viii) type, grade, and amount of cementitious material.
2. Cementitious material must be compatible with the injected fluid, native fluids, and the formations penetrated by the bore hole.
 3. Use of additives to the cementitious materials used for mixing shall be determined by the applicant, provided the integrity, containment, corrosion protection, and structural strength of the cementitious material are not significantly affected. Accurate records shall be kept and recorded of all additives used.
 4. Prior to cementing, the hole shall be conditioned in such a way as to optimize bonding of the cement to the casing and formation, and to prevent channeling.
 5. Placement of cementitious material shall be in such a manner that the purposes and characteristics of the cement are retained, and shall be subject to Commissioner approval.
 6. The applicant shall submit a cement testing program with the permit application for Commissioner approval. The purpose of the cement testing program is to insure that the cement seal is adequate to prevent migration of fluids in channels, microannular spaces, or voids in the cement. The following methods of testing, as a minimum, shall be considered:
 - (i) pressure testing of casing - to not less than 1.5 times the expected injection pressure;
 - (ii) temperature log - must be run within forty-eight (48) hours after cementing; and
 - (iii) cement bond log.
- (g) Testing during drilling and construction of new Class I wells

Appropriate logs and other tests shall be conducted during the drilling and construction of new Class I wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a qualified log analyst and submitted to the Commissioner. At a minimum, such logs and tests shall include:

1. Directional surveys on all holes that are constructed by first drilling a pilot hole, and then enlarging the pilot hole by reaming or another method. Construction of pilot holes is not encouraged.
2. Such other logs and tests as may be needed after taking into account the availability of similar data in the area of the drilling site, the construction plan, and the need for additional information. In determining which logs and tests shall be required, the following logs shall be considered for use in the following situations:

(Rule 0400-45-06-.10, continued)

- (i) For surface casing intended to protect USDWs:
 - (I) resistivity, spontaneous potential, and caliper logs before the casing is installed; and
 - (II) a cement bond, temperature, or density log after the casing is set and cemented.
 - (ii) For intermediate and long strings of casing intended to facilitate injection:
 - (I) resistivity, spontaneous potential, porosity, and gamma ray and caliper logs before the casing is installed;
 - (II) fracture finder logs; and
 - (III) a cement bond, temperature, or density log after the casing is set and cemented.
3. The following information concerning the proposed injection zone shall be determined or calculated for new Class I wells:
- (i) hydrostatic pressure head;
 - (ii) temperature of the native fluid;
 - (iii) geostatic pressure;
 - (iv) other physical and chemical characteristics of the proposed injection zone;
 - (v) physical and chemical characteristics of the native fluids;
 - (vi) generalized direction of fluid flow in the proposed injection zone; and
 - (vii) other information as deemed necessary by the Commissioner.
- (h) Testing Integrity of Completed Class I Well(s)
1. The completed well(s) will be tested to assure that the well(s) will function as built. Tests to be considered shall include, but not be limited to, the followings:
- (i) cement bond log;
 - (ii) temperature log;
 - (iii) pressure test of final casing to at least 1.5 times the expected injection pressure for one hour, with no pressure drop after temperature correction;
 - (iv) casing inspection log from top to bottom of the well for baseline monitoring purposes;
 - (v) injection tests; and
 - (vi) withdrawal tests - if necessary.
- (i) Construction Reports

(Rule 0400-45-06-.10, continued)

1. The Commissioner shall be notified when drilling is to commence.
 2. The Commissioner will require periodic data reports and progress reports that may include, but not be limited to, the following:
 - (i) driller's log;
 - (ii) geophysical logs;
 - (iii) core analyses;
 - (iv) lithologic log;
 - (v) drill stem test data;
 - (vi) injection or withdrawal test data;
 - (vii) pressure test data; and
 - (viii) construction progress reports.
 3. Interpretation of data will be required in the data reports or progress reports at each milestone phase of construction such as completion of the pilot hole, completion of test well, and completion of well performance tests.
 4. The applicant shall submit final reports of pertinent data collected with interpretations to the Commissioner with the application for an Injection Well Operation Permit.
- (4) Operating Permits
- (a) Application for permit to operate any Class I well shall be complete and contain any information necessary to provide:
 1. A feasibility study including all of the items required in subparagraph (3)(a) of this rule. An up-to-date feasibility study must also be submitted with any request for renewal of an operating permit. If the feasibility study is not included, the application for renewal of an operating permit will not be complete.
 2. A description of the area of review which applies to each Class I injection well in a manner acceptable to the Commissioner. The description shall take into account the zone of endangering influence. A radius around the injection well field of not less than one mile shall be used as a minimum area of review. A determination of the area of review shall include, but not be limited to, the following information:
 - (i) the geologic and hydrologic characteristics of the host rock, and the confining unit separating the injection zone from the lowermost formation(s) containing a USDW;
 - (ii) the characteristics of the injection fluids and native fluids;
 - (iii) number of people residing in the area of review; and
 - (iv) ground water use and dependence; past, present, and future to the extent such information is known to the applicant or is on public record.

(Rule 0400-45-06-.10, continued)

3. The compatibility of the non-hazardous injected fluid with both the native fluid and the host rock of the intended injection zone must be demonstrated using laboratory or field data.
4. Contingency plans to prevent pollution of any USDWs or surface water which may be caused by failure of the well or associated equipment.
5. A plan for plugging and abandonment of the proposed injection well. Plugging shall be accomplished so that the injection zones are completely isolated and the movement of fluids into any formation(s) containing a USDW or between formation(s) containing a USDW is prevented. Plugging shall also be accomplished so that surface water cannot enter the well.
6. A report on the status of any corrective action required under these rules.

(b) Operating Requirements for Class I Wells

1. Injection pressure shall not exceed a maximum of 0.60 psi/foot of depth from the land surface to the shallowest injection zone unless the applicant can demonstrate, to the satisfaction of the Commissioner that a higher pressure can be used and will not initiate new fractures or propagate existing fractures in the injection zone.
2. Total pressure shall not exceed the maximum allowable stress of the materials used to construct the well.
3. Injection of wastewater between the outermost casing protecting USDWs and the inner tubing is prohibited.
4. All waste fluids to be emplaced shall be injected through tubing.
5. The annulus between the tubing and the long string of casing shall be filled with a fluid approved by the Commissioner. A pressure, also approved by the Commissioner shall be maintained on the annulus sufficient to allow for continuous monitoring of the mechanical integrity of the well.
6. The Commissioner shall be notified when operation is to commence.
7. Other operational limitations shall be established as necessary on a case-by-case basis.

(c) Operation and maintenance Manual

1. Operation and maintenance procedure manual(s) shall be prepared for injection well disposal facilities, or parts thereof. The manual shall, at a minimum, contain appropriate information discussed in the remainder of this subparagraph. The Commissioner may require that the manual be submitted as part of the application for an operating permit.
2. The required procedure shall provide for the reliable and efficient operation and maintenance of the injection well disposal facility, in accordance with the requirements of this rule.
3. The detail of the required manual shall be consistent with the complexity of the system. The manual shall be developed in accordance with the unique

(Rule 0400-45-06-.10, continued)

requirements of the individual injection well disposal facility and shall provide the operator with sufficient information and description regarding the design, operation, and maintenance criteria and features of the disposal facility involved.

4. Basic hydraulic and engineering design criteria for the injection well disposal facility shall be included in the manual, as well as information and procedures required for normal control and distribution of effluent within the injection well disposal facility.
5. Information concerning process control and performance evaluation for the facility shall be included, as well as equipment and procedural descriptions for emergency operating conditions, alternate discharge as a back-up procedure, and listing of spare parts to have on hand. Regular maintenance of all equipment, repair, safety, and monitoring procedures, laboratory, lab testing equipment, and personnel requirements, and a "trouble shooting" problem guide shall also be included in the manual.
6. A copy of the manual shall be provided to the operator of the injection facility by the permittee. The manual shall be available for reference at the facility or other approved site. The permittee shall maintain at least one copy of the manual.
7. The Commissioner may require revisions to the manual to reflect any facility modifications performed in order to comply with the requirements of this chapter, or to reflect experience resulting from facility operation.

(d) Abnormal Events

1. In the event the permittee is temporarily unable to comply with any of the conditions of a permit that may result in imminent harm to the public health or to the environment due to breakdown of equipment, power outages, destruction by hazard of fire, wind, or by other cause, the permittee of the facility shall immediately cease injection and shall notify the Commissioner. Notification shall be made in person, by telephone, or by telegraph to the nearest office of the Department within 24 hours of breakdown or malfunction.
2. A written report shall be required by the Commissioner within 72 hours of the notification referenced in part 1 of this subparagraph. The report shall describe the nature and cause of the breakdown or malfunction, the steps being taken or planned to be taken to correct the problem and prevent its reoccurrence, emergency procedures in use pending correction of the problem, and the time when the facility will again be operating in accordance with permit conditions.
3. Under emergency conditions in which the permittee is unable to use the permitted well, the permittee may use an alternate discharge only with prior approval of the Commissioner. The applicant shall address the alternate disposal method in the permit application and the operating manual.
4. In the event a well must be developed the applicant shall address disposal of backwashed fluids. The disposal method shall be approved by the Commissioner.

(e) Operational Monitoring Requirements

1. In determining the type, number, depth, and location of monitoring wells to be used and the parameters to be measured, the following criteria shall, as a minimum, be considered:

(Rule 0400-45-06-.10, continued)

- (i) the local geology and hydrology,
 - (ii) the extent of the area of review;
 - (iii) the proximity of the injection operation to points of withdrawal of drinking water;
 - (iv) the operating pressures and attendant hydraulic gradients;
 - (v) the physical and chemical character of the injected fluid; and
 - (vi) the number, type, location, and depth of water wells in the area of review.
 2. The Commissioner shall be allowed access at reasonable times to the permittee's property and records for the purpose of inspections and the collection of samples for analyses from the wastewater streams associated with the permitted wells.
 3. The physical and chemical quality of the native fluid in the injection zone and in the zone(s) to be monitored shall be established prior to injection.
 4. The injected fluid shall be analyzed with sufficient frequency to yield representative data on its characteristics.
 5. Continuous indicating and recording devices shall be used to monitor fluid level or closed-in surface pressure in monitor wells other than the injection wells.
 6. The mechanical integrity of the injection well system shall be examined and evaluated at least once every three years in accordance with the standards contained in this rule.
- (f) Class I injection wells shall be monitored as follows:
1. Continuous indicating and recording devices shall be installed and used to monitor the following:
 - (i) injection rate and daily volume of injected fluids;
 - (ii) injection pressure; and
 - (iii) pressure maintained on the annulus between the injection tubing and the long string of casing.
 2. Determination shall be made at least twice monthly of the injectivity index of each well used for injection. The method of determination shall be subject to the approval by the Commissioner.
- (g) Sampling frequency and procedure for monitoring wells other than the injection well shall include, but not be limited to:
1. The fluids in the zone to be monitored shall be sampled and analyzed with sufficient frequency to yield representative data on its characteristics. The frequency shall be at least monthly.

