

The Texas Natural Resource Conservation Commission (TNRCC or commission) adopts amendments to §331.2, Definitions; §331.7, Permit Required; §331.9, Injection Authorized by Rule; §331.10, Inventory of Wells Authorized by Rule; §331.11, Classification of Injection Wells; §331.12, Conversion of Wells; §331.82, Construction Requirements; §331.131, Applicability; §331.132, Construction Standards; and §331.133, Closure Standards for Injection Wells. The commission also adopts new §331.8, Prohibition of Motor Vehicle Waste Disposal Wells and Large Capacity Cesspools; §331.135, Construction Standards for Large Capacity Septic Systems; §331.136, Closure Standards for Motor Vehicle Waste Disposal Wells, Large Capacity Septic Systems, Large Capacity Cesspools, Subsurface Fluid Distribution Systems, and Drywells; and §331.137, Permits for Motor Vehicle Waste Disposal Wells. The commission withdraws §331.138, Monitoring Requirements for Motor Vehicle Waste Disposal Wells. Sections 331.7, 331.8, 331.9, 331.10, 331.11, 331.82, 331.132, 331.133, 331.136, and 331.137 are adopted *with changes* to the proposed text as published in the January 26, 2001 issue of the *Texas Register* (26 TexReg 926). Sections 331.2, 331.12, 331.131, and 331.135, are adopted *without changes* and will not be republished.

BACKGROUND AND SUMMARY OF THE FACTUAL BASIS FOR THE ADOPTED RULES

Underground injection wells are regulated under the authority of Part C of the federal Safe Drinking Water Act (SDWA or the Act) (42 United States Code (USC), 300h et seq.). Part C mandates the regulation of underground injection of fluids through wells. Section 1421 of the Act requires the United States Environmental Protection Agency (EPA) to propose and promulgate regulations specifying minimum requirements for state programs to prevent underground injection that endangers drinking water sources. The EPA entered into a consent decree with the Sierra Club on August 31,

1994, subsequently modified on January 28, 1997, requiring the EPA to complete the promulgation of regulations for high risk Class V wells to prevent underground injection that endangers drinking water. Class V wells are generally shallow wells used to inject nonhazardous fluids into or above formations that contain underground sources of drinking water (USDW). The EPA has promulgated a final rule, Underground Injection Control Regulations for Class V Injection Wells, in the December 7, 1999 issue of the *Federal Register* (64 FR 68546). The new federal rule provisions are in Title 40 Code of Federal Regulations (CFR) Part 144, Underground Injection Control Program, and Part 146, Underground Injection Control Program: Criteria and Standards.

The new federal rules primarily address two types of Class V injection wells that have high potential for endangering USDWs: large capacity cesspools and motor vehicle waste disposal wells. The EPA's rulemaking links the Class V Underground Injection Control (UIC) Program and the State Drinking Water Source Assessment and Protection Program for motor vehicle waste disposal wells. Under the new federal rules, subsurface fluid distribution system and improved sinkhole are defined as Class V injection wells and subject to these rules. In addition, construction of new large capacity cesspools and motor vehicle waste disposal wells was banned by the federal rules as of April 5, 2000. Under the EPA's rulemaking, all existing motor vehicle waste disposal wells in a groundwater protection area must close or obtain a permit within one year of the designation of the groundwater protection area, but no later than by January 1, 2005 (40 CFR §144.87(b)). Groundwater protection areas are delineated under the Drinking Water Source Assessment and Protection Program for source water protection areas for community or non-transient non-community water systems that use groundwater as a source of drinking water. The EPA's rulemaking also provides that states may delineate other sensitive

groundwater areas for groundwater areas that are critical for public health protection because of hydrogeologic and other features that would cause USDWs to be vulnerable to contamination from injection wells. The EPA's rulemaking requires the closing of all other motor vehicle waste disposal wells in other sensitive groundwater areas, if the state delineates these areas. If the state does not delineate other sensitive groundwater areas, the owners or operators must close all other wells by January 1, 2007, unless the owner or operator of the well obtains a permit or converts the well (40 CFR §144.87).

Options for motor vehicle waste disposal well owners offered in the new federal rules are: 1) apply for a permit (40 CFR §144.84); 2) get an extension of the closure compliance date in groundwater protection areas for up to one year, if the most efficient compliance option is to route the waste to a sanitary sewer or to install a new treatment technology (40 CFR §144.87(b)); 3) convert the motor vehicle waste disposal well to another type of Class V well if all motor vehicle fluids are segregated by physical barriers and are not allowed to enter the well, and injection of motor vehicle waste is unlikely based on a facility's compliance history and records showing proper waste disposal (40 CFR §144.89(b)); or 4) close the well. A motor vehicle waste disposal well is defined in the federal rules as a well which currently receives or has ever received motor vehicle waste. The federal rules further state that if a motor vehicle waste disposal well owner or operator applies for a permit, the disposed waste must meet the primary maximum contaminant levels (MCLs) for drinking water, and other health-based standards at the point of injection. Additionally, the owner or operator must follow best management practices and monitor the injectate (40 CFR Part 144, Table 2). The federal rules also

clarified plugging and abandonment requirements for Class IV and V wells, and adopted new and amended definitions.

To demonstrate environmental need, the EPA cited evidence in its rulemaking that fluids released in motor vehicle waste disposal wells commonly exceed primary MCLs for drinking water, and that these wells have been linked with contamination of USDWs. Data provided by the EPA indicates that fluids being injected may exceed health-based limits for contaminant levels in water by ten to 100 times. The data also demonstrates that contaminants known to be associated with motor vehicle waste disposal wells occur nationwide in public water systems. (64 FR 68548).

The EPA is banning large capacity cesspools because these have a high potential to contaminate USDWs. The effluent released from cesspools frequently exceeds drinking water MCLs for nitrates, total suspended solids, and coliform bacteria; and may contain other constituents of concern such as phosphates, chlorides, grease, viruses, and industrial chemicals such as trichloroethane and methylene chloride. Pathogens in untreated sanitary waste released into large capacity cesspools could contaminate water supply sources and pose a serious health risk with a single exposure (64 FR 68551). Also, the use of large capacity cesspools is recognized as an inferior method of disposing of waste that can be remedied by the installation of a septic system (64 FR 68553). Prior to this federal rulemaking, the commission banned and continues to ban cesspools in §285.3 of this title (relating to On-Site Sewage Facilities). New §331.8 will further clarify the existing ban on large capacity cesspools.

Section 1422 of the SDWA provides that states may apply to the EPA for primary enforcement responsibility to administer the federal UIC Program. The State of Texas has applied for and been approved by the EPA to administer the federal UIC Program in this state since January 6, 1982. The commission is, therefore, obligated to maintain rules at least as stringent as the federal rules to retain federal authorization to implement the UIC Program in Texas.

In Texas, the UIC Program is implemented under Texas Water Code (TWC), Chapter 27, Injection Wells, and the commission's rules, 30 TAC Chapter 331, Underground Injection Control. The new and amended federal rule requirements are incorporated into Chapter 331, Subchapter A, General Provisions, and Subchapter H, Standards for Class V Wells.

The main purpose of the commission's rulemaking is to implement these new federal rules. The commission is adopting new rules to require all existing motor vehicle waste disposal wells in groundwater protection areas to close or obtain a permit within one year of the date the groundwater protection areas are identified by the commission, or by January 1, 2005, whichever occurs earlier. This is in compliance with new 40 CFR §144.87(b). Additionally, upon the effective date of these rules, the commission prohibits the construction of new motor vehicle waste disposal wells. Because there are no currently inventoried (registered) motor vehicle waste disposal wells in the state and only a small number are believed to exist, the commission decided not to designate other sensitive groundwater areas (as allowed by the federal rules) and instead, is adopting these rules to require all existing motor vehicle waste disposal wells outside of groundwater protection areas to close or obtain a permit. Therefore, owners and operators of all motor vehicle waste disposal wells in areas other than

groundwater protection areas must close the wells or obtain a permit by January 1, 2007. The commission determined that this will provide consistent and equitable regulation throughout the state, and will not require the commitment of additional resources to designate other sensitive groundwater areas. This decision to apply the rules statewide does not mean the commission determined that the entire state is a sensitive groundwater area. The phasing in of these deadlines is intended to give any owners of motor vehicle waste disposal wells the most time possible to close these wells. The commission solicited comments on the proposal to apply the rules statewide rather than designating other sensitive groundwater areas. No comments were received on this issue. Therefore, the commission adopts these rules, as proposed, requiring owners and operators of all motor vehicle waste disposal wells in areas other than groundwater protection areas to close the wells or obtain a permit by January 1, 2007.

The commission determined that the cost of complying with the options of obtaining a permit and meeting primary MCLs for drinking water at the point of injection for motor vehicle waste disposal wells, or installing a new on-site treatment process, would most likely not be cost effective for a majority of the well owners or operators. Recycling or off-site disposal of motor vehicle waste is anticipated to be more cost effective than these options. No public comments were received on whether the commission should provide owners and operators the option to obtain a permit. Nevertheless, the commission has decided to retain the permit option in the rules.

The adopted rules include specific definitions of large capacity cesspools, septic systems, subsurface fluid distribution systems, and improved sinkholes to clarify their status as Class V injection wells.

