

US EPA ARCHIVE DOCUMENT

# 32 Types of Class V Injection Wells

Source: Ground Water Protection Council

Code	Well Type and Description	Risk	Potential Contaminants
<b>DRAINAGE WELLS</b>			
5F1	Agricultural Drainage Wells – receive irrigation tailwater, other field drainage, animal yard, feedlot, or dairy runoff, etc.	High	Pesticides, nutrients, pathogens, metals transported by sediments, salts
5D2	Storm Water Drainage Wells – receive storm water runoff from paved areas including parking lots, streets, residential subdivisions, building roofs, highways etc.	Low - Moderate	Heavy metals (Cu, Pb, Zn), organics, high levels of coliform bacteria. Contaminants from streets, roofs, landscaped areas (herbicides, pesticides.)
5D3	Improved Sinkholes - receive stormwater runoff from developments in karst topographic areas.	Moderate - High	Variable; pesticides, nutrients, coliform bacteria, or other storm water contaminants
5D4	Industrial Drainage Wells - wells located in industrial areas which are constructed to discharge storm water but are susceptible to spills, leaks, or other chemical discharge.	Moderate - High	Usually organic solvents, acids, pesticides, and various industrial waste constituents.
5G30	Special Drainage Wells - used for disposing water from sources other than direct precipitation, such as landslide control, lake level control, swimming pool drainage, or portable water tank overflow/drainage.	Low - Moderate	Chlorinated and treated water, pH imbalance, algaecides, fungicides, muriatic acid.
<b>GEOHERMAL REINJECTION WELLS</b>			
5A5	Electric Power Reinjection Wells - reinject geothermal fluids used to generate electric power (deep wells.)	Moderate	pH imbalance, minerals and minerals in solution (As, Bo, Se), sulfates.
5A6	Direct Heat Reinjection Wells - reinject geothermal fluids used to provide heat for large buildings or developments.	Moderate	Hot geothermal brines with TDS between 2,000 to 325,000 mg/L Co <sub>3</sub> , CaSO <sub>4</sub> , SR and Ba, As.
5A7	Heat Pump/Air Conditioning Return Flow Wells – reinject groundwater used to heat or cool a building in a heat pump system (shallow wells.) <b>Not injection wells</b> if they are a closed loop system as many states require.	Low	Potable water with temperatures ranging from 90 to 110 degrees F, may have scale or corrosion inhibitors.
5A8	Groundwater Aquaculture Return Flow Wells – reinject groundwater or geothermal wells used to support aquaculture. Non-geothermal aquaculture disposal wells are also included in this category (such as those used in aquariums.)	Moderate	Used geothermal waters which may be highly mineralized and include traces of arsenic, boron, fluoride, dissolved and suspended solids, animal waste, perished animals and bacteria.