(Rule 0400-45-06-.10, continued)

2. Constituents to be monitored shall be those determined appropriate based on the nature of the waste being injected.
3. Samples must be collected by a method insuring that the sample is representative of the fluid in the zone to be monitored. The method shall be subject to approval by the Commissioner.

(h) Operation Reports

1. The applicant must submit, for Commissioner approval, his proposed methodology for collection and reporting of operational data, to insure that data is collected, correlated, and reported in a fashion that would enable the agency to evaluate well performance.
2. Reporting requirements shall, at a minimum, include:
 - (i) Quarterly reporting to the Commissioner;
 - (ii) Monthly average, maximum and minimum values for injection pressure, flow rate, volume, and annular pressure; and
 - (iii) Results of mechanical integrity and any other periodic test required by the Commissioner shall be reported with the first regular quarterly report after the completion of the test.
3. The results of analyses of representative samples of the injected fluid and water from the monitoring wells shall be submitted on a quarterly basis to the Commissioner. Parameters for such analyses shall be established on an individual basis.

(i) Ambient Monitoring

1. Based on a site-specific assessment of the potential for fluid movement from the well or injection zone and on the potential value of monitoring wells to detect such movement, the Commissioner shall require the owner or operator to develop a monitoring program. At a minimum, the Commissioner shall require:
 - (i) Monitoring of the pressure buildup in the injection zone annually, including a shut down of the well for a time sufficient to conduct a valid observation of the pressure fall-off curve; and
 - (ii) Periodic monitoring of the ground water quality in the first aquifer overlying the injection zone.
2. When prescribing a monitoring system the Commissioner may also require:
 - (i) Continuous monitoring for pressure changes in the first aquifer overlying the confining zone. When such a well is installed, the owner or operator shall, on a quarterly basis, sample the aquifer and analyze for constituents specified by the Commissioner;
 - (ii) The use of indirect, geophysical techniques to determine the position of the waste front, the water quality in a formation designated by the Commissioner, or to provide other site specific data;

(Rule 0400-45-06-.10, continued)

- (iii) Periodic monitoring of the ground water quality in the lowermost USDW;
and
 - (iv) Any additional monitoring necessary to determine whether fluids are moving into or between USDWs.
- (5) Plugging and Abandonment Permits
- (a) Upon the occurrence of any of the conditions stated in subparagraph (6)(a) of Rule 0400-45-06-.09, the owner or operator of the well shall submit an application for a permit for plugging and abandonment of the well.
 - (b) Before any injection well is plugged, the owner or operator shall obtain a permit for the plugging of the well.
 - (c) The application shall include the items stated in subparagraph (6)(b) of Rule 0400-45-06-.09.
 - (d) If the Commissioner finds that the application meets all requirements of these rules, then the permit for plugging and abandonment of the well shall be issued.
 - (e) Upon completion of plugging and abandonment of a well or wellfield, the permittee shall submit to the Commissioner a Final Report, in accordance with the standards described in paragraph (6) Rule 0400-45-06-.09, which shall include, but will not be limited to, the following:
 - 1. Daily construction reports;
 - 2. Certification of completion in accordance with approved plans and specifications by a person knowledgeable and experienced in the field; and
 - 3. Evidence, such as a sealed copy or certification from the county clerk, that a surveyor's plot of the location of the abandoned wells has been recorded in the county courthouse property records.
 - (f) The Commissioner shall require post-closure monitoring of Class I wells for at least three (3) years. Results of such monitoring shall be reported quarterly to the Commissioner.

Authority: T.C.A. §§ 69-3-101 et seq. and 4-5-201 et seq. **Administrative History:** Original rule filed September 12, 2012; effective December 11, 2012. Rule renumbered from 1200-04-06.

0400-45-06-.11 CLASS II WELLS.

A permit must be obtained from the Commissioner prior to the operation of any Class II injection well except for existing Class II enhanced recovery wells and hydrocarbon storage wells. This requirement is in addition to and separate from any approval or regulatory procedure required by the Tennessee Oil and Gas Board, Department of Environment and Conservation.

(1) Permit Applications

- (a) For Class II wells, the Commissioner shall require an applicant to furnish a demonstration of commercial producibility which shall be made as follows:
 - 1. For a Class II well to be used for enhanced oil recovery processes in a field or project containing aquifers from which hydrocarbons were previously produced,

(Rule 0400-45-06-.11, continued)

- commercial producibility shall be presumed by the Commissioner upon evidence that production has occurred in the project area or field.
2. For Class II wells not located in a field or project from which hydrocarbons were previously produced, information such as logs, core data, formation description, formation depth, formation thickness, and formation parameters such as permeability and porosity shall be considered by the Commissioner to the extent such information is available.
- (b) Permit applications for Class II wells shall be submitted by the applicant using the appropriate permit application form promulgated by the Department and shall contain any attachments necessary to provide:
1. facility name and location;
 2. name and address of legal contacts (agents of process);
 3. ownership of facility, including address;
 4. a map and a tabulation of data as required by part (3)(b)1 of Rule 0400-45-06-.10.
 5. a description of the proposed injection system including type and construction of injection wells, nature of injected fluid and any proposed pretreatment;
 6. a statement of estimated daily volume of fluid to be injected and maximum injection pressure;
 7. appropriate logs of the well with the proposed injection zone marked, in the case of a well already drilled, or; in the case of undrilled wells a statement of the proposed zone to be used for disposal and the approximate depth of said zone;
 8. a schematic diagram of the proposed Class II well showing the casing and cementing program together with an explanation thereof; and
 9. a statement by the applicant that the proposed Class II well(s) will be completed in such a manner to insure that the injected substances are injected into the proposed injection zone and that provisions have been made for adequate protection of formation(s) containing USDWs and any other zone of commercial value.
 10. proposed formation testing program to obtain the information required by subparagraph (5)(b) of this rule.
 11. proposed stimulation program.
 12. proposed injection procedure.
 13. proposed contingency plans, if any, to address well failures so as to prevent migration of contaminating fluids into a USDW.
 14. plans for meeting the monitoring requirements of paragraph (6) of this rule.
- (c) Reserved
- (d) Additional requirements for Class II enhanced recovery wells

(Rule 0400-45-06-.11, continued)

Applications for Class II enhanced recovery wells must include a description of the reservoir to be enhanced and a state statement relative to the necessity for the use of wells to enhance production of oil or natural gas.

(e) Additional Requirements for Class II Hydrocarbon Storage Wells

Applications for Class II hydrocarbon storage wells must include the following:

1. a map showing the known areal extent of the reservoir to be used for storage and the location of all wells or test holes known to extend into or through the proposed reservoir.
2. a series of maps and geologic cross-sections showing the known subsurface position and structure of the reservoir, the nature of the horizontal and vertical boundaries of the reservoir, and the thickness of the reservoir.
3. a tabulation of the type, construction, depth and current condition of each well or test hole located within the area covered by the reservoir map required in part 1 of this subparagraph.
4. a description of the procedures to be used to plug or work over existing wells or test holes to prevent migration of injected substances into any aquifer other than the proposed storage reservoir.
5. a description of the method, procedures and devices for testing the integrity of the proposed reservoir to contain the injected substances within the bounds of the reservoir.

(f) The Commissioner may issue a permit on an area basis rather than for each Class II well individually provided that the injection wells are:

1. described and identified by location in permit application(s) if they are existing wells, except that the Commissioner may accept a single description of wells with substantially the same characteristics;
2. within the same well field, facility site, reservoir, project, or similar unit in the same State;
3. operated by a single owner or operator; and
4. used to inject other than hazardous waste.

(g) Area permits shall specify:

1. the area within which underground injections are authorized; and
2. the requirements for construction, monitoring, reporting, operation, and abandonment, for all wells authorized by the permit.

(h) The area permit may authorize the permittee to construct and operate, convert, or plug and abandon wells within the permit area provided:

1. the permittee notifies the Commissioner at such time as the permit requires;

(Rule 0400-45-06-.11, continued)

2. the additional well satisfies the criteria in subparagraph (f) of this paragraph and meets the requirements specified in the permit under subparagraph (g) of this paragraph; and
 3. the cumulative effects of drilling and operation of additional injection wells are considered by the Commissioner during evaluation of the area permit application and are acceptable to the Commissioner.
- (i) If the Commissioner determines that any well constructed under an area permit does not satisfy any of the requirements of this paragraph, the Commissioner may modify the permit, terminate, or take enforcement action. If the Commissioner determines that cumulative effects of additional wells are unacceptable, the permit may be modified or revoked.
- (2) Construction of Class II Wells
- (a) All Class II wells shall be cased and cemented to prevent the movement of fluids into or between USDWs and to maintain the quality of aquifers above the injection zone that may be used for monitoring or other purposes.
 - (b) All Class II wells shall be designed and constructed in such a fashion that they inject into a formation which is beneath the lower-most formation(s) containing USDWs. Class II wells shall be sited in such a fashion that they inject into a formation which is separated from any formation(s) containing USDWs by a confining zone that is free of known open faults or fractures within the area of review.
 - (c) In the design specifications for Class II wells, the applicant shall address the problem of corrosion, proposed protective measure(s), and if appropriate, proposed methods of monitoring the extent of corrosion subject to Commissioner approval. The applicant shall consider thickness and type of cement, number and thickness of casings, casing material, casing coatings, native fluid quality, injection fluid quality and life expectancy of the well.
 - (d) Class II wells shall inject fluids through tubing with a packer set immediately above the injection zone, or tubing with an approved fluid seal as an alternative. The tubing, packer, and fluid seal shall be designed for the expected service.
 1. The use of other alternatives may be allowed with the written approval of the Commissioner and if the Commissioner receives authority from U.S. E.P.A. for an underground injection control program, the EPA Administrator or his designee. To obtain approval, the applicant shall submit a written request to the Commissioner, which shall set forth the proposed alternative and all technical data supporting its use. The Commissioner will approve the request if the alternative method is deemed capable of providing a comparable level of protection to USDWs.
 2. In determining and specifying requirements for tubing, packer, or alternatives, the following factors shall be considered:
 - (i) depth of setting;
 - (ii) characteristics of injection fluid (chemical content and corrosiveness);
 - (iii) injection rate and pressure;
 - (iv) annular pressure;

(Rule 0400-45-06-.11, continued)

- (v) temperature, volume, viscosity, and density of injected fluid; and
 - (vi) type and size of casing.
 - (e) Commissioner approval is required prior to any remedial procedures that alter the basic design specifications, materials, or character of the well.
- (3) Casings
 - (a) The casings used in the construction of each newly drilled Class II well shall be designed for the life expectancy of the well.
 - (b) The number, thickness, type of materials, and length of casing shall be sufficient to protect the quality of drinking water resources and the integrity of the well and the confining strata.
 - (c) Exact setting depths for all casings shall be determined in the field, based on all available information, and subject to the Commissioner's approval.
- (4) Cementing
 - (a) The cementitious material used in the construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements, the following factors shall be considered:
 - 1. depth to the injection zone;
 - 2. depth to the bottom of all formation(s) containing USDWs;
 - 3. injection pressure and external loading;
 - 4. hole size;
 - 5. size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification and construction material);
 - 6. corrosiveness of injected fluid, formation fluids, and temperatures;
 - 7. lithology of injection and confining zones; and
 - 8. type or grade of cementitious material.
 - (b) In addition, the Commissioner may consider the following factors:
 - 1. nature of formation fluids, and
 - 2. external pressures, internal pressure and axial loading.
 - (c) Cementitious material must be compatible with the injected fluid, native fluids, and the formation.
 - (d) Use of the cementitious materials used for mixing shall be determined by the applicant, provided the integrity, containment, corrosion protection, and structural strength of the cement are not significantly affected. Accurate records shall be kept and recorded of all additives used.