Regulations for temporary injection points are adopted to reflect advances in technology such as the current use of push point technology for the delivery of fluids into or above a USDW. The adopted amendments also clarify that the Class V wells listed in TWC, §32.001(8) shall be installed by a licensed water well driller. In addition, amendments are adopted to the construction and closure sections of the rules because they include the types of Class V injection wells that are the primary focus of the new federal rules, and the commission wants to update the construction and closure methods to reflect recent advances in technology. In addition to changes to implement the federal rules, these rules incorporate some minor clarifications and updates.

SECTION BY SECTION DISCUSSION

Subchapter A: General Provisions

Section 331.2, Definitions, is adopted to add the following new definitions: cesspool, drywell, groundwater protection area, improved sinkhole, point of injection, sanitary waste, septic system, and subsurface fluid distribution system. Section 331.2 also is adopted to amend the definition of “well” for compatibility with new 40 CFR §144.3. In addition, the commission adopts new definitions for large capacity cesspool, large capacity septic system, motor vehicle waste disposal well, temporary injection point, and well injection.

The definition for large capacity septic system found in §331.2(50) is “A septic system that is designed for a flow of greater than 5,000 gallons per day.” In the federal rules, a large capacity cesspool is one which receives sanitary waste and serves more than 20 persons a day. The commission believes a cesspool capacity of 5,000 gallons per day is equivalent to a cesspool that serves 20 persons per day.

The definition of large capacity septic system is not in the federal rules; however, the commission is adopting this definition to provide consistency with Chapter 285 of this title.

The new definition for motor vehicle waste disposal well is derived from new 40 CFR §144.81(16) and is adopted to clarify that wells which receive or have ever received motor vehicle waste are Class V injection wells. The new definition of temporary injection point is being adopted to keep the state rules up-to-date with push point injection technology used in remediation of groundwater. The new definition of well injection is adopted to simply state that well injection means the subsurface emplacement of fluids through a well. These definitions are being added and/or amended for compatibility with the federal rules located at 40 CFR §144.3.

The terms “improved sinkhole” and “subsurface fluid distribution system” are also defined under 40 CFR §144.3 as types of injection wells regulated under the UIC Program. These adopted definitions codify the EPA’s interpretation that the intentional disposal of fluids in natural depressions, open fractures, and crevices (such as those commonly associated with cooling of lava flows or weathering of limestone), and the disposal of fluids through shallow horizontal distribution systems fit within the statutory definition of underground injection. Because improved sinkholes and subsurface fluid distribution systems are considered Class V wells, owners or operators of these wells must comply with the inventory requirements of this chapter. The definition of groundwater protection area is a geographic area near and/or surrounding community and non-transient, non-community water systems that use groundwater as a source of drinking water. Motor vehicle waste disposal wells in these areas are subject to earlier closure or permitting requirements. In compliance with the new federal rules, the

definition of well is amended to clarify that a well includes both improved sinkholes and subsurface fluid distribution systems. Where necessary, the definitions in the section have been renumbered to accommodate the addition of the new definitions.

The adopted new definitions for cesspool, drywell, point of injection, sanitary waste and septic system are derived from the new federal definitions in 40 CFR §144.3.

Adopted new §331.7(c), Permit Required, clarifies that the owner or operator of large capacity septic systems, or septic systems which accept industrial waste, must obtain a wastewater discharge permit in addition to the requirements of this chapter. Large capacity septic systems are currently regulated by the commission under TWC, Chapter 26, and 30 TAC Chapter 305 of this title (relating to Consolidated Permits), and must be inventoried by submitting the information required under §331.10 of this title (relating to Inventory of Wells Authorized by Rule).

Adopted new §331.8, Prohibition of Motor Vehicle Waste Disposal Wells and Large Capacity Cesspools, implements the federal requirement under 40 CFR §144.87. Adopted new §331.8(a) implements a ban on the construction of all new motor vehicle waste disposal wells and large capacity cesspools. The construction of these two types of wells has been prohibited by the federal rules since April 5, 2000. Adopted new §331.8(b) specifies that the owner or operator of an existing motor vehicle waste disposal well located in a groundwater protection area must close the well within one year of the designation of the groundwater protection area, or by January 1, 2005, whichever occurs earlier, or must apply for a UIC Class V permit or extension prior to the closure date. This subsection also

describes well permitting and closure procedures and requirements. If the most efficient compliance option is connection to a sanitary sewer or installation of new treatment technology, adopted §331.8(b)(1) establishes the procedure and requirements for applying for an extension from the closure date for one year, as provided in 40 CFR §144.87(b)(2). Adopted §331.8(b)(2) specifies that to continue operating during an extension, the owner or operator must ensure that the injectate meets primary MCLs for drinking water at 40 CFR Part 141, and other health-based standards at the point of injection. Since the commission is not adopting the option of identifying “other sensitive groundwater areas,” adopted §331.8(c) establishes that the owner or operator of an existing motor vehicle waste disposal well in areas of the state other than groundwater protection areas must close the well by January 1, 2007, apply for a Class V UIC permit prior to January 1, 2007, or convert the well so it is not receiving motor vehicle waste. Adopted new §331.8(d) specifies that the owner or operator of an existing motor vehicle waste disposal well must close the well in accordance with closure standards specified in new §331.136 of this title (relating to Closure Standards for Motor Vehicle Waste Disposal Wells, Large Capacity Septic Systems, Large Capacity Cesspools, Subsurface Fluid Distribution Systems, and Drywells). New §331.8(e) is added since the proposed rules were published and is adopted to clarify that owners or operators must close all existing large capacity cesspools, in accordance with closure standards in §331.136 of this title (relating to Closure Standards for Motor Vehicle Waste Disposal Wells, Large Capacity Septic Systems, Large Capacity Cesspools, Subsurface Fluid Distribution Systems, and Drywells).

Adopted §331.9, Injection Authorized by Rule, is amended to update the cross-reference to §331.133 of this title (relating to Closure Standards), and §331.136 of this title. Section 331.9(b) is also adopted to

require that Class V wells used to dispose of greater than 5,000 gallons per day of sewage or sewage effluent must be authorized by a wastewater discharge permit. The amount of effluent is increased from 1,000 gallons per day to greater than 5,000 gallons per day for consistency with other commission rules and to be equivalent to federal rules where the capacity is specified as greater than 20 persons per day in 40 CFR §144.81(9).

Adopted §331.10(a) is amended to specify that the owner or operator and not the driller of the Class V well (except for those wells listed under subsection (b) of this section), must submit an inventory for each facility prior to construction, or within one year of January 1, 1982, if the well existed on that date. Adopted §331.10(b) states that drillers of closed loop and air conditioning return flow injection wells must submit an inventory form provided by the executive director as required under §331.132(b)(3) of this title (relating to Construction Standards). Minor grammatical changes are also adopted in this subsection. New §331.10(d) is adopted to require that inventory information for all Class V wells, with the exception of closed loop and air conditioning return flow wells, be submitted prior to construction, conversion, or use of the well. Inventory information for closed loop and air conditioning return flow wells may be submitted after construction of these types of wells.

Adopted new §331.10(e) specifies that owners and operators of existing subsurface fluid distribution systems and improved sinkholes must submit the inventory information within one year of the effective date of these rules. All new subsurface fluid distribution systems and improved sinkholes must comply with subsection (d) of this section.

Adopted new §331.11(a)(1)(C) is adopted to specify that radioactive waste disposal wells which inject fluids below the lowermost formation containing a USDW within 1/4 mile of the well bore are classified as Class I injection wells. This requirement is added to implement the new federal rules at 40 CFR §144.6(a)(3). These disposal wells are primarily associated with in situ uranium mining operations in South Texas and are used for disposal of uranium byproduct as defined in Texas Health and Safety Code, §401.003(3)(B). These wells have historically been permitted as Class I injection wells, and are identical to other Class I injection wells in terms of their design, the nature of injected fluids, and their potential to endanger USDWs; therefore, they warrant the same level of control as other Class I injection wells. This classification change does not mean that the Class II injection wells permitted by the Railroad Commission of Texas (RCT) used to inject oil and gas naturally-occurring radioactive material (NORM waste) are reclassified as Class I wells. These wells remain under RCT jurisdiction as Class II wells. However, any wells used to inject non-oil and gas NORM waste for disposal are Class I wells under TNRCC jurisdiction.

Adopted §331.11(a)(4) is amended to improve readability by moving the second sentence in the paragraph to the beginning of the paragraph. In response to comments on the proposed rules, §331.11(a)(4) has been modified to delete the list of wells under RCT jurisdiction because that list was incomplete and may change. Instead, new language is adopted which states that “Except for Class V wells within the jurisdiction of the Railroad Commission of Texas, all Class V injection wells are within the jurisdiction of the commission and include, but are not limited to: ...” Section 331.11(a)(4)(C) is amended to clarify that large capacity cesspools which are Class V wells are those cesspools which receive greater than 5,000 gallons of waste per day. Section 331.11(a)(4)(F) is

amended to correct the spelling of drywell. Section 331.11(a)(4)(J) is amended to clarify that septic systems designed to inject greater than 5,000 gallons per day of waste or effluent are classified as Class V wells. Since the proposed rules were published, clauses (i) and (ii) have been deleted for clarification and to eliminate duplication with §331.11(a)(4)(C). Section 331.11(a)(4)(K), (L), and (O) are amended for punctuation. New §331.11(a)(4)(M) and (N) list motor vehicle waste disposal wells and improved sinkholes as types of Class V injection wells in accordance with the federal rules at 40 CFR §144.1 and §144.81. New §331.11(a)(4)(O) lists aquifer remediation wells, temporary injection points, and subsurface fluid distribution systems as additional types of Class V wells. Since the proposed rules were published, adopted new §331.11(a)(4)(P) has been added to clarify that subsurface fluid distribution systems are Class V wells.