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<b>DOMESTIC WASTEWATER DISPOSAL WELLS</b>			
5W9	Untreated Sewage Waste Disposal Wells – receive raw sewage wastes (septage) from pumping trucks or other vehicles which collect such wastes from single or multiple sources.	High	Raw sewage with 99.9% water and .03% suspended solids, or sludge/scum residues with less water. Soluble organic and inorganic compounds including household chemicals. May contain pathogenic bacteria and viruses, nitrates, ammonia, chlorides, sulfates, sodium, calcium.
5W10	Cesspools - including multiple dwelling, community, or regional cesspools, or other devices that receive wastes and have perforated sides. <b>NEW CONSTRUCTION PROHIBITED 4/5/00</b>		
5W11	Septic Systems (undifferentiated disposal method) used to inject the waste or effluent from a multiple dwelling, business establishment, community, or institutional facility.		
5W31	Septic Systems (well disposal method) – septic tank followed by seepage pit, drywell, rockwell, cavitette.	High - Low	<i>NOTE: Onsite sewage systems must have the capacity to serve 20 persons per day to be regulated under the UIC program, unless they also receive an industrial, commercial or other chemical waste stream, in which case they are no longer a domestic wastewater injection well.</i>
5W32	Septic Systems (Drainfield disposal method) – septic tank followed by horizontal leach lines, drain tiles, or other soil-based treatment unit. Generally better degree of treatment than other methods listed.		
5W12	Domestic Wastewater Treatment Plant Effluent Wells – dispose of treated sewage or domestic effluent from small package plants up to large municipal treatment plants (achieving Secondary or further treatment.)		
<b>MINERAL AND FOSSIL FUEL RECOVERY RELATED WELLS</b>			
5X13	Mining, sand, or other backfill wells– used to inject a mixture of water and sand, mill tailings, and other solids into mined out portions of subsurface mines whether what is injected is a radioactive waste or not. Also includes wells used to control mine fires and acid mine drainage.	Moderate	Acidic waters
5X14	Solution mining wells – used for in-situ solution mining in conventional mines, such as stopes leaching.	Moderate - Low	2.4% sulfuric acid, pH less than 2 for copper and ferric cyanide solution for gold or silver.
5X15	In-situ Fossil Fuel Recovery wells – used for recovery of coal, lignite, oil shale, and tar sands.	Moderate	Steam, air, solvents, igniting agents.
5X16	Spent-Brine Return Flow wells – reinject into the same formation from which it was withdrawn after extraction of halogens or their salts.	Low	Variable
5X17	Air Scrubber Waste Disposal Wells associated with Class II oilfield activities	Moderate - High	Lime, sodium or alkali system; nitrates, chlorides, sulfates, TDS.
5X18	Water Softener Regeneration Brine disposal associated with Class II oilfield activities		TDS, Ca, Mg, Chloride, backwash

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<b>INDUSTRIAL/COMMERCIAL/UTILITY DISPOSAL WELLS</b>			
5A19	Cooling Water Return Flow – inject water which was used in a cooling process (open or closed loop.)	Low - High	Anti-scaling additives, thermal pollution, potential for industrial spills reaching ground water.
5W20	Industrial Process Waste and Water Disposal – used to dispose a wide variety of wastes and wastewaters from industrial, commercial, or utility processes. Industries include refineries, chemical plants, smelters, pharmaceutical plants, laundromats/dry cleaners, tanneries, carwashes, laboratories etc. Industry and waste stream must be specified on inventory form.	High	Potentially any fluid disposed by industrial processes, suspended solids, alkalinity, sulfates, volatile organic compounds.
5X28	Motor Vehicle Waste Disposal Wells - repair bay drains connected to a disposal well. <b>NEW WELLS PROHIBITED 4/5/00</b>	High	Heavy metals, solvents, cleaners, used oil and fluids, detergents, organic compounds.
<b>RECHARGE WELLS</b>			
5R21	Aquifer Recharge Wells – used to recharge depleted aquifers and may inject fluids from a variety of sources such as lakes, streams, domestic wastewater treatment plants, other aquifers, etc.	High - Low	Variable; water is generally of good quality
5B22	Saline Barrier Intrusion Wells – used to inject water into fresh water aquifers to prevent intrusion of salt water into those aquifers.	Low	Varies; advanced treated sewage effluent, surface urban and agricultural runoff, and imported surface waters.
5S23	Subsidence Control Wells – used to inject fluids into a non-oil or gas producing zone to reduce or eliminate subsidence associated with over-draft of fresh water and not used for the purpose or oil or natural gas production.		No specific type of fluid noted, similar to aquifer recharge wells.
<b>MISCELLANEOUS WELLS</b>			
5N24	Radioactive Waste Disposal wells (moved to the Class I category if not Class IVs.)		
5X25	Experimental Technology Wells – wells used in experimental or unproven technologies such as pilot scale in-situ solution mining wells in previously unmined areas.	Low - High	Depends on project.
5X26	Aquifer Remediation wells – wells used to prevent, control, or remediate aquifer pollution, including but not limited to state or federal Superfund sites.		Nutrients used in biodegradation of organics, oil/grease, phenols, toluene, other constituents depending on site.
5X29	Abandoned Drinking Water Wells – used for disposal of waste.		Varies based on use. Risk heightened by proximity to USDW.
5X27	Other Wells – any other unspecified Class V well.		Variable