(Rule 0400-45-06-.11, continued)

- (e) Prior to cementing, the hole shall be conditioned in such a way as to optimize bonding of the cement to the casing and formation, and to prevent channeling.
 - (f) Placement of cementitious material shall be in such a manner that the purposed and characteristics of the cement are retained, and shall be subject to Commissioner approval.
 - (g) The applicant shall submit his cement testing program with the permit application for Commissioner approval. The purpose of the cement testing program is to insure that the cement seal is adequate to prevent migration of fluids in channels, microannular space, or voids in the cement. The following methods of testing, as a minimum, shall be considered:
 - 1. pressure testing of casing - to not less than 1.5 times the expected injection pressure;
 - 2. temperature log; and
 - 3. cement bond log.
- (5) Testing for Class II Wells
- (a) Appropriate logs and other tests shall be conducted during the drilling and construction of new Class II wells. A descriptive report interpreting the results of that portion of those logs and tests which specifically relate to (1) a USDW and the confining zone adjacent to it, and (2) the injection zone and adjacent formations shall be prepared by a knowledgeable log analyst and submitted to the Commissioner. At a minimum, these logs and tests shall include:
 - 1. Deviation checks on all holes constructed by first drilling a pilot hole and then enlarging the pilot hole, by reaming or another method. Such checks shall be at sufficiently frequent intervals to assure that vertical avenues for fluid movement in the form of diverging holes are not created during drilling.
 - 2. Such other logs and tests as may be needed after taking into account the availability of similar data in the area of the drilling site, the construction plan, and the need for additional information that may arise from time to time as the construction of the well progresses. In determining which logs and tests shall be required, the following shall be considered by the Commissioner in setting logging and testing requirements:
 - (i) For surface casing intended to protect USDWs in areas where the lithology has not been determined:
 - (I) electric and caliper logs before casing is installed; and
 - (II) a cement bond, temperature, or density log after the casing is set and cemented.
 - (ii) For intermediate and long strings of casing intended to facilitate injection:
 - (I) electric, porosity and gamma ray logs before the casing is installed;
 - (II) fracture finder logs; and

(Rule 0400-45-06-.11, continued)

- (III) a cement bond, temperature, or density log after the casing is set and cemented.
 - (b) At a minimum, the following information concerning the injection formation shall be determined or calculated for new Class II wells or projects:
 - 1. fluid pressure;
 - 2. estimated fracture pressure; and
 - 3. physical and chemical characteristics of the injection zone.
 - (c) Prior to commencement of injection, wells shall be tested to assure the initial integrity of the casing, tubing and packer, if used, including pressure testing of the casing-tubing annulus.
 - (d) At least once every five years thereafter, injection wells shall be tested to assure their continued mechanical integrity. The results of these tests shall be reported to the Commissioner. Tests demonstrating continued mechanical integrity shall include the following:
 - 1. measurement of annular pressures in wells injecting at positive pressures under a packer or a balanced-fluid seal;
 - 2. pressure testing of the casing-tubing annulus for wells injecting under vacuum conditions; and
 - 3. such other tests which are demonstrably effective and which may be approved for use by the Commissioner.
 - (e) Notwithstanding the test procedures of subparagraph (d) of this paragraph, the Commissioner may require more comprehensive testing of the injection wells when deemed advisable, including the use of tracer surveys, noise logs, temperature logs, or other test procedures or devices.
 - (f) The Commissioner may order special tests to be conducted prior to the expiration of five years if conditions are believed to so warrant. Any such special test which demonstrates continued mechanical integrity of a well shall be considered the equivalent of an initial test for test scheduling purposes, and the regular five-year testing schedule shall be applicable thereafter.
 - (g) The injection well operator shall advise the Commissioner of the date and the time that initial, a five-year, or special tests are to commence in order that such tests may be witnessed.
 - (h) Injection pressure at the wellhead shall not exceed a maximum which shall be calculated so as to assure that the pressure during injection does not initiate new fractures or propagate existing fractures in the confining zone adjacent to USDWs. In no case shall injection pressure cause the movement of injection or formation fluids into USDWs.
 - (i) Injection between the outermost casing protecting USDWs and the well bore is prohibited.
- (6) Monitoring Requirements

(Rule 0400-45-06-.11, continued)

- (a) Class II wells shall be so equipped that the flow rate, injection pressure and annular pressure can be determined at any time for each well.
 - (b) The permittee shall monitor the nature of injected fluids at time intervals sufficiently frequently to yield data representative of their characteristics;
 - (c) The permittee shall make observation of injection pressure, flow rate, and cumulative volume at least daily.
 - (d) The results of all monitoring shall be maintained by the operator and made available to the Commissioner upon request.
 - (e) The Commissioner may grant administrative exception to the requirement set forth in subparagraph (c) of this paragraph.
 - (f) Hydrocarbon storage and enhanced recovery may be monitored on a field or project basis rather than on an individual well basis by manifold monitoring. Manifold monitoring may be used in cases of facilities consisting of more than one injection well, operating with a common manifold. Separate monitoring systems for each well are not required provided the owner/operator demonstrates that manifold monitoring is comparable to individual well monitoring.
 - (g) Monitoring requirements shall, at a minimum, include:
 - 1. Monitoring of the nature of injected fluids at time intervals sufficiently frequent to yield data representative of their characteristics;
 - 2. Observation of injection pressure, flow rate, and cumulative volume at least with the following frequencies:
 - (i) Weekly for produced fluid disposal operations;
 - (ii) Monthly for enhanced recovery operations;
 - (iii) Daily during the injection of liquid hydrocarbons and injection for withdrawal of stored hydrocarbons;
 - (iv) Daily during the injection phase of cyclic steam operations; and
 - (v) Recording of one observation of injection pressure, flow rate and cumulative volume at reasonable intervals no greater than 30 days.
 - 3. Maintenance of the results of all monitoring until the next permit review.
- (7) Commencement, Discontinuance, and Abandonment of Injection Operations

The following provisions shall apply to all Class II wells.

- (a) Notice of Commencement and Discontinuance
 - 1. Immediately upon the commencement of injection operations in any well, the operator shall notify the Division of the date such operations began.
 - 2. Within 30 days after permanent cessation of hydrocarbon storage operations or within 30 days after discontinuance of injection operations into any other well, the operator shall notify the Commissioner of the date of such discontinuance and

(Rule 0400-45-06-.11, continued)

the reasons therefore. No injection well may be temporarily abandoned for a period exceeding six months unless the owner/operator demonstrates to the satisfaction of the Commissioner that there is a continuing need for such a well, that the well exhibits mechanical integrity, and that continued temporary abandonment will not endanger USDWs. Written permission is required.

(b) Abandonment of Injection Operations

1. Whenever there is a continuous two year period of non-injection into any Class II well, such project or well must be plugged and abandoned, and the authority for injection shall automatically terminate, unless the owner/operator demonstrates to the satisfaction of the Commissioner that there is a continuing need for such a well, that the well exhibits mechanical integrity, and that continued temporary abandonment will not endanger USDWs. Written permission is required.
2. Before any injection well is plugged, the operator shall obtain approval for the well's plugging program from the Commissioner.
3. For good cause shown, the Commissioner may grant an administrative extension or extensions of injection authority as an exception to part 1 of this subparagraph.

(c) Prior to granting approval for the plugging and abandonment of a Class II well the Commissioner shall consider the following information:

1. The type, and number of plugs to be used;
2. The placement of each plug including elevation top and bottom;
3. The type, grade, and quantity of cement to be used; and
4. The method of placement of the plugs.
5. The procedure used to meet the requirements of Rule 0400-45-06-.04.

(8) Reporting Requirements

- (a) Annual reporting to the Commissioner summarizing the results of monitoring required under paragraph (6) of this rule is required. Such summary shall include monthly records of injected fluid, and any major changes in characteristics or sources of injected fluid.
- (b) Owners or operators of hydrocarbon storage and enhanced recovery projects may report on a field or project basis rather than an individual field basis where manifold monitoring is used.
- (c) The Commissioner may require a demonstration of mechanical integrity prior to approving transfer of authority to inject. Prior to approval to inject, the permittee must supply to the Commissioner the following:
 1. the anticipated maximum pressure and flow rate at which the well will operate;
 2. the results of the formation testing program;
 3. the actual injection procedure; and

(Rule 0400-45-06-.11, continued)

4. for new wells, the status of corrective action on defective wells in the area of review.

(9) Removal of Produced Water from Leases and Field Facilities

- (a) Produced water shall not be stored or disposed of in any unlined pit, pond, lake or depression or in any other place in a manner that will constitute a hazard to USDWs.
- (b) Transportation of any produced water by motor vehicle from any lease, central tank battery, or other facility, without approval of the Commissioner is prohibited.
- (c) Authorization to transport produced water may be obtained by submitting a request to the Commissioner.
- (d) No owner or operator shall permit produced water to be removed from its leases or field facilities by motor vehicle except by a person possessing Commissioner approval.

(10) Disposition of Transported Produced Water

- (a) No person transporting produced water may dispose of such water on the surface of the ground, or in any pit, pond, lake, depression, draw, or in any watercourse, or in any other place or in any manner which will constitute a hazard to any USDW.
- (b) Delivery of produced water to approved wastewater disposal facilities, enhanced recovery injection facilities, or to a drill site for use in drilling fluid will not be construed as constituting a hazard to USDWs provided the produced waters are placed in tanks or other impermeable storage at such facilities.
- (c) The Commissioner may grant temporary exceptions for emergency situations, for use of produced water in road construction or maintenance or for use of produced waters for other construction purposes upon request and a proper showing by a holder of a Commissioner approval to move produced water.