Adopted new §331.12(a)(4) clarifies that prior to converting a Class V motor vehicle waste disposal well, the owner or operator must inventory the well with the executive director, as required in §331.10 of this title (relating to Inventory of Wells Authorized by Rule), and comply with the conversion requirements specified in §331.12(c). Adopted new §331.12(c) provides the conversion requirements for motor vehicle waste disposal wells in the limited cases when conversion to another type of Class V well is allowed. Adopted new §331.12(c)(1) states that the use of a semi-permanent plug is not sufficient to segregate waste; §331.12(c)(2) states the conditions under which the executive director may approve a Class V well conversion. Adopted new §331.12(c)(2)(A) specifies that the executive director may approve the conversion only if the well is inventoried. Adopted new §331.12(c)(2)(B) specifies that the executive director may approve the conversion only if all motor vehicle fluids are segregated by physical barriers and are not allowed to enter the well. Adopted new §331.12(c)(2)(C)

limits the conversion of Class V wells to those circumstances where the future injection of motor vehicle waste is unlikely based on a facility's compliance history and records showing proper waste disposal.

Subchapter E: Standards for Class III Wells

Section 331.82(b) and (g), Construction Requirements, is amended to change "commission" to "executive director" to distinguish that the actions are actually performed by the executive director and not the commissioners. This amendment is not related to the new federal rules.

Subchapter H: Standards for Class V Wells

Adopted §331.131, Applicability, is amended to delete the word "new." This amendment clarifies that rules in Subchapter H are applicable to "existing" as well as "new" Class V injection wells, and is consistent with the new federal rules.

Adopted §331.132(a), makes explicit the requirement that the types of injection wells listed in TWC, §32.001(8) shall be installed by a licensed water well driller. Section 331.132(b)(1) is adopted to specify that inventory information for Class V wells required by §331.10(a) of this title shall be submitted for review and approval prior to construction of the well. Additionally, subsection (b)(1) is adopted to require that inventory information for large capacity septic systems be submitted as part of the wastewater discharge permit application. Section 331.132(b)(2) exempts large capacity septic systems, subsurface fluid distribution systems, air conditioning return flow wells, closed loop injection wells, improved sinkholes, and temporary injection points from the requirement to submit the Texas

Department of Licensing and Regulation state well report form to the executive director within 30 days of construction of the well. New §331.132(b)(5) requires the owner or operator of large capacity septic systems, subsurface fluid distribution systems, and improved sinkholes to report construction by submitting the reporting form provided by the executive director within 30 days after construction of the well is completed. Section 331.132(d)(1) is adopted to specify that surface completion requirements of a concrete slab or sealing block is required for all injection wells except temporary injection points, subsurface fluid distribution systems, improved sinkholes, and large capacity septic systems. Section 331.132(d)(2) has been changed since the proposed rules were published to clarify that the casing requirements only apply to wells that use casing. New 331.132(d)(4) is adopted to implement the requirement that temporary injection points shall be completed in such a manner as to prevent the movement of surface fluids into a USDW. Section 331.132(f) has been modified since the proposed rules were published and states that improved sinkholes, as well as closed loop injection wells and air conditioning return flow wells, are exempt from the completion standards in this section. New §331.132(h) is adopted to specify that sampling shall be done on a Class V injection well from the point of injection, which is the last accessible sampling point prior to the waste fluids being released into the subsurface environment, or as specified in a permit. This requirement is to ensure that any sampling is representative of the waste fluid being released and is consistent with the sampling requirement for permitted motor vehicle waste disposal wells in 40 CFR §144.88(b), Table 2.

Adopted §331.133, Closure Standards, is amended to change the title of the section to “Closure Standards for Injection Wells,” and to provide that the closure standards specified in this section apply to all injection wells other than those specified. This is to distinguish these closure standards from the

closure requirements for wells found in new §331.136 of this title. Section 331.133(a) has been modified since proposal to include a reference to §331.136, and to reference the *Federal Register*. The subsection is adopted to have consistent use of terminology; specifically, the term “close” is substituted for “plug or plugged.” This subsection is also adopted to specify that the injection well must be closed in a manner that complies with §331.5 of this title (relating to Prevention of Pollution), 40 CFR §144.12 (“prohibition of movement of fluid into underground sources of drinking water,” effective June 2, 1987), and disposal or other management of any contaminated soil, gravel, sludge, liquids, or other materials removed from or adjacent to the well must be in accordance with Chapter 350 of this title (relating to Texas Risk Reduction Program). New §331.133(e) is adopted to specify the proper closure technique for temporary injection points. This subsection accommodates the use of temporary injection points for remediation of groundwater. New §331.133(f) is adopted to specify the closure standards for improved sinkholes. The owner or operator must close the sinkhole in a manner that prohibits the movement of contaminated fluids into USDWs, in compliance with §331.5 of this title (relating to Prevention of Pollution), and 40 CFR §144.12 (“prohibition of movement of fluid into underground sources of drinking water,” as amended through June 2, 1987 at 48 FR 20676); and to demonstrate that fluids released through the well will meet the primary MCLs for drinking water contained in 40 CFR Part 141, and other appropriate health-based standards at the point of injection.

Adopted new §331.135, Construction Standards for Large Capacity Septic Systems, provides appropriate regulatory standards for the construction of large capacity septic systems. Adopted §331.135(a) requires large capacity septic systems to be constructed in accordance with the terms of the wastewater discharge permit. Under adopted §331.135(b), during construction the movement of fluids

which might contaminate a USDW or violate primary drinking water standards, or other health-based standards is prohibited. There were no construction standards previously specified in commission rules for these types of Class V injection wells.

Adopted new §331.136, Closure Standards for Motor Vehicle Waste Disposal Wells, Large Capacity Septic Systems, Large Capacity Cesspools, Subsurface Fluid Distribution Systems, and Drywells, provides appropriate regulatory standards for the closure of these types of Class V injection wells. Since the proposed rules were published, the name of this section was changed to add subsurface fluid distribution systems to the title. These adopted standards, in part, implement the federal requirements for closure of Class V wells found in 40 CFR §144.89. These standards ensure that wells are closed in a manner that prevents the movement of contaminated fluids into a USDW, which may cause a violation of the primary drinking water or other health-based standards, or adversely affect public health. Adopted new §331.136(a) specifies that owners or operators of motor vehicle waste disposal wells, large capacity septic systems, large capacity cesspools, subsurface fluid distribution systems, and drywells must comply with the standards set forth in this section. Adopted new §331.136(b) specifies that owners or operators of large capacity cesspools and motor vehicle waste disposal wells must submit a preclosure notice form provided by the executive director 30 days prior to closure. In addition, adopted new §331.136(c) specifies closure procedures and requirements for large capacity cesspools, large capacity septic systems, drywells, subsurface fluid distribution systems, and motor vehicle waste disposal wells. Adopted new §331.136(c)(1) specifies that the owner or operator must close the well in a manner that prohibits the movement of contaminated fluids into USDWs in compliance with §331.5 of this title (relating to Prevention of Pollution) and 40 CFR §144.12 (“prohibition of movement of fluid

into underground sources of drinking water,” as amended through June 2, 1987 at 48 FR 20676).

Paragraph (2) specifies that the owner or operator must dispose or otherwise manage any contaminated soil, gravel, sludge, liquids, or other material removed from or adjacent to the well in accordance with Chapter 350 of the title (relating to Texas Risk Reduction Program), and all other applicable state, federal, and local regulations and requirements. Paragraph (3) specifies that the owner or operator must submit a closure report to the executive director within 60 days of closing the well.

Adopted new §331.137, Permit for Motor Vehicle Waste Disposal Wells, establishes the minimum requirements for a motor vehicle waste disposal well permit. Adopted new §331.137(1) establishes that owners or operators of motor vehicle waste disposal wells must demonstrate that fluids released in their wells meet the primary drinking water MCLs contained in 40 CFR Part 141 and other health-based standards at the point of injection. Adopted new §331.137(2) establishes that owners or operators must follow prescribed best management practices as specified in their permits. Adopted new §331.137(3) establishes that owners or operators are required to monitor the quality of their injectate and sludge both initially and on a continuing basis as specified in their permit to demonstrate compliance with MCLs at the point of injection.

Proposed new §331.138, Monitoring Requirements for Motor Vehicle Waste Disposal Wells, has been withdrawn because the commission determined that general monitoring requirements are specified in §331.137 of this title, and more specific monitoring requirements will be included in the individual permit as determined by the executive director on a case-by-case basis.

