Texas Commission on Environmental Quality

## Class V Injection Well

## Authorization/Inventory Form

### Types of Class V Wells

A well is defined in 30 Texas Administrative Code (TAC) §331.2 as 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. A well does not include any surface pit, surface excavation, or natural depression. Injection wells are wells into which any material or substance which flows or moves whether in a semisolid, liquid, gas or any other form or state are injected. Class V wells are injection wells that are not included in Classes I, II, III, IV or VI. Generally, Class V wells inject nonhazardous fluids into or above formations that contain an Underground Source of Drinking Water (USDW). The following types of Class V wells are regulated by the TCEQ.

* 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
* Experimental wells used to test new technologies or to conduct tracer dye studies
* Aquifer recharge wells used to replenish the water in an aquifer or for storage and subsequent retrieval for beneficial use as part of an aquifer storage and recovery project
* Drainage wells, improved sinkholes and subsurface fluid distribution systems used to drain storm water runoff into a subsurface formation
* Large capacity septic systems designed to inject greater than 5,000 gallons per day of waste or effluent
* Septic systems designed to inject 5,000 gallons per day or less of waste or effluent, except for single family residential septic systems
* Subsurface fluid distribution systems or subsurface area drip dispersal systems used for disposal of treated effluent from a wastewater treatment plant
* Industrial cooling water return flow wells used to inject noncontact water used to cool industrial process equipment
* Wells used to dispose of nonhazardous industrial process wastewater
* Wells used to dispose of nonhazardous brine generated by a desalination operation or nonhazardous drinking waste treatment residuals
* Air conditioning return flow wells used to return groundwater used for heating or cooling in a heat pump to the supply aquifer
* 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
* Saltwater intrusion barrier wells used to inject water into a freshwater aquifer to prevent the intrusion of salt water into the fresh water
* Subsidence control wells used to control land subsidence caused by groundwater withdrawal
* Mine sand backfill wells used to control subsidence, dispose of mining byproducts, and/or fill sections of a mine
* Drywells used for the injection of wastes into a subsurface formation
* Other wells not defined above and not used for activities related to energy production

Cesspools or other devices. which have an open bottom and sometimes have perforated sides are prohibited. 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 are prohibited.

### Types of Class V Authorization/Inventory Forms

Most Class V wells require authorization from the Texas Commission on Environmental Quality (TCEQ) prior to construction, conversion, modification, and operation of the wells. Authorization approval for Class V wells may be obtained by completing and submitting the attached Class V Injection Well Authorization/Inventory Form for review and approval by the executive director.

There are a few exceptions when authorization is obtained by completing and submitting alternate forms. The following types of Class V wells require submittal of the indicated alternate forms.

* Aquifer storage and recovery (ASR) wells require submittal of an [ASR Application Form](https://www.tceq.texas.gov/downloads/permitting/radioactive-materials/uic/asr-applicaton-form.docx)[[1]](#footnote-1)
* Large capacity septic systems, septic systems which accept industrial waste, subsurface area drip dispersal systems, and subsurface fluid distribution systems used for disposal of treated effluent from a wastewater treatment plant require submittal of applications for either a [Domestic Wastewater Discharge Permit](https://www.tceq.texas.gov/permitting/wastewater/municipal/WQ_Domestic_Wastewater_Permits_Steps.html)[[2]](#footnote-2)or an [Industrial Wastewater Discharge Permit](https://www.tceq.texas.gov/permitting/wastewater/industrial/TPDES_industrial_wastewater_steps.html)[[3]](#footnote-3)
* Closed loop injection and air conditioning return flow wells require submittal of a [Texas Department of Licensing and Regulation (TDLR) Well Report Form](https://www.tdlr.texas.gov/wwd/wwd001.pdf)[[4]](#footnote-4) within 30 days from the date the well construction is complete and submittal of a TDLR Plugging Report form after the wells are plugged.
* Class II wells to be used for disposal of nonhazardous brine and drinking water treatment residuals (DWTR) require submittal of a [DWTR Disposal Application Form](https://www.tceq.texas.gov/downloads/permitting/radioactive-materials/uic/tceq-rrc-class-v-application.docx)[[5]](#footnote-5) for dual permitting.

In cases where Class V wells require unique design, construction, and operation or where Class V wells are not in compliance with the injection well standards, the executive director may require the owner or operator to apply for and obtain an injection well permit. In these cases, the executive director will request by letter the submittal of an application for an injection well permit.