(11) Existing Class II enhanced recovery wells and hydrocarbon storage wells.

Class II wells in current operation upon the effective date of this rule shall file an application within 6 months of the effective date of this rule. No application fee will be required. Failure to file an application by the required date shall make the wells in violation of this Chapter and subject to the new application fee or closure.

- (a) An existing Class II enhanced recovery or hydrocarbon storage injection well is authorized by rule, if the owner or operator injects into the existing well within one year after the date which the State of Tennessee's UIC program is authorized under the Federal Safe Drinking Water Act and becomes effective. An owner or operator of a well which is authorized by rule pursuant to this paragraph shall re-work, operate, maintain, plug, abandon or inject into the well in compliance with applicable regulations.

- (b) Duration of well authorization by rule

Well authorization under this paragraph expires upon the effective date of a permit issued after plugging and abandonment in accordance with an approved plugging and abandonment plan pursuant to these rules and upon submission of a plugging and abandonment report.

- (c) Prohibitions on injection

(Rule 0400-45-06-.11, continued)

An owner or operator of a well authorized by rule pursuant to this paragraph is prohibited from injecting into the well:

1. Upon the effective date of an applicable permit denial;
2. Upon failure to submit a permit application in a timely manner;
3. Upon failure to submit inventory information in a timely manner;
4. Upon failure to comply with a request for information in a timely manner;
5. Upon failure to provide alternative financial assurance;
6. Forty-eight hours after receipt of the determination by the Commissioner that the well lacks mechanical integrity, unless the Commissioner requires immediate cessation; or
7. Upon receipt of notification from the Commissioner that the transferee has not demonstrated financial responsibility.

(d) Requirements

The owner or operator of a well authorized under this paragraph shall comply with the applicable requirements of this rule. Such owner or operator shall comply with the casing and cementing requirements no later than 1 year and other requirements no later than 1 year after authorization.

Authority: T.C.A. §§ 69-3-101 et seq. and 4-5-201 et seq. **Administrative History:** Original rule filed September 12, 2012; effective December 11, 2012. Rule renumbered from 1200-04-06.

0400-45-06-.12 CLASS III WELLS.

(1) Permit Application

- (a) For Class III wells, the Commissioner shall require an applicant to furnish a feasibility study demonstrating the applicability of the injection well method of mining.
- (b) A permit must be obtained from the Commissioner prior to the operation of any Class III well. Prior to granting approval for operation of a Class III well or project, the Commissioner shall consider all relevant information developed during the construction phase as well as any information submitted in the permit application and supporting documents.
- (c) Permit applications for Class III wells shall be submitted by the applicant using the appropriate permit application form promulgated by the Department and shall contain any attachments necessary to provide:
 1. facility name and location;
 2. name and address of legal contacts (agents of process);
 3. ownership of facility, including address;
 4. a map and a tabulation of data as required by part (3)(b)1 of Rule 0400-45-06-.10.

(Rule 0400-45-06-.12, continued)

5. a description of the proposed injection system including type and construction of injection wells, nature of injected fluid and any proposed pretreatment;
 6. a statement of estimated daily volume of fluid to be injected and maximum injection pressure;
 7. an electric log of the well with the proposed injection zone marked, in the case of a well already drilled, or; in the case of undrilled wells a statement of the proposed zone to be mined and the approximate depth, top and bottom, of said zone;
 8. a schematic diagram of the proposed Class III well showing the casing and cementing program together with an explanation thereof; and
 9. a statement by the applicant that the proposed Class III well(s) will be completed in such a manner to insure that the injected substances are injected into the proposed injection zone and that provision has been made for adequate protection of USDWs and any other zones of commercial value.
- (d) The Commissioner may issue a permit on an area basis rather than for each Class III well individually provided that the injection wells are:
1. described and identified by location in permit application(s) if they are existing wells, except that the Commissioner may accept a single description of wells with substantially the same characteristics;
 2. within the same well field, facility site, reservoir, project, or similar unit in the same State;
 3. operated by a single owner or operator; and
 4. used to inject other than hazardous waste.
- (e) Area permits shall specify:
1. the area within which underground injections are authorized; and
 2. the requirements for construction, monitoring, reporting, operation, and abandonment, for all wells authorized by the permit.
- (f) The area permit may authorize the permittee to construct and operate, convert, or plug and abandon wells within the permit area provided:
1. the permittee notifies the Commissioner at such time as the permit requires;
 2. the additional well satisfies the criteria in subparagraph (d) of this paragraph and meets the requirements specified in the permit under subparagraph (e) of this paragraph; and
 3. the cumulative effects of drilling and operation of additional injection wells are considered by the Commissioner during evaluation of the area permit application and are acceptable to the Commissioner.
- (g) If the Commissioner determines that any well constructed under an area permit does not satisfy any of the requirements of this paragraph, the Commissioner may modify

(Rule 0400-45-06-.12, continued)

the permit, terminate, or take enforcement action. If the Commissioner determines that cumulative effects of additional wells are unacceptable, the permit may be modified or revoked.

(2) Well Construction Standards for Class III Wells

(a) General Design Considerations

1. All Class III wells shall be cased and cemented to prevent the movement of fluids into or between USDWs and to maintain the quality of aquifers above the injection zone that may be used for monitoring or other purposes.
2. In the design specification for Class III wells, the applicant shall address the problem of corrosion, proposed protective measure(s), and if appropriate, proposed methods of monitoring the extent of corrosion subject to Commissioner approval. The applicant shall consider thickness and type of cement, number and thickness of casings, casing material, casing coatings, native fluid quality, injection fluid quality and life expectancy of the well.
3. Class III wells shall inject fluids through tubing with a packer set immediately above the injection zone, or tubing with an approved fluid seal as an alternative. The tubing, packer, and fluid seal shall be designed for the expected service.
 - (i) The use of other alternatives may be allowed with the written approval of the Commissioner. To obtain approval, the applicant shall submit a written request to the Commissioner, which shall set forth the proposed alternative and all technical data supporting its use. The Commissioner will approve the request if the alternative method is deemed capable of providing a comparable level of protection to USDWs.
 - (ii) In determining and specifying requirements for tubing, packer, or alternatives the following factors shall be considered:
 - (I) depth of setting;
 - (II) characteristics of injection fluid (chemical content and corrosiveness);
 - (III) injection rate and pressure;
 - (IV) annular pressure;
 - (V) temperature, volume, viscosity and density of injected fluid; and
 - (VI) type and size of casing.
4. Commissioner approval is required prior to any remedial procedures that alter the basic design specifications, materials, or character of the well.

(b) Casings

1. The casings used in the construction of each newly drilled Class III well shall be designed for the life expectancy of the well.

(Rule 0400-45-06-.12, continued)

2. The number, thickness, type of materials, and length of casing shall be sufficient to protect the quality of USDW waters and the integrity of the well and the confining strata.
3. Exact setting depths for all castings shall be determined in the field, based on all available information, and subject to the Commissioner's approval.

(c) Cementing

1. The cementitious material used in the construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements, the following factors shall be considered by the applicant:
 - (i) depth to the injection zone;
 - (ii) depth to the bottom of all formations containing USDWs;
 - (iii) injection pressure, external pressure, internal pressure, and axial loading;
 - (iv) hole size;
 - (v) size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification and construction material);
 - (vi) corrosiveness of injected fluid, formation fluids, and temperatures;
 - (vii) lithology of injection and confining zones; and
 - (viii) type or grade of cementitious material.
2. Cementitious materials must be compatible with the injected fluid, native fluids, and the formations penetrated by the bore hole.
3. Use of additives used for mixing shall be determined by the applicant, provided the integrity, containment, corrosion protection, and structural strength of the cement are not significantly affected. Accurate records shall be kept and recorded of all additives used.
4. Placement of cementitious material shall be in such a manner that the purposes and characteristics of the cement are retained, and shall be subject to Commissioner approval.
5. The applicant shall submit his cement testing program with the permit application for Commissioner approval. The purpose of the cement testing program is to insure that the cement seal is adequate to prevent migration of fluids in channels, micro-annular spaces, or voids in the cement. The following methods of testing, as a minimum, shall be considered:
 - (i) pressure testing of casing - to not less than 1.5 times the expected injection pressure;
 - (ii) temperature log; and
 - (iii) cement bond log.

(Rule 0400-45-06-.12, continued)

(d) Testing

1. Appropriate logs and other tests shall be made during the drilling and construction of new Class III wells. Upon completion of construction, the completed well system will be tested to assure that the well system will function as designed at the design operation pressures. A descriptive report interpreting the results of such logs and tests shall be prepared by a qualified log analyst and submitted to the Commissioner. The logs and tests appropriate to each type of Class III well shall be determined based on the intended function, depth, construction and other characteristics of the well, availability of similar data in the area of the drilling site and the need for additional information that may arise from time to time as the construction of the well progresses. At a minimum, such logs and tests shall include deviation checks conducted on all holes where pilot holes and reaming are used, at sufficiently frequent intervals to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling.
2. Where the injection zone is a water bearing formation, the following information concerning the injection zone shall be determined or calculated by the applicant for new Class III wells:
 - (i) hydrostatic pressure head;
 - (ii) fluid pressure;
 - (iii) fracture pressure;
 - (iv) other physical and chemical characteristics of the injection zone;
 - (v) physical and chemical characteristics of the native fluids; and
 - (vi) compatibility of injected fluids with formation fluids.
3. Where the injection formation is not a water bearing formation, the fracture pressure shall be determined or calculated.

(e) Environmental Concerns During Construction

1. The disposal of drilling fluids or cuttings and the disposal of wastes during testing shall be in a sound environmental manner that avoids violation of surface and ground water quality standards. The proposed disposal method must be approved by the Commissioner prior to start of construction.
2. For Class III wells, the applicant is advised that other permits may be required for surface facilities associated with the mining activity.

(f) Operating Requirements

1. Total pressure shall not exceed the maximum allowable stress of the materials used to construct the well and shall not initiate new fractures or propagate existing fractures in the confining zone or in the injection zone or cause migration of fluids into USDWs.
2. Injection between the outermost casing protecting USDWs and the inner tubing is prohibited.

(Rule 0400-45-06-.12, continued)

3. The Commissioner shall be allowed access at reasonable time to the permittee's property and records for the purpose of inspections and the collection of samples for analyses from the process and wastewater streams associated with the permitted wells.
4. Other operational limitations shall be established as necessary on a case-by-case basis.

