3745-34-01 **Underground injection control definitions.**

(A)

(1) "Abandoned well" means a well whose use has been permanently discontinued or that is in a state of disrepair such that it cannot be used for its intended purpose or for observation purposes.

(2) "Application" means the Ohio EPA standard forms for applying for a permit, including any additions, revisions or modifications to the forms; or forms approved by Ohio EPA, including any approved modifications or revisions. For a Class I hazardous waste facility, application also includes the information already required by the director under section 3734.05 of the Revised Code.

(3) "Appropriate act and regulations" means the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA) or Safe Drinking Water Act (SDWA), whichever is applicable; Chapter 3734. of the Revised Code and sections 6111.043 and 6111.044 of the Revised Code and all rules promulgated thereunder.

(4) "Aquifer" means a geologic formation, group of formations, or part of a formation that is capable of yielding a significant amount of water to a well or spring.

(5) "Area of review" means the area surrounding an injection well described according to the criteria set forth in rule 3745-34-32 of the Administrative Code, or in the case of an area permit, the project area plus a circumscribing area of a width that is either one-quarter of a mile or a number calculated according to the criteria set forth in rule 3745-34-32 of the Administrative Code.

(B) [Reserved.]

(C)

(1) "Casing" means a pipe or tubing of appropriate material, of varying diameter and weight, lowered into a borehole during or after drilling in order to support the sides of the hole and thus prevent the walls from caving, to prevent loss of drilling mud into porous ground, or to prevent water, gas, or other fluid from entering or leaving the hole.

(2) "Catastrophic collapse" means the sudden and utter failure of overlying strata

caused by removal of underlying materials.

(3) "Cementing" means the operation whereby a cement slurry is pumped into a drilled hole or forced behind the casing.

(4) "Cesspool" means a "well" other than a "septic system" or a "subsurface fluid distribution system" that receives untreated sanitary waste containing human excreta, and which sometimes has an open bottom or perforated sides.

(5) "Cone of influence" means that area around the well within which increased injection zone pressure caused by injection into the hazardous waste injection well would be sufficient to drive fluids into an underground source of drinking water (USDW).

(6) "Confining bed" means a body of impermeable or distinctly less permeable material stratigraphically adjacent to one or more aquifers.

(7) "Confining zone" means a geological formation, group of formations, or part of a formation that is capable of limiting fluid movement above an injection zone.

(8) "Contaminant" means any physical, chemical, biological, or radiological substance or matter in water.

(9) "Conventional mine" means an open pit or underground excavation for the production of minerals.

(D)

(1) "Director" means the director of the Ohio EPA or the director's duly authorized representative.

(2) "Disposal well" means a well used for the disposal of waste into a subsurface formation.

(3) "Draft permit" means a draft action as provided in rule 3745-49-02 of the Administrative Code.

(4) "Drilling mud" means a heavy suspension used in drilling an injection well, introduced down the drill pipe and through the drill bit.

(5) "Drywell" means a well, other than an improved sinkhole or subsurface fluid distribution system, completed above the water table so its bottom and sides are typically dry except when receiving fluids.

(E)

(1) "Effective date of a UIC program" means the date that a state of Ohio UIC program is approved or established by the United States environmental protection agency.

(2) "Emergency permit" means a UIC permit issued in accordance with rule 3745-34-19 of the Administrative Code.

(3) "Exempted aquifer" means an aquifer or its portion that meets the criteria in the definition of underground source of drinking water but that has been exempted according to the procedures in 40 CFR 144.7.

(4) "Experimental technology" means a technology that has not been proven feasible under the conditions that are being tested.

(F)

(1) "Facility" or "activity" means any hazardous waste facility as defined in section 3734.01 of the Revised Code, UIC injection well, or any other facility or activity (including land or appurtenances thereto) that is subject to regulation under Chapter 3734. or 6111. of the Revised Code and all rules promulgated thereunder.

(2) "Fault" means a surface or zone of rock fracture along which there has been displacement.

(3) "Flow rate" means the volume per time unit given to the flow of gases or other fluid substance that emerges from an orifice, pump, turbine, or passes along a conduit or channel.

(4) "Fluid" means material or substance that flows or moves whether in a semisolid, liquid, sludge, gas, or any other form or state.

(5) "Formation" means a body of rock characterized by a degree of lithologic homogeneity that is prevailingly, but not necessarily, tabular and is mappable

on the earth's surface or traceable in the subsurface.