FINAL REGULATORY IMPACT ANALYSIS DETERMINATION

The commission reviewed the rulemaking in light of the regulatory analysis requirements of Texas Government Code, §2001.0225, and determined that the rulemaking is not subject to §2001.0225 because it does not meet the definition of a “major environmental rule” as defined in the act. “Major environmental rule” means a rule the specific intent of which is to protect the environment or reduce risks to human health from environmental exposure and that may adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, or the public health and safety of the state or a sector of the state. The intent of the rules is to protect the environment or reduce risks to human health from environmental exposure from contamination from large capacity cesspools and motor vehicle waste disposal wells. Cesspools had previously been banned in the state, but these rules adopt a provision clarifying this ban under the UIC Program. Because cesspools have already been banned and the commission has no inventory of registered motor vehicle waste disposal wells, the rules will not have a material adverse impact on the economy. Furthermore, the rulemaking does not meet any of the four applicability requirements listed in §2001.0225(a). Section 2001.0225 only applies to a major environmental rule, the result of which is to: 1) exceed a standard set by federal law, unless the rule is specifically required by state law; 2) exceed an express requirement of state law, unless the rule is specifically required by federal law; 3) exceed a requirement of a delegation agreement or contract between the state and an agency or representative of the federal government to implement a state and federal program; or 4) adopt a rule solely under the general powers of the agency instead of under a specific state law. The adopted rulemaking does not exceed a standard set by federal law, an express requirement of state law, a requirement of a delegation agreement, nor adopt a rule solely under the general powers of the agency.

Chapter 27 of the TWC authorizes the commission to regulate injection wells and §27.019 authorizes the commission to adopt rules reasonably required for the regulation of injection wells. Section 330h(b)(1) of the federal SDWA requires that the EPA promulgate regulations for state underground injection programs containing minimum requirements for effective programs to prevent underground injection which endangers drinking water sources. The commission believes that the adopted rules do not exceed standards set by federal law. New federal requirements ban all new motor vehicle waste disposal wells and require existing motor vehicle waste disposal wells in groundwater protection areas or other sensitive groundwater areas to close or obtain a permit. The new federal requirement found in 40 CFR §144.87(c) provides: “States may also delineate other sensitive groundwater areas by January 1, 2004... If a state or EPA region fails to identify these additional sensitive groundwater areas by January 1, 2004, the new requirements of this rule will apply to all motor vehicle waste disposal wells in the state effective January 1, 2007...” Because the commission is choosing not to identify other sensitive groundwater areas, the requirements applicable to existing motor vehicle waste disposal wells must be implemented statewide by January 1, 2007. Under the adopted rules, all large capacity cesspools and new motor vehicle waste disposal wells are banned. Owners or operators of existing large capacity cesspools must close the cesspools under closure standards specified in these rules. Owners or operators of existing motor vehicle waste disposal wells must close the wells or apply for a permit.

The commission believes that the adopted rules do not exceed an express requirement of state law. Requirements for injection wells are found in TWC, §27.003, which provides that: “It is the policy of this state and the purpose of this chapter to maintain the quality of fresh water in the state to the extent consistent with the public health and welfare, the operation of existing industries, and the economic

development of the state, to prevent underground injection that may pollute fresh water, and to require the use of all reasonable methods to implement this policy.” However, TWC, Chapter 27 does not provide specific standards or requirements for large capacity cesspools or motor vehicle waste disposal wells. Therefore, the commission does not believe that an express requirement of state law has been exceeded in the adopted rules.

The commission has also determined that the adopted rules do not exceed a requirement of a delegation agreement or contract between the state and an agency of the federal government. The State of Texas has been delegated authority to administer the UIC Program in the state by the EPA under the federal SDWA. The SDWA requires the EPA to promulgate minimum requirements for effective state UIC Programs that prevent underground injection which endangers drinking water sources. The commission believes that the adopted rules do not exceed the new federal requirements for large capacity cesspools or motor vehicle waste disposal wells, nor exceed the requirements in the delegation agreement with the EPA for state authorization of the UIC Program.

The commission also believes that these rules are adopted under specific authority of the Injection Well Act, TWC, Chapter 27. Section 27.003 requires the use of all reasonable methods to implement the policy of the state to maintain the quality of fresh water in the state to the extent consistent with the public health and welfare, the operation of existing industries, and the economic development of the state, and to prevent underground injection that may pollute fresh water. Section 27.019 requires the commission to adopt rules reasonably required for the regulation of injection wells. These adopted rules

implement requirements for certain types of Class V wells to prevent underground injection that may pollute fresh water.

TAKINGS IMPACT ASSESSMENT

The commission evaluated these adopted rules and performed a preliminary assessment of whether Texas Government Code, Chapter 2007 is applicable. The commission's preliminary assessment indicates that Texas Government Code, Chapter 2007 does not apply to these adopted rules because this is an action that is reasonably taken to fulfill an obligation mandated by federal law, which is exempt under Texas Government Code, §2007.003(b)(4). The State of Texas has received authorization from the EPA to administer the UIC Program in Texas. The SDWA, 42 USC §300h, requires that the administrator of the EPA promulgate regulations for state underground injection programs containing minimum requirements for delegated programs to prevent underground injection which endangers drinking water sources. The adopted rulemaking will provide consistency with new federal rules for two categories of Class V wells the EPA has determined to be a source of endangerment to drinking water.

Nevertheless, the commission further evaluated these adopted rules and performed a preliminary assessment of whether these adopted rules constitute a taking under Texas Government Code, Chapter 2007. The following is a summary of that evaluation and preliminary assessment. The primary purpose of these adopted rules is to implement federal requirements for large capacity cesspools and motor vehicle waste disposal wells. The adopted rules would substantially advance this purpose by banning new motor vehicle waste disposal wells and by requiring the owners and operators of existing motor

vehicle waste disposal wells to close the wells or obtain a permit from the commission. Cesspools have already been banned in Texas.

Promulgation and enforcement of these adopted rules would be neither a statutory nor a constitutional taking of private real property. Specifically, the subject adopted regulations do not affect a landowner's rights in private real property because this rulemaking does not burden (constitutionally), nor restrict or limit, the owner's right to property and reduce its value by 25% or more beyond which would otherwise exist in the absence of the regulations. In other words, these rules implement federal requirements for closure of motor vehicle waste disposal wells and large capacity cesspools, but because there are no inventoried motor vehicle waste disposal wells in the state and cesspools have already been banned, there will be no burden, restriction, or limitation on the owner's right to property. Additionally, a prohibition on such disposal wells and cesspools would not reduce property value by 25%.

CONSISTENCY WITH THE COASTAL MANAGEMENT PROGRAM

The executive director reviewed the adopted rulemaking and found that the rules are neither identified in Coastal Coordination Act Implementation Rules, 31 TAC §505.11(b)(2), relating to Actions and Rules Subject to the Texas Coastal Management Program (CMP), nor will they affect any action or authorization identified in Coastal Coordination Act Implementation Rules, 31 TAC §505.11(a)(6). Therefore, the adopted rules are not subject to the CMP.

HEARING AND COMMENTERS

The commission held a public hearing on February 20, 2001; there were no commenters present at the hearing. The public comment period closed March 5, 2001. The following commenters submitted written comments: the RCT and the EPA.

RESPONSE TO COMMENTS

§331.11

The EPA commented that the proposed amendments to Chapter 331 do not contain equivalent language to 40 CFR §144.1(g)(1)(iii) that specifically includes wells injecting hazardous wastes under the scope of the UIC Program.

The commission disagrees with the comment and responds that §331.1 states that the chapter applies to all injection wells. Section 331.11(a)(1)(A) states that injection wells within the jurisdiction of the commission include Class I wells used by generators of hazardous waste, or owners or operators of hazardous waste facilities, other than Class IV wells. Section 331.1 and §331.11(a)(1)(A) when read together adequately provide that wells injecting hazardous waste are under the scope of the UIC Program. The commission believes that this language is equivalent to the federal language at 40 CFR §144.1(g)(1)(iii).

The EPA also commented that the proposed amendments to Chapter 331 do not contain equivalent language to 40 CFR §144.1(g)(2)(v) that specifically excludes from the UIC Program any dug hole, drilled hole, or bored shaft which is not used for the subsurface emplacement of fluids.

The commission disagrees with the comment and responds that §331.1 states that the chapter applies to all injection wells. Section 331.1 when read in conjunction with §331.2(97) which defines an injection well as “a well into which fluids are being injected” adequately clarifies that any hole or bored shaft not used for the subsurface emplacement of fluids is excluded from the UIC Program. The commission believes this language is equivalent to the federal language at 40 CFR §144.1(g)(2)(v).

The RCT commented that the proposed revision to §331.11(a)(4) is incorrect in that the proposed language limited the Class V wells within the jurisdiction of the RCT to wells used for in situ combustion of fossil fuels, recovery of geothermal energy to produce electricity, and geothermal wells used in heating and aquaculture. In addition to those listed types of Class V wells, the RCT commented that it has jurisdiction over Class V wells at groundwater remediation sites associated with oil and gas activities and fluid return wells at oilfield water supply operations. The RCT also stated that there may be other types of Class V wells associated with activities it regulates. The RCT suggested that §331.11(a)(4) should be changed to: “Except for wells associated with activities regulated by the Railroad Commission of Texas, Class V wells are under the jurisdiction of the commission and include, but are not limited to: etc.”

The commission agrees with the commenter that the language in this section could be improved. The commission also agrees that there may be other wells under the RCT jurisdiction which are not listed, and the types of wells under the RCT jurisdiction may change over time necessitating another rule change to update the list. Therefore, the commission has adopted §331.11(a)(4) to

read, “Except for Class V wells within the jurisdiction of the Railroad Commission of Texas, all Class V injection wells are within the jurisdiction of the commission and include, but are not limited to: ...”

STATUTORY AUTHORITY

The amendments and new section are adopted under TWC, §5.103, which provides the commission authority to adopt any rules necessary to carry out its powers and duties under this code and other laws of this state; §5.105, which authorizes the commission to establish and approve all general policy of the commission by rule; §27.003, which requires the use of all reasonable methods to implement policy on underground injection; and §27.019, which requires the commission to adopt rules reasonably required for the regulation of injection wells.