(g) Monitoring Requirements

1. Monitoring Well Design

- (i) Monitor wells shall be located in such a fashion as to detect any excursion of injected fluids or process by-products outside the mining area or zone.
- (ii) Where injection is into a formation which contains water with less than 10,000 mg/L Total Dissolved Solids, monitoring wells shall be completed into the injection zone and into the deepest aquifer above the injection zone and may also be required below the injection zone.
- (iii) Where injection is into a formation which contains water with more than 10,000 mg/L Total Dissolved Solids, monitoring wells will be required above and may be required in the injection zone.
- (iv) Where the injection wells penetrate USDWs in an area subject to subsidence or catastrophic collapse, an adequate number of monitoring wells shall be completed into USDWs to detect any movement of injected fluids, process by-products or native fluids into the USDWs. The monitoring wells shall be located outside the physical influence of the subsidence or catastrophic collapse.
- (v) Class III wells may be monitored on a field or project basis rather than an individual well basis provided the owner or operator demonstrates to the satisfaction of the Commissioner that the proposed monitoring system is comparable to individual well monitoring.
- (vi) In determining the type, number, depth, and location of monitoring wells to be used and the parameters to be measured, the following criteria shall, as a minimum, be considered by the applicant:
 - (I) the local geology and hydrology;
 - (II) the population relying on USDWs within the area of review;
 - (III) the proximity of the injection operation to points of withdrawal of drinking water;
 - (IV) the operating pressures and attendant hydraulic gradients;
 - (V) the nature and volume of the injected fluid, the formation water and process by-products; and
 - (IV) the number, type, location, and depth of injection wells in the system, field or project.

(h) Monitoring Well Construction Requirements

(Rule 0400-45-06-.12, continued)

Any monitoring well which penetrates the confining zone must be designed and constructed using the same standards that apply to the type of injection well to be monitored.

(i) Monitoring Criteria

1. The physical and chemical quality of the native fluid in the zones to be monitored shall be established prior to injection.
2. The injected fluid shall be analyzed with sufficient frequency to yield representative data on its physical and chemical characteristics. Parameters for such analysis shall be established on an individual basis.
3. The mechanical integrity of the injection well system shall be examined and evaluated at least once every three years. The methods and procedures to be used shall be subject to review by the Commissioner.
4. Samples must be collected by a method insuring that the sample is representative of the fluid in the zone to be monitored. The method shall be subject to approval by the Commissioner.
5. Continuous indicating and recording devices shall be installed and used to monitor the injection pressure and flow rate, and the volume of fluids injected and withdrawn.
6. Determination shall be made at least semi-monthly of the parameters chosen to measure water quality in the injection zone.
7. Determination shall be made at least semi-monthly of the fluid level or pressure head in each well used for monitoring.
8. The Commissioner may require that the applicant continue to monitor in the area affected by mining for a period of time after mining operations cease. If the monitoring reveals violations, the permittee must investigate and take corrective action.
9. The Commissioner may require a certificate that the applicant has assured, through a performance bond or other appropriate means, the resources necessary to cover post-closure monitoring and any corrective action resulting from this monitoring.
10. Wells specified in subpart (g)1(iv) of this paragraph shall be monitored once every three months.

(j) Reporting Requirements

The content and frequency of reports that will be required by the Commissioner shall be specified in the permit for each Class III well or project. Minimum requirements are as follows:

1. Construction Reports

- (i) The Commissioner will require periodic data progress reports during the construction of Class III injection or monitor wells.

(Rule 0400-45-06-.12, continued)

- (ii) Interpretation of data will be required in the progress reports at each milestone phase of construction.
- (iii) The applicant shall submit final reports of all data collected with interpretations to the Commissioner. The final report shall include all information and data collected during construction with appropriate interpretations.

2. Operation Reports

- (i) An updated map of the area of review showing locations of all newly constructed or newly discovered wells not included in the technical report accompanying the permit application or in later reports shall be submitted annually to the Commissioner.
- (ii) The applicant must submit, for Commissioner approval, his proposed methodology for collection and reporting of operational data, to insure that data is collected, correlated, and reported in a fashion that would enable the agency to evaluate well performance.
- (iii) Except for routine monitoring required in subparagraph (g) of this paragraph results of required monitoring shall be maintained on site and reported to the Commissioner with the first quarterly report after the completion of the test.
- (iv) Results of mechanical integrity and any other periodic test required by the Commissioner shall be reported upon request or as specified in the permit.
- (v) Monitoring may be reported on a project or field basis rather than on an individual well basis where field or project monitoring has been approved.
- (vi) Routine monitoring data required shall be reported quarterly to the Commissioner. These reports must be postmarked no later than the tenth day of the month following the end of the quarter.
- (vii) In the event an excursion is verified in a designated monitor well, the permittee shall submit a written remedial action report at least every month to include for each well affected:
 - (I) An explanation of required and other actions since the verifying analysis was taken. The explanation should include the date on which actions were initiated and completed;
 - (II) A description of actions to be taken during the following report period;
 - (III) Sample analysis results for control parameters;
 - (IV) Permittee's efforts to define the extent and probable cause of the presence of mining solutions in a designated monitor well; and
 - (V) The first report shall include a groundwater analysis in the manner required by this rule. All such reports shall be mailed to the Commissioner, postmarked within two days of the end of each report period. The first report period shall begin with the day the presence of mining solution in a designated monitor well is verified. The

(Rule 0400-45-06-.12, continued)

permittee shall continue to make remedial action reports until clean-up is accomplished.

(k) Plugging and Abandonment Operation

1. Upon the occurrence of any of the conditions stated in subparagraph (6)(a) of Rule 0400-45-06-.09, the owner or operator of the well shall submit an application for a permit for plugging and abandonment of the well.
2. Before any injection well is plugged, the operator shall obtain approval for the wells plugging program from the Commissioner.
3. The owner or operator of an abandoned injection well or facility must retain all pertinent records of construction, operation and abandonment for a period of not less than three years following the date of abandonment of the well or facility.
4. Within one-hundred twenty (120) days after acknowledgment of completion of mining activities or, if final restoration of the mine area aquifer is required, upon final completion of the final restoration, the permittee shall accomplish closure of the mining facilities in accordance with Plugging and Abandonment Standards.

(l) Abandonment Reports

1. Upon completion of plugging and abandonment of a well or wellfield, the permittee shall submit to the Commissioner a Final Report which shall include, but will not be limited to, the following:
 - (i) daily construction reports;
 - (ii) certification of completion in accordance with approved plans and specifications by the engineer of record; and
 - (iii) evidence, such as a sealed copy or certification from the county clerk, that a surveyor's plot of the location of the abandoned wells has been recorded in the county courthouse property records.
2. Results of post-closure monitoring, if required by the abandonment permit, shall be reported quarterly to the Commissioner.

Authority: T.C.A. §§ 69-3-101 et seq. and 4-5-201 et seq. **Administrative History:** Original rule filed September 12, 2012; effective December 11, 2012. Rule renumbered from 1200-04-06.

0400-45-06-.13 CLASS IV WELLS.

- (1) The construction or operation of a well used for the disposal of any hazardous waste or radioactive waste into or above a USDW is prohibited.
- (2) The operator or the owner of an existing Class IV well must, within six (6) months after the effective date of this rule, submit a Plugging and Abandonment Plan for the Commissioner's approval. The owner or operator of an existing Class IV well shall complete plugging and abandonment in accordance with the approved Plugging and Abandonment Plan not later than six (6) months after the Commissioner's approval of the plan.
- (3) Wells used to inject contaminated ground water that has been treated and is being re-injected into the same formation from which it was drawn are not prohibited by this rule if such injection is approved by EPA or the Commissioner, pursuant to provisions for cleanup of

(Rule 0400-45-06-.13, continued)

releases under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), 42 U.S.C. 9601-9657, or pursuant to requirements and provisions under the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. 6901 – 6987.

Authority: T.C.A. §§ 69-3-101 et seq. and 4-5-201 et seq. **Administrative History:** Original rule filed September 12, 2012; effective December 11, 2012. Rule renumbered from 1200-04-06.

0400-45-06-.14 CLASS V WELLS.

This rule sets forth Criteria and Standards to regulate all injection systems not regulated as Class I through IV.

- (1) The following are prohibited:
 - (a) The use of any well to dispose of water carrying human waste, household or business waste, raw sewage or the effluent from any septic tank or other sewer system of any kind, unless such well is a subsurface fluid distribution system (SFDS) which is part of a Subsurface Sewage Disposal System (SSDS) permitted under the provisions of T.C.A. §§ 68-221-401 et seq. or a drip disposal system permitted pursuant to T.C.A. §§ 69-3-108 et seq.
 - (b) The use of any Class V injection well in such a manner as to cause any USDW to contain any substances, that are toxic, carcinogenic, mutagenic, or teratogenic, other than those of natural origin, at levels and conditions which violate primary drinking water standards as given in Chapter 0400-45-01 or adversely affect the health of persons.
 - (c) Large capacity cesspools; and
 - (d) Cesspools, other than large capacity cesspools, not authorized under T.C.A. 68-221-401 et seq.
 - (e) Motor Vehicle Waste Disposal Wells (MVWDWs) are prohibited and must be properly closed and abandoned.
- (2) Construction and operation of a Class V well is authorized by virtue of this rule provided:
 - (a) the use of any Class V injection well does not present a hazard to any existing or future use of a USDW,
 - (b) The owner or operator shall within six (6) months after the promulgation of this rule supply a list of all wells owned or operated along with the following information for each well to include the following:
 1. facility name and location, including a plot plan showing location of well(s);
 2. name and address of legal contact;
 3. ownership of facility;
 4. nature and type of injection wells, including installed dimensions of wells and construction materials;
 5. operating status of injection wells, including history of injection;
 6. volume of injected fluid;

(Rule 0400-45-06-.14, continued)

7. nature of injected fluid to include physical, chemical, biological or radiological characteristics; and
 8. description of injection well, including monitoring well(s); and
 9. other information as required by the Commissioner.
- (c) The plans for the construction of any new, or modification of any existing Class V injection well which have been approved by the Commissioner.
- (d) Injectate fluid from commercial or industrial processes shall not be co-mingled with any sanitary waste or septic system effluent in any subsurface fluid distribution system, unless it can be demonstrated to the Commissioner's satisfaction that a beneficial reaction will occur between the waste streams which will enhance the degradation of either or both waste streams.
- (e) The injection well will not adversely impact a wellhead protection area designated by Rule 1200-05-01-.34 promulgated under T.C.A. §§ 68-13-701 et seq., the Tennessee Safe Drinking Water Act. Motor vehicle waste disposal wells are prohibited in wellhead protection areas. All other motor vehicle waste disposal wells must meet the effluent standards set forth in paragraph (1) of Rule 0400-45-06-.05 at the point of injection.
- (f) Prohibition of injection
- An owner or operator of a well which is authorized by rule pursuant to this paragraph is prohibited from injecting into the well:
1. Upon the effective date of an applicable permit denial;
 2. Upon failure to submit a permit application in a timely manner;
 3. Upon failure to submit inventory information in a timely manner; or
 4. Upon failure to comply with a request for information in a timely manner.
- (3) The owner of a Class V well shall be responsible for notifying the Commissioner of change in ownership.
- (4) No authorization by permit or rule shall be allowed where a Class V well causes or allows a violation of the provisions of paragraph (1) of this rule or pollution of any ground or surface water.
- (5) If at any time the Commissioner learns that an existing Class V system may cause a violation of these regulations, the Commissioner shall:
- (a) require the injector to apply for an individual permit;
 - (b) order the injector to take such actions including, where required, closure of the injection well as may be necessary to prevent the violation; or
 - (c) take enforcement action.
- (6) Notwithstanding any other provision of this rule, the Commissioner may take emergency action upon receipt of information that a contaminant from a Class V injection system is likely

(Rule 0400-45-06-.14, continued)

to enter a public water system and present an imminent and substantial endangerment to the health of persons.

