

SUBCHAPTER G: CONSIDERATION PRIOR TO PERMIT ISSUANCE
§331.121, §331.122
Effective December 11, 2014

§331.121. Class I Wells.

(a) The commission shall consider the following before issuing a Class I Injection Well Permit:

(1) all information in the completed application for permit;

(2) all information in the Technical Report submitted with the application for permit in accordance with §305.45(a)(8) of this title (relating to Contents of Application for Permit). Subparagraphs (A) - (R) of this paragraph apply to all Class I wells except those Class I wells authorized to inject only nonhazardous desalination concentrate or nonhazardous drinking water treatment residuals. Information to be considered includes, but is not limited to:

(A) a map showing the location of the injection well for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number, or name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells, and other pertinent surface features, including residences and roads. The map should also show faults, if known or suspected. Only information of public record is required to be included on this map;

(B) a tabulation of all wells within the area of review which penetrate the injection zone or confining zone, and for salt dome cavern disposal wells, the salt dome cavern injection zone, salt dome cavern confining zone and caprock. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the executive director may require;

(C) the protocol followed to identify, locate, and ascertain the condition of abandoned wells within the area of review which penetrate the injection or the confining zones;

(D) maps and cross-sections indicating the general vertical and lateral limits of underground sources of drinking water (USDWs) and freshwater aquifers, their positions relative to the injection formation and the direction of water movement, where known, in each USDW or freshwater aquifer which may be affected by the proposed injection;

(E) maps, cross-sections, and description of the geologic structure of the local area;

(F) maps, cross-sections, and description of the regional geologic setting;

(G) proposed operating data:

(i) average and maximum daily injection rate and volume of the fluid or waste to be injected over the anticipated life of the injection well;

(ii) average and maximum injection pressure;

(iii) source of the waste streams;

(iv) an analysis of the chemical and physical characteristics of the waste streams;

(v) for salt dome cavern waste disposal, the bulk waste density, permeability, porosity, and compaction rate, as well as the individual physical characteristics of the wastes and transporting media;

(vi) for salt dome cavern waste disposal, the results of tests performed on the waste to demonstrate that the waste will remain solid under cavern conditions; and

(vii) any additional analyses which the executive director may reasonably require;

(H) proposed formation testing program to obtain an analysis of the chemical, physical, and radiological characteristics of formation fluids, and other information on the injection zone and confining zone;

(I) proposed stimulation program, if needed;

(J) proposed operation and injection procedures;

(K) engineering drawings of the surface and subsurface construction details of the injection well and pre-injection units, except that pre-injection units registered under the provisions of §331.17 of this title (relating to Pre-injection Units Registration) shall be considered under that section;

(L) contingency plans, based on a reasonable worst case scenario, to cope with all shut-ins; loss of cavern integrity, or well failures so as to prevent migration of fluid into any USDW;

(M) plans (including maps) for meeting the monitoring requirements of this chapter, such plans shall include all parameters, test methods, sample methods, and quality assurance procedures necessary and used to meet these requirements;

(N) for wells within the area of review which penetrate the injection zone or confining zone but are not adequately constructed, completed, or plugged, the corrective action proposed to be taken;

(O) construction procedures including a cementing and casing program, contingency cementing plan for managing lost circulation zones and other adverse subsurface conditions, well materials specifications and their life expectancy, logging procedures, deviation checks, and a drilling, testing, and coring program;

(P) delineation of all faults within the area of review, together with a demonstration, unless previously demonstrated to the commission or to the United States Environmental Protection Agency, that the fault is not sufficiently transmissive or vertically extensive to allow migration of hazardous constituents out of the injection zone;

(Q) the authorization status under this chapter of the pre-injection units for the injection well; and

(R) information demonstrating compliance with the applicable design criteria of Chapter 217 of this title (relating to Design Criteria for Domestic Wastewater Systems), for pre-injection units associated with Class I nonhazardous, noncommercial injection wells.