### Instructions

1. The purpose of this Class V Injection Well Authorization/Inventory Form is to serve as the means for the Class V injection well owner or operator to provide notice to the TCEQ Underground Injection Control (UIC) Permits Section of intent to construct, convert, modify, and/or operate Class V injection wells in accordance with the inventory and approval requirements of 30 Texas Administrative Code §331.10. The owner or operator is referred to [Title 30 of the Texas Administrative Code (TAC)](https://texreg.sos.state.tx.us/public/readtac$ext.ViewTAC?tac_view=3&ti=30&pt=1)[[6]](#footnote-6) Chapter 331, Subchapters A, C, H, K and O for technical and procedural regulations.
2. **No Class V injection wells may be constructed, converted, modified, and/or operated without prior approval from the executive director**.
3. The Class V Injection Well Authorization/Inventory Form should be delivered to the following mailing address or physical address:

Mailing address:

Texas Commission on Environmental Quality

Attn: Underground Injection Control (UIC) Permits Section

Radioactive Materials Division

Mail Code 233

P O Box 13087

Austin Texas 78711-3087

Physical address:

Texas Commission on Environmental Quality

Attn: Underground Injection Control (UIC) Permits Section

Radioactive Materials Division

Mail Code 233

12100 Park 35 Circle Building F

Austin Texas 78753

Submit one original and one copy of the authorization/inventory form. If two or more injection wells will be located at the same facility, submit one form. A separate form is required for each facility.

An amendment to an existing authorization/inventory is required if the owner or operator plans to implement any changes to the approved system including but not limited to the addition of injection wells or temporary injection points, replacement of injection wells, different injectate, operational and status changes, and owner, operator or facility name or address changes.

For an amendment to an existing Class V authorization/inventory, submit one original and one copy of the following:

1. the authorization/inventory form General Information, Nos. 1 through 7, plus any other section of the form that changes as a result of the amendment; and
2. a status report of all injection activities conducted from the date of the last status report, including the number of injection wells constructed and plugged.
3. As required by 30 TAC §331.21, “All geoscientific information submitted to the agency under this chapter shall be prepared by, or under the supervision of, a licensed professional geoscientist or a licensed professional engineer and shall be signed, sealed, and dated by the licensed professional geoscientist or licensed professional engineer in accordance with the Texas Geoscience Practice Act and the Texas Engineering Practice Act.” All engineering and geoscience plans and drawings must be individually signed, sealed, and dated.
4. All analytical data submitted to the TCEQ must be generated by a lab that the Texas Laboratory Accreditation Program (TLAP) has accredited under the National Environmental Laboratory Accreditation Conference (NELAC) standard for matrices, methods, and parameters of analysis, unless: (1) the lab is an in-house lab and either the lab performs work for its owner, for another company with a unit located on the same site, or without compensation for a governmental agency or charitable organization, or the lab is in another state and is accredited or inspected by that state; (2) the lab is accredited under federal law; (3) the data are needed for emergency-response activities and no TLAP-accredited lab is available; or (4) the lab supplies data for which the TCEQ does not offer accreditation. Refer to the [list of laboratories](https://www.tceq.texas.gov/downloads/compliance/labs/txnelap-lab-list.pdf)[[7]](#footnote-7) accredited by the State of Texas under the National Environmental Laboratory Accreditation Program (NELAP) on the TCEQ website.

Texas Commission on Environmental Quality

## Class V Injection Well

## Authorization/Inventory Form

Authorization No.

#### **General Information**

1. Type of Notification:

Initial

Amendment

1. Associated TCEQ Program Area (PST, VCP, IHW, etc.):

Program ID Number:

Contact Name:

Phone Number:

1. Agent/Consultant Name:

Mailing Address:

City, State, and Zip Code:

Contact Name:

Phone Number:

Email Address:

1. Applicant/Entity Responsible for Injection Activity:

Owner  Operator  Other (define)

Owner/Operator/Other Name:

Mailing Address:

City, State, and Zip Code:

Contact Name:

Phone Number:

Email Address:

1. Facility Name:

Street Address (if no address is available, provide location description):

City, State, and Zip Code:

County:

Contact Name:

Phone Number:

Email Address:

1. For a new Class V authorization/inventory or an amendment to change the owner or operator name and/or the facility name or address, submit a [Core Data Form (Form 10400)](https://www.tceq.texas.gov/assets/public/permitting/centralregistry/10400.docx)[[8]](#footnote-8) as “Attachment A”. For all other amendments, provide the Regulated Entity Number (RN) and Customer Reference Number (CN) for the facility. If the injection wells are part of a remediation project administered by a TCEQ-funded or EPA-funded program, use the appropriate CN for those programs. For more information regarding the Core Data Form, go to the [TCEQ Core Data Form Instructions](https://www.tceq.texas.gov/assets/public/permitting/centralregistry/10400-inst.pdf)[[9]](#footnote-9) on the TCEQ Web site or call (512) 239-5175.
2. For an amendment to a Class V authorization/inventory, briefly describe all requested changes and the reason for the changes.