(7) Construction Standards for Class V Wells

- (a) The variety of Class V well and their uses dictate a variety of construction designs consistent with those uses, and precludes specific construction standards. However, a well must be designed and constructed for its intended use, in accordance with good engineering practices, and the design and construction must be approved by the Commissioner.
- (b) Class V wells shall be constructed so that their intended use does not violate the water quality standards.

(8) Operating Requirements for Class V Wells

- (a) All Class V injection wells shall be operated in such a manner that they do not violate the provisions of paragraph (1) of this rule.
- (b) Use of a pretreatment system may be necessary to insure that the water discharged meets the applicable water quality standards.
- (c) Initial and/or periodic testing may be required for Class V injection wells.
- (d) Upon completion of the well, the owner or operator must certify to the Commissioner that the well has been completed in accordance with the approved construction plan, and must submit any other additional information required.
- (e) After the effective date of this rule, the operator, if not the property owner, for all Class V injection wells shall have access to the "point of injection" for the Class V wells. This is to be maintained by easement or deed restrictions on all injection points.

(9) Monitoring Requirements for Class V Injection Systems

- (a) The Commissioner may require monitoring of Class V injection wells; the nature of which will be determined by the type of well, nature of the injected fluid, and water quality of the receiving aquifer.
- (b) The Commissioner shall determine the extent and frequency of monitoring based on the type of injection well and the nature of the injected fluid.

(10) Reporting Requirements for Class V Wells will be determined by the type of injection well and nature of injected fluid.

- (a) All municipalities and other governmental entities with storm water injection wells under their control either by ownership or easement shall submit an annual report describing the location and status of each injection well and any other information the Commissioner determines to be necessary. Such reports shall include a locational map.

(11) Plugging and Abandonment Standard

- (a) The Commissioner will order that a Class V injection well be plugged and abandoned when the use of the system is determined to be a hazard to the ground water resource.

(Rule 0400-45-06-.14, continued)

- (b) Prior to abandoning a Class V injection well, the well shall be plugged with cement in a manner which will not allow movement of fluids between USDWs. The proposed plugging method and type of cement shall be approved by the Commissioner. Placement of the cement plug shall be accomplished by any recognized method which is acceptable to the Commissioner.
 - (c) The owner or operator shall notify the Commissioner of his intention to abandon the system when a Class V injection well is no longer used or is usable for its intended purpose.
 - (d) The owner of any Class V injection well shall apply for a Plugging and Abandonment Permit when the well is no longer used or usable for its intended purpose or any other purpose approved by the Commissioner. The application shall include justification for abandonment, the approved plugging and abandonment plan and any proposed modification to the original plugging plan as approved by the Commissioner.
 - (e) Closure does not mean that the owner or operator will need to cease operations at the facility, only that the owner or operator will need to close the well. A number of alternatives are available for the disposal of waste fluids. Examples of alternatives that may be available to motor vehicle stations include: recycling and reusing wastewater as much as possible; collecting and recycling petroleum-based fluids, coolants, and battery acids drained from vehicles; washing parts in a self-contained, recirculating solvent sink, with spent solvents being recovered and replaced by the supplier; using absorbents to clean up minor leaks and spills, and placing the used materials in approved waste containers and disposing of them properly; using a wet vacuum or mop to pick up accumulated rain or snow melt, and, if allowed, connecting floor drains to a municipal sewer system or holding tank, and, if allowed, disposing of the holding tank contents through a publicly owned treatment works ("POTW"). The owner/operator should check with the POTW to see if the POTW would accept the wastes. Alternatives that may be available to owners and operators of a large-capacity cesspool include: conversion to a septic system; connection to sewer; and installation of an on-site treatment unit.
- (12) Prohibition of fluid movement.
- (a) Injection activity prohibitions
 1. No injection activity can allow the movement of fluid containing any contaminant into USDWs, if the presence of that contaminant may cause a violation of any primary drinking water standard, or other health based standards, or may otherwise adversely affect the health of persons. This prohibition applies to well construction, operation, maintenance, conversion, plugging, closure or any other injection activity.
 2. If the Commissioner learns that an injection activity may endanger USDWs, the Commissioner may require the closure of the well a permit or permit modification, or other appropriate action.
 - (b) Closure requirements

The owner/operator must close the well in a manner that complies with the prohibition of fluid movement in subparagraph (a) of this paragraph. Also, the owner/operator must dispose or otherwise manage any soil, gravel, sludge, liquids, or other materials removed from or adjacent to the well in accordance with all applicable Federal, State and local regulations and requirements.

(Rule 0400-45-06-.14, continued)

(13) Authorization by Rule Requirements

All Class V UIC well authorizations by rule shall comply with this rule and all conditions established by the Commissioner as necessary to fulfill the purposes of the Tennessee Water Quality Control Act, T.C.A. §§ 69-3-101 et seq., contain a description of the injection zone being authorized, and contain any necessary corrective action as stated under paragraph (5) of Rule 0400-45-06-.09. The authorization conditions shall be set at levels to prevent adverse effects to persons utilizing the ground water resource after consideration of at least the following factors: any guidelines set for certain pollutants by U.S.E.P.A.; the flow characteristics of ground water risk to humans; and the risk of migration. The following conditions, subparagraphs (a) through (n) of this paragraph, apply to all Class V UIC authorizations. All conditions applicable to all authorizations shall be incorporated into the authorizations either expressly or by reference. If incorporated by reference, a specific citation to these regulations must be given in the authorizations.

- (a) An applicant must comply with all conditions of this authorization and all applicable laws and regulations. Any authorization noncompliance constitutes a violation of the Tennessee Water Quality Control Act and is grounds for enforcement action; for authorization termination, revocation and reissuance, or modification; or for denial of an authorization renewal application.
- (b) If the applicant wishes to continue an activity regulated by this authorization after the expiration date of this authorization, the applicant must apply for and obtain a new authorization prior to expiration of this authorization.
- (c) It shall not be a defense for an owner or operator in an enforcement action that it would have been necessary to halt or reduce the authorized activity in order to maintain compliance with the conditions of this rule.
- (d) The owner or operator shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from non-compliance with this rule.
- (e) The owner or operator shall at all times properly operate and maintain all facilities and systems of related appurtenances which are installed or used by the applicant to achieve compliance with the conditions of this rule and authorization. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this rule.
- (f) The authorization may be modified, revoked and reissued, or terminated for cause. The filing of a request by the owner or operator for a modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any authorization condition.
- (g) This rule and the authorizations issued under it do not convey any property rights of any sort, or any exclusive privilege.
- (h) The owner or operator shall furnish to the Commissioner, within a time specified, any information which the Commissioner may request to determine whether cause exists for modifying, revoking and reissuing, or terminating the authorization, or to determine compliance with this rule. The applicant shall also furnish to the Commissioner, upon request, copies of records required to be kept by this rule or the authorization.

(Rule 0400-45-06-.14, continued)

- (i) The owner or operator shall allow the Commissioner, or an authorized representative of the Commissioner, upon the presentation of credentials to:
 - 1. Enter upon the owner or operator's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this rule or the authorization;
 - 2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this rule or the authorization;
 - 3. Inspect at reasonable times any facility, equipment (including monitoring and control equipment), practices, or operations regulated or required under this rule or the authorization; and
 - 4. Sample or monitor at reasonable times, for the purposes of assuring compliance or as otherwise authorized by the Tennessee Water Quality Control Act or these rules, any substances or parameters at any location.

- (j) Monitoring and records
 - 1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The owner or operator shall monitor injection fluids, injection operations, and local ground water supplies, in accordance with the requirements for the applicable class of well stated in this rule.
 - 2. The owner or operator shall retain records of all monitoring information, including the following:
 - (i) Calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this authorization, and records of all data used to complete the application for the authorization under this rule, for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of the Commissioner at any time; and
 - (ii) The nature and composition of all injected fluids until three years after the completion of any plugging and abandonment procedures. The Commissioner may require the owner or operator to deliver the records to the Commissioner at the conclusion of the retention period.
 - 3. Records of monitoring information shall include:
 - (i) The date, exact place, and time of sampling or measurements;
 - (ii) The individual(s) who performed the sampling or measurements;
 - (iii) The date(s) analyses were performed;
 - (iv) The individual(s) who performed the analyses;
 - (v) The analytical techniques or methods used; and
 - (vi) The results of such analyses.

(Rule 0400-45-06-.14, continued)

(k) All applications, reports, or information submitted to the Commissioner shall be signed and certified.

(l) Reporting requirements

1. Planned Changes

The owner or operator shall give notice to the Commissioner as soon as possible of any planned physical alterations or additions to the permitted facility.

2. Anticipated noncompliance

The owner or operator shall give advance notice to the Commissioner of any planned changes in the permitted facility or activity which may result in noncompliance with authorization requirements.

3. Transfers

See paragraphs (6), (7), (8) and (9) of Rule 0400-45-06-.08.

4. Monitoring reports

Monitoring results shall be reported at the intervals specified elsewhere in this rule or the authorization.

5. Compliance schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 30 days following each schedule date.

6. Twenty-four hour reporting

The owner or operator shall report any noncompliance which may endanger health or the environment, including:

(i) Any monitoring or other information which indicates that any contaminant may cause an endangerment to USDWs; or

(ii) Any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between USDWs.

Any such information shall be provided orally within 24 hours from the time the owner or operator becomes aware of the circumstances. A written submission shall also be provided within 72 hours of the time the owner or operator becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance.

7. Other noncompliance

The owner or operator shall report all instances of noncompliance not reported under parts 1, 4, 5, and 6 of this subparagraph, at the time monitoring reports are

(Rule 0400-45-06-.14, continued)

submitted. The reports shall contain the information listed in part 6 of this subparagraph.