(3) This paragraph applies to those Class I wells authorized to inject only nonhazardous desalination concentrate or nonhazardous drinking water treatment residuals. Information to be considered includes, but is not limited to:

(A) a map showing the injection well(s) for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number, or name, and location of all producing wells, dry holes, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells and other pertinent surface features including residences and roads. The map should also show faults, if known or suspected. Only information of public record is required to be included on this map;

(B) a tabulation of data on all wells within the area of review that penetrate into the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the executive director may require;

(C) a topographic map (or other map if a topographic map is unavailable) extending one mile beyond the property boundaries of the source depicting the facility and each of its intake and discharge structures; each of its hazardous waste treatment, storage, or disposal facilities; each well where fluids from the facility are injected underground; and those wells, springs, and other surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant within a quarter mile of the facility property boundary;

(D) maps and cross sections indicating the general vertical and lateral limits of all underground sources of drinking water within the area of review, their position relative to the injection formation and the direction of water movement, where known, in each underground source of drinking water which may be affected by the proposed injection;

(E) maps and cross sections detailing the geologic structure of the local area;

(F) generalized maps and cross sections illustrating the regional geologic setting;

(G) proposed operating data:

(i) average and maximum daily rate and volume of the fluid to be injected;

(ii) average and maximum injection pressure; and

(iii) source and an analysis of the chemical, physical, radiological and biological characteristics of injection fluids;

(H) proposed formation testing program to obtain an analysis of the chemical, physical and radiological characteristics of and other information on the receiving formation;

(I) proposed stimulation program;

(J) proposed injection procedure;

(K) schematic or other appropriate drawings of the surface and subsurface construction details of the well;

(L) contingency plans to cope with all shut-ins or well failures so as to prevent migration of fluids into any underground source of drinking water;

(M) plans (including maps) for meeting the monitoring requirements in §331.64 of this title (relating to Monitoring and Testing Requirements);

(N) for wells within the area of review which penetrate the injection zone but are not properly completed or plugged, the corrective action proposed to be taken under §331.45(2)(G) of this title (relating to Executive Director Approval of Construction and Completion); and

(O) construction procedures including a cementing and casing program, logging procedures, deviation checks, and a drilling, testing, and coring program; and

(4) whether the applicant will assure, in accordance with Chapter 37, Subchapter Q of this title (relating to Financial Assurance for Underground Injection Control Wells), the resources necessary to close, plug, abandon, and if applicable, provide post-closure care for the well and/or waste disposal cavern as required;

(5) the closure plan, corrective action plan, and post-closure plan submitted in the technical report accompanying the permit application; except that a post-closure plan is not required for those Class I wells authorized to inject only nonhazardous desalination concentrate or nonhazardous drinking water treatment residuals; and

(6) any additional information required by the executive director for the evaluation of the proposed injection well.

(b) In determining whether the use or installation of an injection well is in the public interest under Texas Water Code, §27.051(a)(1), the commission shall also consider:

(1) the compliance history of the applicant in accordance with Texas Water Code, §27.051(e) and §281.21(d) of this title (relating to Draft Permit, Technical Summary, Fact Sheet, and Compliance History);

(2) whether there is a practical, economic and feasible alternative to an injection well reasonably available to manage the types and classes of hazardous waste;

(3) if the injection well will be used for the disposal of hazardous waste, whether the applicant will maintain liability coverage for bodily injury and property damage to third parties that is caused by sudden and nonsudden accidents in accordance with Chapter 37 of this title (relating to Financial Assurance); and

(4) that any permit issued for a Class I injection well for disposal of hazardous wastes generated on site requires a certification by the owner or operator that:

(A) the generator of the waste has a program to reduce the volume or quantity and toxicity of such waste to the degree determined by the generator to economically practicable; and

(B) injection of the waste is that practicable method of disposal currently available to the generator which minimizes the present and future threat to human health and the environment.

(c) The commission shall consider the following minimum criteria for siting before issuing a Class I injection well permit for all Class I wells except those Class I wells authorized to inject only nonhazardous desalination concentrate or nonhazardous drinking water treatment residuals. For Class I wells authorized to inject only nonhazardous desalination concentrate or nonhazardous drinking water treatment residuals, only paragraph (1) of this subsection applies.

(1) All Class I injection wells shall be sited such that they inject into a formation that is beneath the lowermost formation containing, within 1/4 mile of the wellbore, a USDW or freshwater aquifer.

