

WATER DISPOSAL



Water Disposal

The oil and gas industry has made great strides in the advancement of technologies which enable the recycling and reuse of waters used for drilling and **completions** activities. However, when water used in the oil and gas industry can no longer be recycled for practical reasons, it must be disposed of safely and responsibly, with minimal impact to humans and the environment. Disposal of this waste water is highly regulated and methods of water disposal allowed will vary from jurisdiction to jurisdiction.

Waste water from oil and gas development typically contains dissolved salts, and may contain hydrocarbons, trace metals and other elements. The most commonly approved disposal method is to inject waste water deep underground using a dedicated and specially constructed well. Deep well injection has been used in the Canadian oil and gas industry and throughout the world for decades to permanently isolate liquid waste from the environment.

A number of disposal methods are used by industry. Disposal options are location and regulatory specific. The most common are:

Option 1 – Deep well injection

The drilling and licensing of a disposal well must comply with a number of government regulations which determine the need and feasibility of the well. A company must first apply and gain a license for the proposed disposal well. As part of that process, the well owner must demonstrate that the well and rock formation will accept the volume of proposed fluid and ensure that the contained fluids remain isolated from any potential usable groundwater source.

Following approval and construction to rigorous standards, the well can now be used for disposal purposes. Regular inspections and tests are required throughout the life of the well to ensure mechanical integrity and fluid containment. Specific tolerances, such as pressure and disposal volumes, are monitored daily. Sealing and capping protocols are followed when the well's capacity is reached. Even after abandonment, the well owner maintains liability for the well, ensuring any potential future issues relating to safety or the environment are handled in a responsible manner.

TERMINOLOGY

Completion: A term used to describe the activities necessary to bring a wellbore into production once drilling operations have been concluded.

Option 2 – Water treatment facilities

Waste water from a production facility may also be delivered, with other drilling waste, to sophisticated waste handling facilities. These facilities treat the waste and, following treatment conditions established by the facility operator and local regulators, dispose of the final waste water in designated disposal wells or make it available for reuse.

Option 3 – Land application

There are strict regulations which govern the application of produced water to the surface of the land. Land applications are generally appropriate for fluids which contain naturally biodegradable constituents (degradable organics or nutrients) and are also compatible with the soil chemistry. If the produced water is high in total dissolved solids (inorganics) and application will not be permitted.

Option 4 – Surface water discharge

In some jurisdictions surface Water Discharge permits may be issued to any point source that is discharging wastewater to surface waters. The permits contain effluent limits that will protect the beneficial uses of surface waters. The permits also contain sampling and reporting requirements that each facility must follow. Stream quality or designated use may also dictate discharge requirements.