8. Other information. Where the owner or operator becomes aware that the owner or operator has failed to submit any relevant acts in a permit application, or submitted incorrect information in a permit application or in any report to the Commissioner, the owner or operator shall promptly submit such facts or information.

(m) Requirements prior to commencing injection

Except for all new wells authorized by an area permit under Rules 0400-45-06-.11 and 0400-45-06-.12, a new injection well may not commence injection until construction is complete, and

1. The owner or operator has submitted notice of completion of construction to the Commissioner; and
2. (i) The Commissioner has inspected or otherwise reviewed the new injection well and finds it is in compliance with the conditions of this rule and the authorization; or
 - (ii) The owner or operator has not received notice from the Commissioner of his or her intent to inspect or otherwise review the new injection well within 13 days of the date of the notice in part 1 of this subparagraph, in which case prior inspection or review is waived and the owner or operator may commence injection. The Commissioner shall include in his notice a reasonable time period in which he shall inspect the well.

- (n) The owner or operator shall notify the Commissioner at such times as this rule or the authorization requires before conversion or abandonment of the well, or in the case of area permits, before closure of the project.

- (o) A Class V authorization may include, conditions to insure that plugging and abandonment of the well will not allow the movement of fluids into or between USDWs. Where the Commissioner's review of an application indicates that the applicant's plan is inadequate, the Commissioner may require the applicant to revise the plan, prescribe conditions meeting the requirements of this paragraph, or deny the authorization.

Authority: T.C.A. §§ 69-3-101 et seq. and 4-5-201 et seq. **Administrative History:** Original rule filed September 12, 2012; effective December 11, 2012. Rule renumbered from 1200-04-06.

0400-45-06-.15 FEES FOR CLASS I INJECTION WELLS.

(1) Permit Application Fees

Applications for permits to construct, operate or abandon a Class I injection well shall be accompanied by the following fees:

- | | |
|-------------------------------------|---------|
| (a) Construction Permit (New wells) | \$2,500 |
| (b) Operating Permit (Initial) | \$2,500 |
| (c) Abandonment Permit | \$2,500 |
| (d) Operating Permit (Renewal) | \$2,500 |

(Rule 0400-45-06-.15, continued)

(2) Operational Fees

Owners or operators of Class I injection wells shall pay the following fees to the Department.

- | | |
|---|--------------------------|
| (a) Waste fluid injection fee | \$0.50 per 1,000 gallons |
| (b) Annual permit maintenance fee | \$7,500 per well |
| (c) Permit modification and reissuance fee | \$7,500 per well |
| (d) Waste fluid injection fees must be paid after the effective date of the regulations regardless of the status of the permit. | |

(3) All fees are due and payable as follows:

- (a) Application fees must be received with applications.
- (b) Operational fees
1. Fees for waste injection must be paid quarterly and are due at the time of submission of the quarterly monitoring reports as specified in the operating permit.
 2. Annual permit maintenance fees are due on the date these rules become effective or on the date the permittee commences injection, whichever is later, and on each successive anniversary unless the permit expires or is revoked.
 3. Permit modification and reissuance fees are due at the time of submission of the request by the permittee or thirty (30) days after notice of the need for modification has been sent to the permittee by the Commissioner.
- (4) If any part of any fee imposed under this paragraph is not paid within fifteen days of the due date, a penalty of five percent (5%) of the amount due shall at once accrue and be added thereto. Thereafter, on the first day of each month during which any part of any fee or any prior accrued penalty remains unpaid, an additional penalty of five percent (5%) of the unpaid balance shall accrue and be added thereto. In addition, the fees not paid within fifteen (15) days after the due date shall bear interest at the maximum lawful rate from the due date to the date paid.
- (5) The owner or operator of a Class I well who is required to pay fees set forth under this paragraph and who disagrees with the calculation or applicability of the fee may petition the Water Quality Control Board for a hearing. In order to perfect the hearing, a petition for a hearing together with the total amount of fee due must be received by the Department not later than fifteen (15) days after the due date. If it is finally determined that the amount in dispute was improperly assessed, the Commissioner shall return the amount determined to be improperly assessed with interest.
- (6) The Commissioner shall review permit applications for a Class I well to determine if the application contains all of the information required by the Commissioner.
- (a) If the application is deficient the Commissioner will specify the deficiency(ies) in writing and inform the applicant by certified mail within ninety (90) days after the effective date of this rule or the date of receipt of the application whichever is later.

(Rule 0400-45-06-.15, continued)

- (b) If the application is complete the Commissioner will notify the applicant by certified mail and initiate the permit evaluation process within ninety (90) days after the effective date of this rule or the date of receipt of the application whichever is later.
- (c) If the application review is not completed within 90 days in accordance with subparagraphs (a) and (b) of this paragraph, the application fee shall be returned.
- (7) After notification that an application is complete, the Commissioner shall complete its evaluation of an application for a Class I well as follows:
 - (a) Construction permit 180 days
 - (b) Operating permit
 - 1. Existing well 180 days
 - 2. New well 90 days
 - (c) Renewal permit 90 days
 - (d) Abandonment permits 90 days
- (8) Upon completion of the review, the Commissioner will either deny the application or issue a draft permit for processing in accordance with paragraph (7) of this rule. To achieve a final permit decision, an additional ninety (90) days will be required.
- (9) The time periods provided in paragraphs (6), (7), and (8) of this rule shall be stayed if:
 - (a) A legal action concerning the permit is pending before any board, court or independent agency.
 - (b) The applicant requests that review be suspended.
 - (c) The Commissioner issues a written notice of deficiency and until the applicant addresses said deficiency to the satisfaction of the Commissioner.

Authority: T.C.A. §§ 69-3-101 et seq., 68-203-101 et seq. and 4-5-201 et seq. **Administrative History:** Original rule filed September 12, 2012; effective December 11, 2012. Rule renumbered from 1200-04-06.

0400-45-06-.16 FEES FOR CLASS II INJECTION WELLS.

(1) Permit Application Fees

Applications for permits to operate a Class II injection well shall be accompanied by the following fees:

Application review fee.....	\$2,500
Permit renewal fee (every 5 years)	\$1,000

(2) Operational Fees

Owners or operators of Class II injection wells shall pay the following fees to the Department:

Annual maintenance fee.....	\$500
Permit modification and reissuance fee.....	\$250

(Rule 0400-45-06-.16, continued)

- (3) Annual permit maintenance fees are due on the date these rules become effective or on the date the permittee commences injection, whichever is later, and on each successive anniversary unless the permit expires or is revoked.
- (4) Permit modification and reissuance fees are due at the time of submission of the request by the permittee or thirty (30) days after notice of the need for modification has been sent to the permittee by the Commissioner.
- (5) If any part of any fee imposed under this rule is not paid within fifteen days of the due date, a penalty of five percent (5%) of the amount due shall at once accrue and be added thereto. Thereafter, on the first day of each month during which any part of any fee or any prior accrued penalty remains unpaid, an additional penalty of five percent (5%) of the unpaid balance shall accrue and be added thereto. In addition, the fees not paid within fifteen (15) days after the due date shall bear interest at the maximum lawful rate from the due date to the date paid.
- (6) The Commissioner shall review permit applications for a Class II well to determine if the application contains all of the information required by the Commissioner.
 - (a) If the application is deficient the Commissioner will specify the deficiency(ies) in writing and inform the applicant by certified mail within sixty (60) days after the date of receipt of the application.
 - (b) If the application is complete the Commissioner will notify the applicant by certified mail and initiate the permit evaluation process within sixty days (60) days after the date of receipt of the application.
 - (c) The time periods provided in subparagraphs (a) and (b) of this paragraph shall be stayed if:
 - 1. A legal action concerning the permit is pending before any board, court or independent agency.
 - 2. The applicant requests that review be suspended.
 - 3. The Commissioner issues a written notice of deficiency and until the applicant addresses said deficiency to the satisfaction of the Commissioner.
 - (d) If the application review is not completed within 60 days in accordance with subparagraphs (a) and (b) of this paragraph, the application fee shall be returned.

Authority: T.C.A. §§ 69-3-101 et seq., 68-203-101 et seq. and 4-5-201 et seq. **Administrative History:** Original rule filed September 12, 2012; effective December 11, 2012. Rule renumbered from 1200-04-06.

0400-45-06-.17 FEES FOR CLASS III INJECTION WELLS.

(1) Permit Application Fees

Applications for permits to operate a Class III injection well shall be accompanied by the following fees:

Application review fee	\$2,500
Permit renewal fee (every 5 years)	\$1,500

(2) Operational Fees

(Rule 0400-45-06-.17, continued)

Owners or operators of Class III injection wells shall pay the following fees to the Department:

Annual maintenance fee	\$1,000
Permit modification and reissuance fee	\$250

- (3) Annual permit maintenance fees are due on the date these rules become effective or on the date the permittee commences injection, whichever is later, and on each successive anniversary unless the permit expires or is revoked.
- (4) Permit modification and reissuance fees are due at the time of submission of the request by the permittee or thirty (30) days after notice of the need for modification has been sent to the permittee by the Commissioner.
- (5) If any part of any fee imposed under this rule is not paid within fifteen days of the due date, a penalty of five percent (5%) of the amount due shall at once accrue and be added thereto. Thereafter, on the first day of each month during which any part of any fee or any prior accrued penalty remains unpaid, an additional penalty of five percent (5%) of the unpaid balance shall accrue and be added thereto. In addition, the fees not paid within fifteen (15) days after the due date shall bear interest at the maximum lawful rate from the due date to the date paid.
- (6) The Commissioner shall review permit applications for a Class III well to determine if the application contains all of the information required by the Commissioner.
 - (a) If the application is deficient the Commissioner will specify the deficiency(ies) in writing and inform the applicant by certified mail within ninety (90) days after the date of receipt of the application.
 - (b) If the application is complete the Commissioner will notify the applicant by certified mail and initiate the permit evaluation process within ninety days (90) days after the date of receipt of the application.
 - (c) The time periods provided in subparagraphs (a) and (b) of this paragraph shall be stayed if:
 - 1. A legal action concerning the permit is pending before any board, court or independent agency.
 - 2. The applicant requests that review be suspended.
 - 3. The Commissioner issues a written notice of deficiency and until the applicant addresses said deficiency to the satisfaction of the Commissioner.
 - (d) If the application review is not completed within 60 days in accordance with subparagraphs (a) and (b) of this paragraph, the application fee shall be returned.

Authority: T.C.A. §§ 69-3-101 et seq., 68-203-101 et seq. and 4-5-201 et seq. **Administrative History:** Original rule filed September 12, 2012; effective December 11, 2012. Rule renumbered from 1200-04-06.

0400-45-06-.18 FEES FOR CLASS V INJECTION WELLS.