SUBCHAPTER A: GENERAL PROVISIONS

§§331.2, 331.7 - 331.12

§331.2. Definitions.

General definitions can be found in Chapter 3 of this title (relating to Definitions). The following words and terms, when used in this chapter shall have the following meanings, unless the context clearly indicates otherwise.

(1) **Abandoned well** - A well which has been permanently discontinued from use or a well for which, after appropriate review and evaluation by the commission, there is no reasonable expectation of a return to service.

(2) **Activity** - The construction or operation of an injection well or of pre-injection facilities, including the processing, storage, and disposal of waste.

(3) **Affected person** - Any person whose legal rights, duties, or privileges may be adversely affected by the proposed injection operation for which a permit is sought.

(4) **Annulus** - The space in the wellbore between the injection tubing and the long string casing and/or liner.

(5) **Annulus pressure differential** - The difference between the annulus pressure and the injection pressure in an injection well.

(6) **Aquifer** - A geological formation, group of formations, or part of a formation that is capable of yielding a significant amount of water to a well or spring.

(7) **Aquifer restoration** - The process used to achieve or exceed water quality levels established by the commission for a permit/production area.

(8) **Aquifer storage well** - A Class V injection well used for the injection of water into a geologic formation, group of formations, or part of a formation that is capable of underground storage of water for later retrieval and beneficial use.

(9) **Area of review** - The area surrounding an injection well described according to the criteria set forth in §331.42 of this title (relating to Area of Review) or in the case of an area permit, the project area plus a circumscribing area the width of which is either one fourth of a mile or a number calculated according to the criteria set forth in §331.42 of this title.

(10) **Area permit** - An injection well permit which authorizes the construction and operation of two or more similar injection wells within a specified area.

(11) **Artificial liner** - The impermeable lining of a pit, lagoon, pond, reservoir, or other impoundment, that is made of a synthetic material such as butyl rubber, chlorosulfonated polyethylene, elasticized polyolefin, polyvinyl chloride (PVC), other manmade materials, or similar materials.

(12) **Baseline quality** - The parameters and their concentrations that describe the local groundwater quality of an aquifer prior to the beginning of injection activities.

(13) **Baseline well** - A well from which groundwater is analyzed to define baseline quality in the permit area (regional baseline well) or in the production area (production area baseline well).

(14) **Buffer area** - The area between any mine area boundary and the permit area boundary.

(15) **Caprock** - A geologic formation typically overlying the crest and sides of a salt stock. The caprock consists of a complex assemblage of minerals including calcite (CaCO_3), anhydrite (CaSO_4), and accessory minerals. Caprocks often contain lost circulation zones characterized by rock layers of high porosity and permeability.

(16) **Captured facility** - A manufacturing or production facility that generates an industrial solid waste or hazardous waste that is routinely stored, processed, or disposed of on a shared

basis in an integrated waste management unit owned, operated by, and located within a contiguous manufacturing complex.

(17) **Casing** - Material lining used to seal off strata at and below the earth's surface.

(18) **Cement** - A substance generally introduced as a slurry into a wellbore which sets up and hardens between the casing and borehole and/or between casing strings to prevent movement of fluids within or adjacent to a borehole, or a similar substance used in plugging a well.

(19) **Cementing** - The operation whereby cement is introduced into a wellbore and/or forced behind the casing.

(20) **Cesspool** - A drywell that receives untreated sanitary waste containing human excreta, and which sometimes has an open bottom and/or perforated sides.

(21) **Commercial facility** - A Class I permitted facility, where one or more commercial wells are operated.

(22) **Commercial Underground Injection Control (UIC) Class I well facility** - Any waste management facility that accepts, for a charge, hazardous or nonhazardous industrial solid waste for disposal in a UIC Class I injection well, except a captured facility or a facility that accepts waste only from other facilities owned or effectively controlled by the same person.

(23) **Commercial well** - A UIC Class I injection well which disposes of hazardous or nonhazardous industrial solid wastes, for a charge, except for a captured facility or a facility that accepts waste only from facilities owned or effectively controlled by the same person.

(24) **Conductor casing or conductor pipe** - A short string of large-diameter casing used to keep the top of the wellbore open during drilling operations.

(25) **Cone of influence** - The potentiometric surface area around the injection well within which increased injection zone pressures caused by injection of wastes would be sufficient to drive fluids into an underground source of drinking water (USDW) or freshwater aquifer.

(26) **Confining zone** - A part of a formation, a formation, or group of formations between the injection zone and the lowermost USDW or freshwater aquifer that acts as a barrier to the movement of fluids out of the injection zone.

(27) **Contaminant** - Any physical, biological, chemical or radiological substance or matter in water.

(28) **Control parameter** - Any chemical constituent of groundwater monitored on a routine basis used to detect or confirm the presence of mining solutions in a designated monitor well.

(29) **Disposal well** - A well that is used for the disposal of waste into a subsurface stratum.

(30) **Disturbed salt zone** - Zone of salt enveloping a salt cavern, typified by increased values of permeability or other induced anomalous conditions relative to undisturbed salt which lies more distant from the salt cavern, and is the result of mining activities during salt cavern development and which may vary in extent through all phases of a cavern including the post-closure phase.

(31) **Drilling mud** - A heavy suspension used in drilling an injection well, introduced down the drill pipe and through the drill bit.

(32) **Drywell** - 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.

(33) **Excursion** - The movement of mining solutions into a designated monitor well.

(34) **Existing injection well** - A Class I well which was authorized by an approved state or EPA-administered program before August 25, 1988 or a well which has become a Class I well as a result of a change in the definition of the injected waste which would render the waste hazardous under §335.1 of this title (relating to Definitions).

(35) **Fluid** - Material or substance which flows or moves whether in a semisolid, liquid, sludge, gas, or any other form or state.

(36) **Formation** - A body of rock characterized by a degree of lithologic homogeneity which is prevailingly, but not necessarily, tabular and is mappable on the earth's surface or traceable in the subsurface.

(37) **Formation fluid** - Fluid present in a formation under natural conditions.

(38) **Fresh water** - Water having bacteriological, physical, and chemical properties which make it suitable and feasible for beneficial use for any lawful purpose.

(A) For the purposes of this subchapter, it will be presumed that water is suitable and feasible for beneficial use for any lawful purpose only if:

- (i) it is used as drinking water for human consumption; or
- (ii) the ground water contains fewer than 10,000 mg/l total dissolved solids; and
- (iii) it is not an exempted aquifer.

(B) This presumption may be rebutted upon a showing by the executive director or an affected person that water containing greater than or equal to 10,000 mg/l total dissolved solids can be put to a beneficial use.

(39) **Groundwater** - Water below the land surface in a zone of saturation.

(40) **Groundwater protection area** - A geographic area (delineated by the state under the Safe Drinking Water Act, 42 United States Code §300j-13) near and/or surrounding community and non-transient, non-community water systems that use groundwater as a source of drinking water.

(41) **Hazardous waste** - Hazardous waste as defined in §335.1 of this title.

(42) **Improved sinkhole** - A naturally occurring karst depression or other natural crevice found in carbonate rocks, volcanic terrain, and other geologic settings which has been modified by man for the purpose of directing and emplacing fluids into the subsurface.

(43) **Injection interval** - That part of the injection zone in which the well is authorized to be screened, perforated, or in which the waste is otherwise authorized to be directly emplaced.

(44) **Injection operations** - The surface storage or subsurface emplacement of fluids occurring in connection with an injection well or wells, other than that occurring solely for construction or initial testing.

(45) **Injection well** - A well into which fluids are being injected.

(46) **Injection zone** - A formation, a group of formations, or part of a formation that receives fluid through a well.

(47) **In service** - The operational status when an authorized injection well is capable of injecting fluids, including times when the well is shut-in and on standby status.

(48) **Intermediate casing** - A string of casing with diameter intermediate between that of the surface casing and that of the smaller long-string or production casing, and which is set and cemented in a well after installation of the surface casing and prior to installation of the long-string or production casing.

(49) **Large capacity cesspool** - A cesspool that is designed for a flow of greater than 5,000 gallons per day.

(50) **Large capacity septic system** - A septic system that is designed for a flow of greater than 5,000 gallons per day.

(51) **Liner** - An additional casing string typically set and cemented inside the long string casing and occasionally used to extend from base of the long string casing to or through the injection zone.

(52) **Long string casing or production casing** - A string of casing that is set inside the surface casing and that usually extends to or through the injection zone.

(53) **Lost circulation zone** - A term applicable to rotary drilling of wells to indicate a subsurface zone which is penetrated by a wellbore, and which is characterized by rock of high porosity and permeability, into which drilling fluids flow from the wellbore to the degree that the circulation of drilling fluids from the bit back to ground surface is disrupted or "lost."

(54) **Mine area** - The area defined by a line through the ring of designated monitor wells installed to monitor the production zone.

(55) **Mine plan** - A map of adopted mine areas and an estimated schedule indicating the sequence and timetable for mining and any required aquifer restoration.

(56) **Monitor well** - Any well used for the sampling or measurement of any chemical or physical property of subsurface strata or their contained fluids.

(A) Designated monitor wells are those listed in the production area authorization for which routine water quality sampling is required.