##### Proposed Injection System Information

1. Submit a topographic quadrangle map which identifies the facility location relative to major streets or roadways as “Attachment B”.
2. Indicate if the injection system transects or terminates in the Edwards Aquifer as defined by:

30 TAC §331.19(a)&(b)

30 TAC §331.19(c)

Not Applicable

If the injection system transects or terminates in the Edwards Aquifer as defined by 30 TAC §331.19(a), (b), or (c), the injection system must comply with the applicable requirements of 30 TAC §331.19. Provide demonstration of compliance with 30 TAC §331.19 in the appropriate sections of the authorization/inventory form.

1. Provide a detailed description of the proposed injection system.

Submit a detailed site map with locations of the proposed injection system as “Attachment C”. Include on the map the location of all proposed, constructed, and converted injection wells, monitoring wells, temporary injection points, etc.

1. Indicate the number and type of wells in the proposed injection system.

Number of temporary injection points:

Number of vertical or horizontal wells (includes temporary wells):

Type and number of other wells (i.e. injection galleries or subsurface fluid distribution systems):

1. If the injection system includes a cooling water return well, drainage well used to drain surface fluids, recharge well, saltwater intrusion barrier well, sand backfill well, or subsidence control well, provide the following information [Texas Administrative Code Title 16, Chapter 76].

Water Well Driller/Installer Name:

Street Address:

City, State, and Zip Code:

Phone Number:

License Number:

##### Proposed Temporary Injection Point Completion and Plugging Plans

1. A temporary injection point (TIP) is 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 an underground source of drinking water. TIPs shall be completed in such a manner as to prevent movement of surface water or undesirable groundwater into underground sources of drinking water.

Provide a detailed description of the proposed temporary injection point completion and injection process including the injection point diameter and depths of injection below ground surface (bgs).

1. Upon permanent discontinued use of the proposed TIPs, the hole shall be pressure grouted from the bottom of the well to the land surface, and the injection point shall be sealed to prevent the migration of fluids into underground sources of drinking water.

Provide a detailed description of the proposed TIPs plugging plan.

##### Proposed Vertical or Horizontal Injection Well Construction and Plugging Plans (Includes Temporary Wells)

1. Vertical or horizontal injection wells shall be designed and constructed according to the following standards, unless otherwise authorized by the executive director.
2. 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.
3. The well must have a concrete slab or sealing block placed above the cement slurry around the well at the ground surface. The slab or block shall extend at least two feet from the well in all directions and have a minimum thickness of four inches and shall be separated from the well casing by a plastic or mastic coating or sleeve to prevent bonding of the slab to the casing. The surface of the slab shall be sloped so that liquid will drain away from the well.
4. For wells that use casing, the top of the casing shall extend a minimum of 12 inches above the original ground surface. The well casing shall be capped or completed in a manner that will prevent pollutants from entering the well.
5. If the use of a steel or polyvinyl chloride (PVC) sleeve is necessary to prevent possible damage to the casing, the steel sleeve shall be a minimum of 3/16 inches in thickness or the PVC sleeve shall be a minimum of Schedule 80 sun-resistance and 24 inches in length, and shall extend 12 inches into the cement slurry.
6. The well shall not be located in an area generally subject to flooding. If a well must be placed in a flood-prone area, it shall be completed with a watertight sanitary well seal to maintain a junction between the casing and injection tubing, and a steel sleeve extending a minimum of 36 inches above ground level and 24 inches below the ground surface shall be used. A flood-prone area is defined as that area within the 100-year flood plain as determined on the Federal Emergency Management Agency (FEMA) Flood Hazard Maps for the National Flood Insurance Program. If FEMA has conducted a flood insurance study of the area, and has mapped the 50-year flood plain, then the smaller geographic areas within the 50-year boundary are considered to be flood-prone.
7. The well, especially one that is gravel packed, shall be completed so that aquifers or zones containing waters that are known to differ significantly in chemical quality are not allowed to commingle through the borehole-casing annulus or the gravel pack and cause quality degradation of any aquifer containing fresh water.
8. The well shall be constructed so that undesirable groundwater is isolated from any underground source of drinking water and is confined to the zone(s) of origin. Undesirable groundwater is water that is injurious to human health and the environment or water that can cause pollution to land or other waters.

Provide a detailed description of the proposed injection well design, including the casing, tubing and screen sizes, materials of construction, weights, setting depths (bgs), boring size, number of sacks of cement or grout, slurry volumes, tops of cement (bgs) and construction procedures. If the injection well will be installed through a groundwater zone, describe how the well design and construction will prevent commingling or contamination of the groundwater.

Submit a detailed construction diagram of the proposed injection well as “Attachment D”. The diagram must be signed, sealed, and dated by a professional geoscientist or professional engineer licensed in the state of Texas. Include well logs for any existing injection wells or other types of wells to be converted to injection wells.