(1) Application Fees

Applications for authorizations or permits for the following Class V injection wells shall be accompanied by the following one-time application review fees:

(Rule 0400-45-06-.18, continued)

(a)	Innovative technology wells	\$1,000 (per project)
(b)	Storm water drainage wells.	
	Subdivision	\$500 (per project)
	Commercial/industrial facilities	\$750 (per project)
(c)	Commercial/industrial geothermal wells	
	Open loop systems	\$750 (per facility)
(d)	Commercial/industrial SFDS and infiltration cells	\$500 (per facility)
(e)	Large capacity septic systems	\$250 (per facility)
	Churches	\$100 (per facility)
(f)	Remediation wells	
	Oversight under this rule	\$1,000 (per project)
	Oversight by the Commissioner not under this rule	None
(g)	Change of ownership	\$75
(h)	Modification of recharge point	\$350 (per project)

(2) Renewal Fee

The following Class V wells shall submit the following fees with the renewal application:

- | | | |
|-----|--|----------------------|
| (a) | Storm water drainage wells | |
| | Commercial/industrial facilities: | \$350 (per facility) |
| (b) | Commercial/industrial geothermal wells | |
| | Open loop | \$350 (per facility) |
| (c) | Commercial/industrial SFDS and infiltration cells: | \$250 (per facility) |
| (d) | Large capacity septic systems | \$250 (per facility) |
| | Churches | \$50 (per facility) |
- (3) If the application is deficient the Commissioner will specify the deficiency(ies) in writing and inform the applicant within sixty (60) days after the date of receipt of the application.
- (4) If the application is complete the Commissioner will notify the applicant and initiate the permit evaluation process within sixty (60) days after the date of receipt of the application.
- (5) The time periods provided in paragraphs (3) and (4) of this rule shall be stayed if:
1. A legal action concerning the permit is pending before any board, court or independent agency.
 2. The applicant requests that review be suspended.
 3. The Commissioner issues a written notice of deficiency and until the applicant addresses said deficiency to the satisfaction of the Commissioner.
- (6) If the application review is not completed within sixty (60) days in accordance with paragraphs (3) and (4) of this rule, the application fee shall be returned.

(Rule 0400-45-06-.18, continued)

Authority: T.C.A. §§ 69-3-101 et seq., 68-203-101 et seq. and 4-5-201 et seq. **Administrative History:** Original rule filed September 12, 2012; effective December 11, 2012. Rule renumbered from 1200-04-06.

0400-45-06-.19 BONDS REQUIRED FOR PERMITTED WELLS.

- (1) A surety bond or cash bond is required from the owner or operator of an injection well for Class I, II and III wells adequate to allow proper plugging and abandonment of the well(s) and may be required for Class V wells at the Commissioner's discretion. Such bonds are penal in nature. Such surety bond or cash bond is required to be in force for a well from the time a permit has been granted until the well has been properly abandoned. Bonds shall be in favor of the Commissioner, conditioned that the well shall meet all the requirements of this Chapter and be plugged and abandoned in accordance with this Chapter. An individual well bond shall be released upon the proper plugging of the well and the filing of a plugging and abandonment report, driller's log, downhole surveys, and other data as required.
- (2) At any time other than after the issuance of a notice of noncompliance or forfeiture, the surety may notify the Commissioner in writing of its desire to terminate its liability under the bond by giving written notice to the Commissioner. The Commissioner shall thereupon require the principal in the bond to file a new bond, or to effect a change of owners on the well within sixty (60) days. If the principal can no longer be contacted, then any interested party may seek to change ownership on the well. If a new bond is filed by the principal, or a change in ownership is approved by the Commissioner, liability under the original bond shall cease and terminate as to acts and operations occurring after the effective date of the new bond or approval of change in ownership and the original bond shall be released upon written request from the surety. If a new bond is not filed within sixty (60) days, or a change in ownership has not been approved, the Commissioner shall revoke the permit secured by the bond and require the principal to plug and abandon the well in accordance with the Underground Injection Control rules. In the event of the failure of the principal to plug the well, the surety may either cause the well to be plugged, or forfeit the amount of the bond to the Commissioner. This action will be initiated by the issuance of a notice of noncompliance. The surety will then have thirty (30) days in which to plug the well. If the well has not been plugged within that time limit, then a notice of forfeiture will be issued. The surety will then have twenty-one (21) days within which to petition the Tennessee Water Quality Control Board for a hearing relative to the bond forfeiture, pursuant to the Administrative Procedures Act, T.C.A. §§ 4-5-101 et seq. If a hearing is requested, no further action will be taken against the bond until such hearing has taken place and a final order given by the Board. If the well has been plugged in the interim, then notice of forfeiture will be cancelled and the bond released.
- (3) Any of the following shall serve as bonds:
 - (a) A surety bond executed by the well operator as principal and by a corporate surety authorized to do business in Tennessee; or
 - (b) cash; or
 - (c) a certified check; or
 - (d) a certificate of Deposit, if made out exactly as follows: "Owner Name and Tennessee Department of Environment and Conservation or Tennessee Department of Environment and Conservation"; and does not contain any terms or conditions that provide that the issuing bank may charge against the deposit any debt of the depositor(s) owing to it (set-off terms); or any terms or conditions that provide anyone whose signature appears on the signature card to withdraw from funds the account. The owner shall be entitled to any interest earned on a certificate of deposit as the same becomes due and payable. The treasurer of the State of Tennessee shall

(Rule 0400-45-06-.19, continued)

receive and hold originals of such certificates in the name of the State of Tennessee, in trust, for the purpose for which such deposit is made, and shall at all times be responsible for the custody and safekeeping of such deposits; provided, however, that the certificate may be returned to the issuing financial institution as may be necessary for renewal from time to time; or

(4) Forfeiture

- (a) The Commissioner shall cause a notice of noncompliance to be served upon the owner/operator and surety if the requirements for proper plugging and abandonment of a well or wells have not been complied with within the time limits set forth by this rule. Compliance for proper plugging and abandonment shall include the submission of all required records and data.
- (b) The notice shall specify in what respects the owner has failed to comply with this rule or orders of the Water Quality Control Board.
- (c) If the owner has not reached an agreement with the Commissioner, or has not complied with the requirements set forth within thirty (30) days after the mailing of the notice, the bond shall then be forfeited to the Commissioner, and the money used to properly plug the well(s). Such bonds are penal in nature, and the full amount of the bond shall be forfeited.

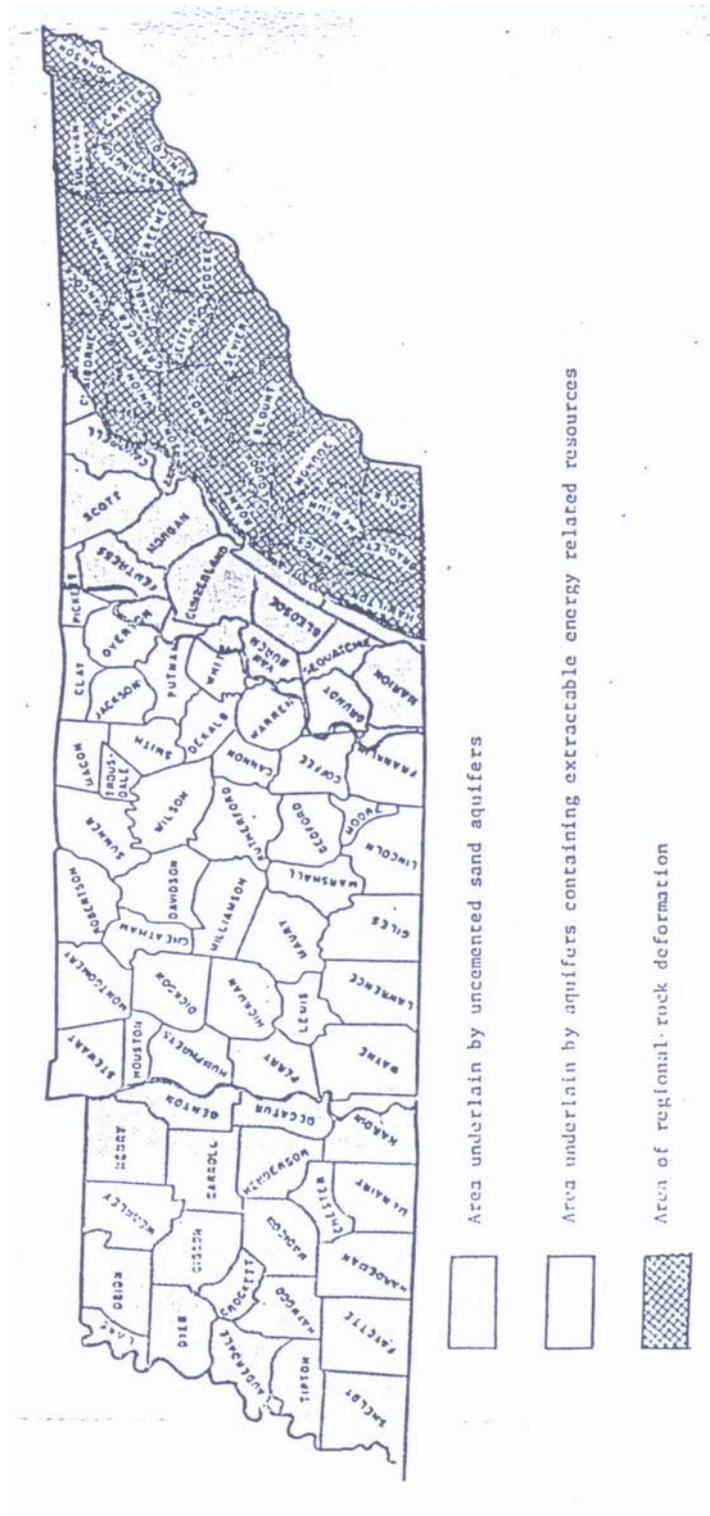
(5) Notice of Noncompliance

- (a) At any time the Commissioner causes a notice of noncompliance to be served upon the principal, the surety shall be afforded the opportunity to act in behalf of the principal within the time set forth in regard to proper plugging of the well or wells and submission of required well records, downhole data and plugging reports. Should the principal and surety fail to comply within the time provided, then and only in that event, the bond shall be forfeited and used to plug the well. When a bond is forfeited under this rule, the Commissioner shall give notice to the Attorney General, who shall institute proceedings to collect the forfeiture.

Authority: T.C.A. §§ 69-3-101 et seq. and 4-5-201 et seq. **Administrative History:** Original rule filed September 12, 2012; effective December 11, 2012. Rule renumbered from 1200-04-06.

(Appendix A)

APPENDIX A



Authority: §§ 69-3-101 et seq. and 4-5-201 et seq. **Administrative History:** Original rule filed September 12, 2012; effective December 11, 2012. Rule renumbered from 1200-04-06.