(B) Secondary monitor wells are those wells in addition to designated monitor wells, used to delineate the horizontal and vertical extent of mining solutions.

(C) Pond monitor wells are wells used in the subsurface surveillance system near ponds or other surface facilities.

(57) **Motor vehicle waste disposal well** - A well used for the disposal of fluids from vehicular repair or maintenance activities, including, but not limited to, repair and maintenance facilities for cars, trucks, motorcycles, boats, railroad locomotives, and airplanes.

(58) **New injection well** - Any well, or group of wells not an existing injection well.

(59) **New waste stream** - A waste stream not permitted.

(60) **Non-commercial facility** - A Class I permitted facility which operates only non-commercial wells.

(61) **Non-commercial UIC Class I well facility** - A UIC Class I permitted facility where only non-commercial wells are operated.

(62) **Non-commercial well** - A UIC Class I injection well which disposes of wastes that are generated on-site, at a captured facility or from other facilities owned or effectively controlled by the same person.

(63) **Off-site** - Property which cannot be characterized as on-site.

(64) **On-site** - The same or geographically contiguous property which may be divided by public or private rights-of-way, provided the entrance and exit between the properties is at a cross-roads intersection, and access is by crossing, as opposed to going along, the right-of-way.

Noncontiguous properties owned by the same person but connected by a right-of-way which the owner controls and to which the public does not have access, is also considered on-site property.

(65) **Out of service** - The operational status when a well is not authorized to inject fluids, or the well itself is incapable of injecting fluids for mechanical reasons, maintenance operations, or well workovers or when injection is prohibited due to the well's inability to comply with the in-service operating standards of this chapter.

(66) **Permit area** - The area owned or under lease by the permittee which may include buffer areas, mine areas, and production areas.

(67) **Plugging** - The act or process of stopping the flow of water, oil, or gas into or out of a formation through a borehole or well penetrating that formation.

(68) **Point of injection** - For a Class V well, the last accessible sampling point prior to fluids being released into the subsurface environment.

(69) **Pollution** - The contamination of water or the alteration of the physical, chemical, or biological quality of water:

(A) that makes it harmful, detrimental or injurious:

(i) to humans, animal life, vegetation, or property; or

(ii) to public health, safety, or welfare; or,

(B) that impairs the usefulness or the public enjoyment of the water for any lawful and reasonable purpose.

(70) **Pre-Injection facilities** - The on-site above-ground appurtenances, structures, equipment, and other fixtures that are or will be used for storage, processing, or in conjunction with an injection operation.

(71) **Production area** - The area defined by a line generally through the outer perimeter of injection and recovery wells used for mining.

(72) **Production area authorization** - A document, issued under the terms of an injection well permit, approving the initiation of mining activities in a specified production area within a permit area.

(73) **Production zone** - The stratigraphic interval extending vertically from the shallowest to the deepest stratum into which mining solutions are authorized to be introduced.

(74) **Radioactive waste** - Any waste which contains radioactive material in concentrations which exceed those listed in 10 Code of Federal Regulations (CFR) Part 20, Appendix B, Table II, Column 2 and as amended.

(75) **Restoration demonstration** - A test or tests conducted by a permittee to simulate production and restoration conditions and verify or modify the fluid handling values submitted in the permit application.

(76) **Restored aquifer** - An aquifer whose local groundwater quality has, by natural or artificial processes, returned to levels consistent with restoration table values or better as verified by an approved sampling program.

(77) **Salt cavern** - A hollowed-out void space that has been purposefully constructed within a salt stock, typically by means of solution mining by circulation of water from a well or wells connected to the surface.

(78) **Salt cavern confining zone** - A zone between the salt cavern injection zone and all USDWs and freshwater aquifers, that acts as a barrier to movement of waste out of a salt cavern injection zone, and consists of the entirety of the salt stock excluding any portion of the salt stock designated as a UIC Class I salt cavern injection zone or any portion of the salt stock occupied by a UIC Class II or Class III salt cavern or its disturbed salt zone.

(79) **Salt cavern injection interval** - That part of a salt cavern injection zone consisting of the void space of the salt cavern into which waste is stored or disposed of, or which is capable of receiving waste for storage or disposal.

(80) **Salt cavern injection zone** - The void space of a salt cavern that receives waste through a well, plus that portion of the salt stock enveloping the salt cavern, and extending from the boundaries of the cavern void outward a sufficient thickness to contain the disturbed salt zone, and an additional thickness of undisturbed salt sufficient to ensure that adequate separation exists between the outer limits of the injection zone and any other activities in the domal area.

(81) **Salt cavern solid waste disposal well or salt cavern disposal well** - For the purposes of this chapter relating to Underground Injection Control, regulations of the commission, and not to UIC Class II or UIC Class III wells in salt caverns regulated by the Texas Railroad Commission, a salt cavern disposal well is a type of UIC Class I injection well used:

(A) to solution mine a waste storage or disposal cavern in naturally occurring salt; and/or

(B) to inject hazardous, industrial, or municipal waste into a salt cavern for the purpose of storage or disposal of the waste.

(82) **Salt dome** - A geologic structure that includes the caprock, salt stock, and deformed strata surrounding the salt stock.

(83) **Salt stock** - A geologic formation consisting of a relatively homogeneous mixture of evaporite minerals dominated by halite (NaCl) that has migrated from originally tabular beds into a vertical orientation.

(84) **Sanitary waste** - Liquid or solid waste originating solely from humans and human activities, such as wastes collected from toilets, showers, wash basins, sinks used for cleaning domestic areas, sinks used for food preparation, clothes washing operations, and sinks or washing machines where food and beverage serving dishes, glasses, and utensils are cleaned.

(85) **Septic system** - A well that is used to emplace sanitary waste below the surface, and is typically composed of a septic tank and subsurface fluid distribution system or disposal system.

(86) **Stratum** - A sedimentary bed or layer, regardless of thickness, that consists of generally the same kind of rock or material.

(87) **Subsurface fluid distribution system** - An assemblage of perforated pipes, drain tiles, or other similar mechanisms intended to distribute fluids below the surface of the ground.

(88) **Surface casing** - The first string of casing (after the conductor casing, if any) that is set in a well.

(89) **Temporary injection point** - A method of Class V injection that uses push point technology (injection probes pushed into the ground) for the one-time injection of fluids into or above a USDW.

(90) **Total dissolved solids (TDS)** - The total dissolved (filterable) solids as determined by use of the method specified in 40 CFR Part 136, as amended.

(91) **Transmissive fault or fracture** - A fault or fracture that has sufficient permeability and vertical extent to allow fluids to move between formations.

(92) **Underground injection** - The subsurface emplacement of fluids through a well.

(93) **Underground injection control (UIC)** - The program under the federal Safe Drinking Water Act, Part C, including the approved Texas state program.

(94) **Underground source of drinking water (USDW)** - An "aquifer" or its portions:

(A) which supplies drinking water for human consumption; or

(B) in which the groundwater contains fewer than 10,000 mg/l total dissolved solids; and

(C) which is not an exempted aquifer.

(95) **Upper limit** - A parameter value established by the commission in a permit/production area authorization which when exceeded indicates mining solutions may be present in designated monitor wells.

(96) **Verifying analysis** - A second sampling and analysis of control parameters for the purpose of confirming a routine sample analysis which indicated an increase in any control parameter to a level exceeding the upper limit. Mining solutions are assumed to be present in a designated monitor well if a verifying analysis confirms that any control parameter in a designated monitor well is present in concentration equal to or greater than the upper limit value.

(97) **Well** - A bored, drilled, or driven shaft whose depth is greater than the largest surface dimension, a dug hole whose depth is greater than the largest surface dimension, an improved sinkhole, or a subsurface fluid distribution system but does not include any surface pit, surface excavation, or natural depression.

(98) **Well injection** - The subsurface emplacement of fluids through a well.

(99) **Well monitoring** - The measurement by on-site instruments or laboratory methods of any chemical, physical, radiological, or biological property of the subsurface strata or their contained fluids penetrated by the wellbore.

(100) **Well stimulation** - Several processes used to clean the well bore, enlarge channels, and increase pore space in the interval to be injected thus making it possible for wastewater to move more readily into the formation, including, but not limited to surging, jetting, blasting, acidizing, and hydraulic fracturing.

(101) **Workover** - An operation in which a down-hole component of a well is repaired, the engineering design of the well is changed, or the mechanical integrity of the well is compromised. Workovers include operations such as sidetracking, the addition of perforations within the permitted injection interval, and the addition of liners or patches. For the purposes of this chapter, workovers do not include well stimulation operations.

§331.7. Permit Required.

(a) Except as provided in §331.9 of this title (relating to Injection Authorized by Rule), all injection wells and activities must be authorized by permit.

(b) For Class III in situ uranium solution mining wells, Frasch sulfur wells, and other Class III operations under commission jurisdiction, an area permit authorizing more than one well may be issued

for a defined permit area in which wells of similar design and operation are proposed. The wells must be operated by a single owner or operator. Before commencing operation of those wells, the permittee may be required to obtain a production area authorization for separate production or mining areas within the permit area.

(c) The owner or operator of a large capacity septic system or a septic system which accepts industrial waste must obtain a wastewater discharge permit in accordance with Texas Water Code, Chapter 26 and Chapter 305 of this title (relating to Consolidated Permits), and must submit the inventory information required under §331.10 of this title (relating to Inventory of Wells Authorized by Rule).

§331.8. Prohibition of Motor Vehicle Waste Disposal Wells and Large Capacity Cesspools.