1. Upon permanent discontinued use or abandonment of the proposed injection well, the well shall be plugged according to the following standards:
2. All removable casing shall be removed and the entire well shall be pressure filled via a tremie pipe with cement from bottom to the land surface; or
3. If the well is not completed through zones containing undesirable groundwater, the well may be filled with fine sand, clay, or heavy mud followed by a cement plug extending from land surface to a depth of not less than ten feet below the land surface; or
4. If the well is completed through zones containing undesirable groundwater, either the zone containing undesirable groundwater or the fresh groundwater zone shall be isolated with cement plugs and the remainder of the wellbore filled with bentonite grout (9.1 lb./gal mud or more) followed by a cement plug extending from land surface to a depth of not less than ten feet below the land surface.

Provide a detailed description of the proposed injection well plugging plan.

##### Proposed Trench System, Subsurface Fluid Distribution System, Infiltration Gallery, Improved Sinkhole or Other Injection System Construction and Closure Plans

1. Trench systems, subsurface fluid distribution systems, infiltration galleries, improved sinkholes and other types of injection systems shall be designed, constructed, and operated to prevent the movement of fluid that would result in the pollution of an underground source of drinking water.

Provide a detailed description of the proposed trench system, subsurface fluid distribution system, infiltration gallery, improved sinkhole, or any other type of injection system design including the dimensions and depths, materials of construction, and construction procedures.

Submit a detailed construction diagram of the proposed trench system, subsurface fluid distribution system, infiltration gallery, improved sinkhole, or any other type of injection system as “Attachment E”. The diagram must be signed, sealed, and dated by a professional geoscientist or professional engineer licensed in the state of Texas.

1. Upon discontinued use or abandonment of trench systems, subsurface distribution systems, infiltration galleries, improved sinkholes and any other type of injection system, the system shall be permanently closed in a manner that will prevent the movement of fluid that would result in the pollution of an underground source of drinking water. Improved sinkholes shall be closed in accordance with 30 TAC §331.133(f).

Provide a detailed description of the proposed injection system closure plan.

##### Site Hydrogeological and Injection Zone Data

1. TIP/Well/Trench Maximum Total Depth (bgs):
2. Name of Injection Zone Formation(s):

Injection Zone Top Depth(s) (bgs):

Injection Zone Bottom Depth(s) (bgs):

Ground Water Depth (bgs):

1. Provide a map and cross-section of the geologic formations which include the horizontal and vertical extent of the injection plume and the injection system as “Attachment F”. If applicable, include the horizontal and vertical extent of the contamination. The map and cross-section must be signed, sealed, and dated by a professional geoscientist or professional engineer licensed in the state of Texas.
2. Provide a chemical analysis of the injection zone formation fluid as “Attachment G”.
3. If the injection zone is contaminated, provide a list of the current contaminants and concentrations as “Attachment H”.
4. Type of Injection Fluid:

Provide a chemical analysis of the injection fluid as “Attachment I”. A Safety Data Sheet (SDS) may be provided in place of the chemical analysis.

1. Maximum Injection Rate, Volume and Pressure:
2. Provide as “Attachment J” a map identifying all water wells, injection wells and monitor wells located within ¼ -mile radius of each proposed injection wellbore. Include drillers logs for all existing water wells and injection wells.

##### Remediation Site History

1. Type of Facility:
2. Provide a list of the original contaminants and concentrations as “Attachment K”.
3. Provide a detailed discussion of previous injection activity including previous UIC Class V authorization numbers related to the facility.

If the injection activity is discussed in a report, the report may be included as “Attachment L”.

1. <https://www.tceq.texas.gov/downloads/permitting/radioactive-materials/uic/asr-applicaton-form.docx> [↑](#footnote-ref-1)
2. <https://www.tceq.texas.gov/permitting/wastewater/municipal/WQ_Domestic_Wastewater_Permits_Steps.html> [↑](#footnote-ref-2)
3. <https://www.tceq.texas.gov/permitting/wastewater/industrial/TPDES_industrial_wastewater_steps.html> [↑](#footnote-ref-3)
4. <https://www.tdlr.texas.gov/wwd/wwd001.pdf> [↑](#footnote-ref-4)
5. <https://www.tceq.texas.gov/downloads/permitting/radioactive-materials/uic/tceq-rrc-class-v-application.docx> [↑](#footnote-ref-5)
6. <https://texreg.sos.state.tx.us/public/readtac$ext.ViewTAC?tac_view=3&ti=30&pt=1> [↑](#footnote-ref-6)
7. <https://www.tceq.texas.gov/downloads/compliance/labs/txnelap-lab-list.pdf> [↑](#footnote-ref-7)
8. <https://www.tceq.texas.gov/assets/public/permitting/centralregistry/10400.docx> [↑](#footnote-ref-8)
9. <https://www.tceq.texas.gov/assets/public/permitting/centralregistry/10400-inst.pdf> [↑](#footnote-ref-9)