

## What Are the Construction Standards for Class II Oil and Gas Disposal Wells ?

A Class II disposal well must be constructed with several layers of protection. The goal is to isolate the injected waste to ensure that groundwater is protected. The first protection layer is surface casing – a steel pipe that is encased in cement that reaches from the ground surface to below the deepest usable-quality groundwater level (unless an alternative surface casing program has been approved by the Railroad Commission of Texas (RRC). Surface casing acts as a protective sleeve through which deeper drilling occurs. A second protection layer is the production casing – a pipe placed in the wellbore (inside the surface casing) to the well's total depth and permanently cemented in place with the top of cement reaching a height of several hundred feet above the injection zone. A third protection layer is the injection tubing string that is set on a sealing packer and conducts the injected water down through the injection tubing string which is inside the production casing. Perforations are made in the production casing and cement opposite the receiving underground formation or through the bottom of the well into the targeted underground formation.

A schematic of a typical injection well construction may be viewed at: <http://www.rrc.texas.gov/media/24203/injectionwellg.jpg>. Click on the image to see more detail.

For detailed construction requirements and/or information about alternative casing requirements, please refer to the RRC's Injection/Disposal Well Permit Testing and Monitoring Seminar Manual. A link is provided below.

### References:

- For RRC Injection and Disposal Wells Frequently Asked Questions (FAQs), go to <http://www.rrc.texas.gov/about-us/resource-center/faqs/oil-gas-faqs/faq-injection-and-disposal-wells/>.
- The RRC's Injection/Disposal Well Permitting, Testing, and Monitoring Manual can be found at <http://www.rrc.texas.gov/oil-gas/publications-and-notice/manuals/injectiondisposal-well-manual/>.
- Information regarding the Texas Commission on Environmental Quality (TCEQ) Underground Injection Control Permits and Registrations can be found at [https://www.tceq.texas.gov/permitting/waste\\_permits/uic\\_permits/uic.html](https://www.tceq.texas.gov/permitting/waste_permits/uic_permits/uic.html).
- TCEQ's Oil & Gas Facilities: Compliance Resources webpage (<http://www.tceq.texas.gov/assistance/industry/oilgas.html>) covers regulations on air, water, and waste related to the oil and gas industry in Texas. This webpage also includes links to other resources such as TCEQ publication RG-482, *Common Environmental Requirements for Regulated Oil and Gas Operations*, which discusses TCEQ regulations for upstream oil and gas sites, as well as the appropriate regulatory contacts for various oil and gas activities in Texas.
- The U.S. Environmental Protection Agency (EPA) Protecting Underground Sources of Drinking Water from Underground Injection (UIC) website is <https://www.epa.gov/uic>.

- Drawings of the different UIC well types can be found on each of their individual webpages (Class I – VI) at [https://www.epa.gov/uic/general-information-about-injection-wells#how\\_protect](https://www.epa.gov/uic/general-information-about-injection-wells#how_protect).
- The U.S. EPA Safe Drinking Water Act website is <http://www.epa.gov/lawsregs/laws/sdwa.html>.
- The Ground Water Protection Council website providing information and links relating to wells, underground injection practices, and groundwater protection is <http://www.gwpc.org>.
- The Texas Groundwater Protection Committee (TGPC) Oil, Gas, and Mining webpage (<http://tgpc.state.tx.us/oil-gas-mining/>) has additional information and links on this subject.

For additional Frequently Asked Questions (FAQs) related to groundwater quantity, groundwater quality, septic systems, water wells, administrative entities, and publications, visit the TGPC's FAQ webpage at <http://tgpc.state.tx.us/frequently-asked-questions-faqs/>.