(a) The construction of new motor vehicle waste disposal wells and large capacity cesspools is prohibited.

(b) The owner or operator of a motor vehicle waste disposal well in a groundwater protection area must close the well within one year after designation of the groundwater protection area, or by January 1, 2005, whichever occurs earlier, or apply for a Class V underground injection control (UIC) permit prior to the closure date.

(1) The owner or operator of a motor vehicle waste disposal well located in a groundwater protection area may be granted an extension to the closure deadline by the executive director for up to one year if the most efficient compliance option for the well is connection to a sanitary sewer or installation of new treatment technology.

(2) To continue operating during the extension period, the owner or operator must ensure that the injectate meets primary maximum contaminant levels for drinking water and other health-based standards at the point of injection.

(c) The owner or operator of a motor vehicle waste disposal well in any area of the state other than a groundwater protection area, must close the well by January 1, 2007; apply for a Class V UIC permit from the executive director under §331.137 of this title (relating to Class V Well Permit), prior to the closure date; or convert the well in accordance with §331.12 of this title (relating to Conversion of Wells) so that it is not receiving motor vehicle waste.

(d) The owner or operator of an existing motor vehicle waste disposal well must close the well in accordance with closure standards specified in §331.136 of this title (relating to Closure Standards for Motor Vehicle Waste Disposal Wells, Large Capacity Septic Systems, Large Capacity Cesspools, Subsurface Fluid Distribution Systems, and Drywells).

(e) All existing large capacity cesspools must be closed. The owner or operator of an existing large capacity cesspool must close the well in accordance with closure standards in §331.136 of this title.

§331.9. Injection Authorized by Rule.

(a) Plugging and abandonment of a well authorized by rule at any time after January 1, 1982, shall be accomplished in accordance with the standards of §331.46 of this title (relating to Closure Standards). Class V wells shall be closed according to standards under §331.133 of this title (relating to Closure Standards for Injection Wells). Motor vehicle waste disposal wells, large capacity septic systems, large capacity cesspools, subsurface fluid distribution systems, and drywells shall be closed according to standards under §331.136 of this title (relating to Closure Standards for Motor Vehicle Waste Disposal Wells, Large Capacity Septic Systems, Large Capacity Cesspools, Subsurface Fluid Distribution Systems, and Drywells).

(b) Injection into Class V wells, unless otherwise provided, is authorized by virtue of this rule. Injection into Class V wells used for the disposal of greater than 5,000 gallons per day of sewage or sewage effluent must be authorized by a wastewater discharge permit from the commission under Chapter 305 of this title (relating to Consolidated Permits) before operations begin.

(1) Well authorization under this section expires upon the effective date of a permit issued under §331.7 of this title (relating to Permit Required).

(2) An owner or operator of a Class V well is prohibited from injecting into the well:

(A) upon the effective date of permit denial;

(B) upon failure to submit a permit application in a timely manner under subsection (c) of this section;

(C) upon failure to submit inventory information in a timely manner under §331.10 of this title (relating to Inventory of Wells Authorized by Rule);

(D) upon failure to comply with a request for information from the executive director in a timely manner; or

(E) upon failure to comply with provisions contained in Subchapter H of this chapter (relating to Standards for Class V Wells) and, if applicable, Subchapter K of this chapter (relating to Additional Requirements for Class V Aquifer Storage Wells).

(c) The executive director may require the owner or operator of an injection well authorized by rule to apply for and obtain an injection well permit. The owner or operator shall submit a complete application within 90 days after the receipt of a letter from the executive director requesting that the owner or operator of an injection well submit an application for permit. Cases for which a permit may be required include, but are not limited to, wells not in compliance with the standards required by this section.

(d) Class IV wells injecting hazardous waste-contaminated ground water that is of acceptable quality to aid remediation and that is being reinjected into the same formation from which it was drawn, as authorized by §331.6 of this title (relating to Prohibition of Class IV Well Injection), shall be authorized by rule.

§331.10. Inventory of Wells Authorized by Rule.

(a) The owner or operator of an injection well facility, except for those wells listed under subsection (b) of this section, must submit to the executive director prior to construction (or within one year after January 1, 1982 if the well existed on that date), an inventory for each facility containing:

- (1) the name of the facility;
- (2) the name and address of legal contact;
- (3) the ownership of the facility;
- (4) the nature, type and operating status of the injection well(s); and
- (5) the location, depth, and construction of each well.

(b) Drillers of closed loop and air conditioning return flow injection wells authorized by rule shall inventory wells after construction by submitting the form provided by the executive director as required under §331.132(b)(3) of this title (relating to Construction Standards).

(c) Failure to comply with this section shall constitute grounds for termination of authorization by rule.

(d) Owners or operators of all Class V wells, with the exception of closed loop and air conditioning return flow wells, shall submit the inventory information required under subsection (a) of this section for review, modification, and approval by the executive director. The owner or operator of a Class V well must obtain approval from the executive director prior to construction, conversion, or operation of the well.

(e) Owners and operators of subsurface fluid distribution systems and improved sinkholes in existence on the effective date of this rule must submit the inventory information for these Class V wells to the executive director within one year of the effective date of these rules. Owners and operators of new subsurface fluid distribution systems and improved sinkholes must submit inventory information as required under subsection (d) of this section.

§331.11. Classification of Injection Wells.

(a) Injection wells within the jurisdiction of the commission are classified as follows.

(1) Class I:

(A) wells used by generators of hazardous wastes or owners or operators of hazardous waste management facilities to inject hazardous waste, other than Class IV wells;

(B) other industrial and municipal waste disposal wells which inject fluids beneath the lower-most formation which within 1/4 mile of the wellbore contains an underground source of drinking water (USDW); and

(C) radioactive waste disposal wells which inject fluids below the lower-most formation containing a USDW within 1/4 mile of the wellbore.

(2) Class III. Wells which are used for the extraction of minerals, including:

(A) mining of sulfur by the Frasch process; and

(B) solution mining of minerals which includes sodium sulfate, sulfur, potash, phosphate, copper, uranium and any other minerals which can be mined by this process.

(3) Class IV. Wells used by generators of hazardous wastes or of radioactive wastes, by owners or operators of hazardous waste management facilities, or by owners or operators of radioactive waste disposal sites to dispose of hazardous wastes or radioactive wastes into or above a formation which within 1/4 mile of the wellbore contains a USDW.

(4) Class V. Class V wells are injection wells not included in Classes I, II, III, or IV. Generally, wells covered by this paragraph inject nonhazardous fluids into or above formations that contain USDWs. Except for Class V wells within the jurisdiction of the Railroad Commission of Texas, all Class V injection wells are within the jurisdiction of the commission and include, but are not limited to:

(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) closed loop injection wells which are closed system geothermal wells used to circulate fluids including water, water with additives, or other fluids or gases through the earth as a heat source or heat sink;

(C) large capacity cesspools or other devices that receive greater than 5,000 gallons of waste per day, which have an open bottom and sometimes have perforated sides;

(D) cooling water return flow wells used to inject water previously used for cooling;

(E) drainage wells used to drain surface fluid, primarily storm runoff, into a subsurface formation;

(F) drywells used for the injection of wastes into a subsurface formation;

(G) recharge wells used to replenish the water in an aquifer;

(H) salt water intrusion barrier wells used to inject water into a freshwater aquifer to prevent the intrusion of salt water into the fresh water;

(I) sand backfill wells used to inject a mixture of water and sand, mill tailings, or other solids into mined out portions of subsurface mines;

(J) septic systems designed to inject greater than 5,000 gallons per day of waste or effluent;

(K) 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;

(L) aquifer storage wells used for the injection of water for storage and subsequent retrieval for beneficial use;

(M) motor vehicle waste disposal wells which are used or have been used for the disposal of fluids from vehicular repair or maintenance activities, such as an automotive repair shop, auto body shop, car dealership, boat, motorcycle or airplane dealership, or repair facility;

(N) improved sinkholes;

(O) aquifer remediation wells, temporary injection points, and subsurface fluid distribution systems used to inject nonhazardous fluids into the subsurface to aid in the remediation of soil and groundwater; and

(P) subsurface fluid distribution systems.

(b) Class II wells and Class III wells used for brine mining fall within the jurisdiction of the Railroad Commission of Texas.

(c) Baseline wells and monitor wells associated with Class III injection wells within the jurisdiction of the commission are also subject to the rules specified in this chapter.

§331.12. Conversion of Wells.

(a) Persons utilizing wells authorized by permit, rule, or otherwise, who wish to convert the well from its authorized purpose to a new or additional purpose must first obtain the appropriate approval described in paragraphs (1) - (4) of this section.

(1) Persons utilizing injection wells authorized by permit must obtain either a permit amendment pursuant to §305.62 of this title (relating to Amendment), or if appropriate, a permit revocation pursuant to §305.66 of this title (relating to Permit Denial, Suspension, and Revocation) or §305.67 of this title (relating to Revocation and Suspension Upon Request or Consent).

(2) Persons utilizing injection wells authorized by rule that are to be converted to a purpose that requires authorization by permit must obtain a permit.

(3) Persons utilizing injection wells authorized by rule that are to be converted to a purpose that does not require authorization by permit must obtain the written approval of the executive director.

(4) Prior to converting a Class V motor vehicle waste disposal well, the owner or operator must inventory the well with the executive director under §331.10 of this title (relating to Inventory of Wells Authorized by Rule) and comply with the conversion requirements under subsection (c) of this section.