(2) The siting of Class I injection wells shall be limited to areas that are geologically suitable. The executive director shall determine geologic suitability based upon:

(A) an analysis of the structural and stratigraphic geology, the hydrogeology, and the seismicity of the region;

(B) an analysis of the local geology and hydrogeology of the well site, including, at a minimum, detailed information regarding stratigraphy, structure, and rock properties, aquifer hydrodynamics, and mineral resources; and

(C) a determination that the geology of the area can be described confidently and that limits of waste fate and transport can be accurately predicted through the use of analytical and numerical models.

(3) Class I injection wells shall be sited such that:

(A) the injection zone has sufficient permeability, porosity, thickness, and areal extent to prevent migration of fluids into USDWs or freshwater aquifers;

(B) the confining zone:

(i) is laterally continuous and free of transecting, transmissive faults or fractures over an area sufficient to prevent the movement of fluids into a USDW or freshwater aquifer; and

(ii) contains at least one formation of sufficient thickness and with lithologic and stress characteristics capable of preventing initiation and/or propagation of fractures.

(4) The owner or operator shall demonstrate to the satisfaction of the executive director that:

(A) the confining zone is separated from the base of the lowermost USDW or freshwater aquifer by at least one sequence of permeable and less permeable strata that will provide an added layer of protection for the USDW or freshwater aquifer in the event of fluid movement in an unlocated borehole or transmissive fault; or

(B) within the area of review, the piezometric surface of the fluid in the injection zone is less than the piezometric surface of the lowermost USDW or freshwater aquifer, considering density effects, injection pressures, and any significant pumping in the overlying USDW or freshwater aquifer; or

(C) there is no USDW or freshwater aquifer present;

(D) the commission may approve a site which does not meet the requirements in subparagraphs (A), (B), or (C) of this paragraph if the owner or operator can demonstrate to the commission that because of the geology, nature of the waste, or other considerations, that abandoned boreholes or other conduits would not cause endangerment of USDWs, and fresh or surface water.

(d) The commission shall also consider the following additional information, which must be submitted in the technical report of the application as part of demonstrating that the facility will meet the performance standard in §331.162 of this title (relating to Performance Standard), before issuing a salt dome cavern Class I injection well permit:

(1) a thorough characterization of the salt dome to establish the geologic suitability of the location, including:

(A) data and interpretation from all appropriate geophysical methods (such as well logs, seismic surveys, and gravity surveys), subject to the approval of the executive director, necessary to:

(i) map the overall geometry of the salt dome, including all edges and any suspected overhangs of the salt stock;

(ii) demonstrate the existence of a minimum distance of 500 feet between the boundaries of the proposed salt dome cavern injection zone and the boundaries of the salt stock;

(iii) define the composition and map the top and thickness of the sedimentary rock units between the caprock and surface, including the flanks of the salt stock;

(iv) define the composition and map the top and thickness of the caprock overlying the salt stock;

(v) map the top of the salt stock;

(vi) calculate the movement and the salt loss rate of the salt stock;

(vii) define any other caverns and other uses of the salt dome, and address any conditions that may result in potential adverse impact on the salt dome; and

(viii) satisfy any other requirement of the executive director necessary to demonstrate the geologic suitability of the location;

(B) a surface-recorded three-dimensional seismic survey, subject to the following minimum requirements:

(i) the lateral extent of the survey will be determined by the executive director; and

(ii) the survey must provide information as part of demonstrating that the location is geologically suitable for the purpose of meeting the performance standard in §331.162 of this title;

(C) identification of any unusual features, such as depressions or lineations observable at the land surface or within or detectable within the subsurface, which may be indicative of underlying anomalies in the caprock or salt stock, which might affect construction, operation, or closure of the cavern;

(D) the petrology of the caprock, salt stock, and deformed strata;
and

(E) for strata surrounding the salt stock, information on their nature, structure, hydrodynamic properties, and relationships to USDWs, including a demonstration that the proposed salt dome cavern injection zone will not be in or above a formation which within 1/4 mile of the salt dome cavern injection zone contains a USDW;

(2) establishment of a pre-development baseline for subsidence and groundwater monitoring, over the area of review;

(3) characterization of the predicted impact of the proposed operations on the salt stock, specifically the extent of the disturbed zone;

(4) demonstration of adequate separation between the outer limits of the injection zone and any other activities in the domal area. The thickness of the disturbed zone, as well as any additional safety factors will be taken into consideration; and

(5) the commission will consider the presence of salt cavern storage activities, sulfur mining, salt mining, brine production, oil and gas activity, and any other activity which may adversely affect or be affected by waste disposal in a salt cavern.