(b) Conversions of wells that remain exclusively within the jurisdiction of the Railroad Commission are not affected by this rule. For example, a conversion from a Class II disposal well to a water supply well regulated by the Railroad Commission would neither enter nor exit the jurisdiction of this agency and thus would not be subject to this rule.

(c) In limited cases, the executive director may authorize the conversion of a motor vehicle waste disposal well to another type of Class V well.

(1) The use of a semi-permanent plug as the means to segregate waste is not sufficient to convert a motor vehicle waste disposal well to another type of Class V well.

(2) The executive director may approve the conversion only if:

(A) the well is inventoried with the executive director under §331.10 of this title;

(B) all motor vehicle fluids are segregated by physical barriers and are not allowed to enter the well; and

(C) injection of motor vehicle waste is unlikely based on a facility's compliance history and records showing proper waste disposal.

SUBCHAPTER E: STANDARDS FOR CLASS III WELLS

§331.82

STATUTORY AUTHORITY

The amendment is adopted under Texas Water Code (TWC), §5.103, which provides the commission authority to adopt any rules necessary to carry out its powers and duties under this code and other laws of this state; §5.105, which authorizes the commission to establish and approve all general policy of the commission by rule; §27.003, which requires the use of all reasonable methods to implement policy on underground injection; and §27.019, which requires the commission to adopt rules reasonably required for the regulation of injection wells.

§331.82. Construction Requirements.

(a) Casing and cementing. All new Class III wells, baseline wells, and monitor wells associated with the mining operations shall be cased, cemented to the surface, and capped to prevent the migration of fluids which may cause the pollution of underground sources of drinking water (USDWs) and maintained in that condition throughout the life of the well. In addition, existing wells in areas where there is the potential for contamination and other harmful or foreign matter to enter groundwater through an open well, shall also be cemented to the surface and capped. The casing and cement used in the construction of each 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) injection pressure, external pressure, internal pressure, axial loading, etc.;
- (3) hole size;
- (4) size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, and construction material);
- (5) corrosiveness of injected fluids and formation fluids;
- (6) lithology of injection and confining zones; and
- (7) type and grade of cement.

(b) Alterations to construction plans. Any proposed changes or alterations to construction plans after permit issuance shall be submitted to the executive director and written approval obtained before incorporating such changes.

(c) Logs and tests. Appropriate logs and other tests shall be conducted during the drilling and construction of all new Class III wells and after an existing well has been repaired. A descriptive report interpreting the results of those logs and tests shall be prepared by a knowledgeable log analyst and

submitted to the executive director. 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.

(1) During the drilling and construction of Class III wells, appropriate deviation checks shall be conducted on 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) Mechanical integrity, as described in §331.43 of this title (relating to Mechanical Integrity Standards), shall be demonstrated following construction of the well.

(A) Except as provided by subparagraph (B) of this section, the following tests shall be used to evaluate the mechanical integrity of the injection well:

(i) to test for significant leaks under §331.43(a)(1) of this title, monitoring of annulus pressure, or pressure test with liquid or gas, or radioactive tracer survey, or for Class III uranium solution mining wells only, a single point resistivity survey in conjunction with a pressure test to detect any leaks in the casing, tubing, or packer; and

(ii) to test for significant fluid movement under §331.43(a)(2) of this title, temperature log, noise log, radioactive tracer survey, cement bond log, oxygen activation log, or for Class III uranium solution mining wells only, cement records that demonstrate the absence of significant fluid movement where other tests are not suitable. For Class III wells where the cement records are used to demonstrate the absence of significant fluid movement, the monitoring program prescribed by §331.84 of this title (relating to Monitoring Requirements) shall be designed to verify the absence of significant fluid movement.

(B) The executive director may allow the use of a test to demonstrate mechanical integrity other than those listed in subparagraph (A) of this paragraph with the written approval of the administrator of the EPA or his authorized representative. To obtain approval, the executive director shall submit a written request to the EPA administrator, which shall set forth the proposed test and all technical data supporting its use. The EPA administrator shall approve the request if it will reliably demonstrate the mechanical integrity of wells for which its use is proposed. Any alternate method approved by the EPA administrator shall be published in the *Federal Register* and may be used unless its use is restricted at the time of approval by the EPA administrator.

(3) Additional logs and tests may be required by the executive director when appropriate.

(d) Construction and testing supervision. All phases of well construction and testing 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.

(e) Injection zone characteristics - water bearing formation. Where the injection zone is a water bearing formation, the following information concerning the injection zone shall be determined or calculated:

- (1) fluid pressure;
- (2) temperature;
- (3) fracture pressure;
- (4) other physical and chemical characteristics of the injection zone;
- (5) physical and chemical characteristics of the formation fluids; and
- (6) compatibility of injected fluids with formation fluids.

(f) Injection zone characteristics - non-water bearing formations. Where the injection formation is not a water bearing formation, the fracture pressure shall be determined or calculated.

(g) Monitor well location. Where injection is into a formation which contains water with less than 10,000 mg/l TDS, monitoring wells shall be completed into the injection zone and into any USDW above the injection zone which could be affected by the mining operation. These wells shall be located to detect any excursion of injection fluids, production fluids, process by-products, or formation fluids outside the mining area or zone. If the operation may be affected by subsidence or catastrophic collapse, the monitoring wells shall be located so that they will not be physically affected. Designated monitoring wells shall be installed at least 100 feet inside any permit area boundary, unless excepted by written authorization from the executive director.

(h) Subsidence or catastrophic collapse. Where the injection wells penetrate a USDW in an area subject to subsidence or catastrophic collapse an adequate number of monitor wells shall be completed into the USDW to detect any movement of injected fluids, process by-products or formation fluids into the USDW. The monitor wells shall be located outside the physical influence of the subsidence or catastrophic collapse.

(i) Monitor well criteria. In determining the number, location, construction, and frequency of monitoring of the monitor wells the following criteria shall be considered:

(1) the population relying on the USDW affected or potentially affected by the injection operation;

(2) the proximity of the injection operation to points of withdrawal of drinking water;

(3) the local geology and hydrology;

(4) the operating pressures and whether a negative pressure gradient is being maintained;

(5) the chemistry and volume of the injected fluid, the formation water, and the process by-products; and

(6) the injection well density.

SUBCHAPTER H: STANDARDS FOR CLASS V WELLS

§§331.131 - 331.133, 331.135 - 331.138

STATUTORY AUTHORITY

The amendments and new sections are adopted under Texas Water Code (TWC), §5.103, which provides the commission authority to adopt any rules necessary to carry out its powers and duties under this code and other laws of this state; §5.105, which authorizes the commission to establish and approve all general policy of the commission by rule; §27.003, which requires the use of all reasonable methods to implement policy on underground injection; and §27.019, which requires the commission to adopt rules reasonably required for the regulation of injection wells.

§331.131. Applicability.

The sections of this subchapter apply to all Class V injection wells under the jurisdiction of the commission. Aquifer storage wells must also comply with Subchapter K of this chapter (relating to Additional Requirements for Class V Aquifer Storage Wells) in addition to this subchapter.

§331.132. Construction Standards.

(a) All Class V wells shall be completed in accordance with the specifications contained in this section, unless otherwise authorized by the executive director. Injection wells listed in Texas Water

Code, §32.001(8) shall be installed by a water well driller licensed by the Texas Department of Licensing and Regulation.

(b) Reporting.

(1) Prior to construction. Except for closed loop injection and air conditioning return flow wells, information required under §331.10(a) of this title (relating to Inventory of Wells Authorized by Rule) shall be submitted to the executive director for review and approval prior to construction. For large capacity septic systems the information required under §331.10(a) of this title shall be submitted as part of the wastewater discharge permit application filed under Chapter 305 of this title (relating to Consolidated Permits).

(2) After completion of construction. Except for large capacity septic systems, subsurface fluid distribution systems, temporary injection points, closed loop injection wells, improved sinkholes, and air conditioning return flow wells, the Texas Department of Licensing and Regulation state well report form shall be submitted to the executive director within 30 days from the date the well construction is completed.

(3) Closed loop and air conditioning return flow wells. No reporting prior to construction is necessary for these two types of wells. The Texas Department of Licensing and Regulation state well report form shall be completed and submitted to the executive director within 30 days from the date the well construction is completed. Any additives, constituents, or fluids (other than

potable water) that are used in the closed loop injection well system shall be reported in the Water Quality Section on the state well report form.

(4) Temporary injection points. Temporary injection points shall be completed in such a manner as to prevent movement of surface water or undesirable groundwater into underground sources of drinking water (USDW).

(5) Large capacity septic systems, subsurface fluid distribution systems, and improved sinkholes. The owner or operator of large capacity septic systems, subsurface fluid distribution systems, and improved sinkholes must submit the well report form provided by the executive director within 30 days from the date well construction is completed.

(c) Sealing of casing.

(1) General. Except for closed loop injection wells, the annular space between the borehole and the casing shall be filled with cement slurry from ground level to a depth of not less than ten feet below the land surface or well head. In areas of shallow, unconfined groundwater aquifers, the cement need not be placed below the static water level. In areas of shallow, confined groundwater aquifers having artesian head, the cement need not be placed below the top of the water-bearing strata.

(2) Closed loop injection well. The annular space of a closed loop injection well shall be backfilled to the total depth with impervious bentonite or a similar material. Where no groundwater