(e) Information requirements for Class I hazardous waste injection well permits.

(1) The following information is required for each active Class I hazardous waste injection well at a facility seeking an underground injection control permit:

(A) dates well was operated; and

(B) specification of all wastes that have been injected in the well, if available.

(2) The owner or operator of any facility containing one or more active hazardous waste injection wells must submit all available information pertaining to any release of hazardous waste or constituents from any active hazardous waste injection well at the facility.

(3) The owner or operator of any facility containing one or more active Class I hazardous waste injection wells must conduct such preliminary site investigations as are necessary to determine whether a release is occurring, has occurred, or is likely to have occurred.

(f) Interim Status under the Resource Conservation Recovery Act (RCRA) for Class I hazardous waste injection wells. The minimum state standards which define acceptable injection of hazardous waste during the period of interim status are set out in this chapter. The issuance of an underground injection well permit does not automatically terminate RCRA interim status. A Class I well's interim status does, however, automatically terminate upon issuance of a RCRA permit for that well, or upon the well's receiving a RCRA permit-by-rule under §335.47 of this title (relating to Special Requirements for Persons Eligible for a Federal Permit by Rule). Thus, until a Class I well injecting hazardous waste receives a RCRA permit or RCRA permit-by-rule, the well's interim status requirements are the applicable requirements imposed under this chapter, including any requirements imposed in the underground injection control permit.

Adopted July 25, 2012

Effective August 16, 2012

§331.122. Class III Wells.

The commission shall consider the following before issuing a Class III Injection Well or Area Permit:

- (1) all information in the completed application for permit;
- (2) all information in the Technical Report submitted with the application for permit, including the following:
 - (A) a map showing the injection well(s) and area for which the permit is sought and the applicable area of review. Within the area of review, the map must show the number, or name, and location of all existing producing wells, injection wells, dry holes, surface bodies of water, mines (surface and subsurface), quarries, public water systems, water wells, and other pertinent surface features, including residences and roads. The map should also show faults, if known or suspected. Only information of public record is required to be on this map. If production area authorizations are required prior to the commencement of mining, the proposed production areas must be shown on the map;
 - (B) a tabulation of reasonably available data on all wells within the area of review which penetrate the proposed injection zone. This data shall include a

description of each well's type, construction, date drilled, location, depth, record of plugging and completion, and any additional information the executive director may require;

(C) maps and cross-sections indicating the vertical and lateral limits of those aquifers within the area of review that contain water with less than 10,000 milligrams per liter of total dissolved solids, their position relative to the injection formation, and the direction of water movement;

local area; (D) maps and cross-sections, detailing the geologic structure of the

geologic setting; (E) generalized map and cross-sections illustrating the regional

(F) proposed operating data:

injected; (i) average and maximum daily rate and volume of fluid to be

(ii) average and maximum injection pressure;

(iii) source of the injection fluids; and

radiological characteristics of the injection fluids; (iv) analysis, as needed, of the chemical, physical, and

(G) proposed formation testing program to obtain an analysis of the physical, chemical, and radiological characteristics of the receiving formation;

(H) proposed stimulation program;

(I) proposed operation and injection procedure;

details of the system; (J) engineering drawings of the surface and subsurface construction

requirements of the rules; (K) plans (including maps) for meeting the minimum monitoring

direction of movement of injection fluid; (L) expected changes in pressure, native fluid displacement,

(M) contingency plans to cope with all shut-ins or well failures so as to prevent the migration of contaminating fluids into fresh water;

(N) the corrective action proposed to be taken under §331.44 of this title (relating to Corrective Action Standards); and

(O) the permit range table required under §305.49(a)(10) and §331.82(e)(7) of this title (relating to Additional Contents of Application for an Injection Well Permit; and Construction Requirements);

(3) whether the applicant will assure, in accordance with Chapter 37, Subchapter Q of this title (relating to Financial Assurance for Underground Injection Control Wells), the resources necessary to close, plug, or abandon the well;

(4) the closure plan, in accordance with §331.46 of this title (relating to Closure Standards), submitted in the Technical Report accompanying the application; and

(5) any additional information reasonably required by the executive director for the evaluation of the proposed injection well or project.

Adopted November 19, 2014

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