(6) "Formation fluid" means fluid present in a formation under natural conditions as opposed to introduced fluids, such as drilling mud.

(G)

(1) "Generator" means any person, by site location, whose act or process produces hazardous waste identified or listed in Chapter 3745-51 of the Administrative Code.

(2) "Ground water" means water below the land surface in a zone of saturation.

(H)

(1) "Hazardous waste" means a hazardous waste as defined in rule 3745-51-03 of the Administrative Code.

(2) "Hazardous waste management facility" or "HWM facility" means all contiguous land, structures, other appurtenances, and improvements on the land used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (for example, one or more landfills, surface impoundments, or combination of them).

(I)

(1) "Improved sinkhole" means a naturally occurring karst depression or other geologic setting which has been modified by man for the purpose of directing and emplacing fluids into the subsurface.

(2) "Industrial waste" means any liquid, gaseous, or solid waste substance resulting from any process of industry, manufacture, trade, or business, or from the development, processing, or recovery of any natural resource, together with such sewage as is present.

(3) "Injection interval" means that part of the injection zone in which the well is screened, perforated or in which the waste is otherwise directly emplaced.

(4) "Injection well" means a well into which fluids are being injected.

(5) "Injection zone" means a geological formation, group of formations, or part of a formation receiving fluids through a well.

(6) "Innovative technology" means any proposed innovative and experimental hazardous or industrial waste treatment technology or process for which research and development are necessary to establish technical or operational validity.

(J) [Reserved.]

(K) [Reserved.]

(L)

(1) "Large capacity cesspool" means a multiple dwelling, community or regional cesspools, or other devices that receive sanitary wastes, containing human excreta that have an open bottom and sometimes have perforated sides. The UIC requirements do not apply to single-family residential cesspools nor to non-residential cesspools that receive solely sanitary wastes and have the capacity to serve fewer than twenty persons per day.

(2) "Lithology" means the description of rocks on the basis of their physical and chemical characteristics.

(M)

(1) "Manifest" means the shipping document originated and signed by the generator which contains the information required by Chapter 3745-52 of the Administrative Code.

(2) "Motor vehicle waste disposal well" means a well that has the potential to receive, receives, or has received fluids from vehicular repair or maintenance activities, such as an auto body repair shop, automotive repair shop, new and used car dealership, specialty repair shop (e.g. transmission and muffler repair shop), or any facility that does any vehicular repair work. Fluids disposed in these wells may contain organic and inorganic chemicals in concentrations that exceed the maximum contaminant levels (MCLs) established by the primary drinking water regulations. These fluids also may include waste petroleum products and may contain contaminants, such as heavy metals and volatile organic compounds, which pose risks to human health, safety or the environment.

(N) [Reserved.]

(O)

(1) "Other wastes" means garbage, refuse, decayed wood, sawdust, shavings, bark, and other wood debris, lime, sand, ashes, offal, night soil, oil, tar, coal dust, dredged or fill material, or silt, other substances that are not sewage, sludge, sludge materials, or industrial waste, and any other "pollutants" or "toxic pollutants" as defined in the Federal Water Pollution Control Act that are not sewage, sludge, sludge materials, or industrial waste.

(2) "Owner or operator" means the owner or operator of any facility or activity subject to regulation under Chapters 3734. and 6111. of the Revised Code and all rules promulgated thereunder.

(P)

(1) "Packer" means a device lowered into a well to produce a fluid-tight seal.

(2) "Permit" means an authorization, license, or equivalent document issued by Ohio EPA to implement the requirements of Chapter 6111. of the Revised Code. Permit does not include a draft permit, a permit issued by the hazardous waste facility approval board under Chapter 3734. of the Revised Code, or rule 3745-34-11 of the Administrative Code.

(3) "Person" means an individual, association, partnership, the State of Ohio or any agency or employee thereof, the federal government or any agency or employee thereof, any other state or agency or employee thereof, any interstate agency, any municipal corporation, political subdivision, public or private corporation, or other entity.

(4) "Plugging" means the act or process of stopping the flow of water, oil or gas into or out of a formation through a borehole or well penetrating that formation.

(5) "Plugging record" means a systematic listing of permanent or temporary abandonment of water, oil, gas, test, exploration and waste injection wells, and may contain a well log, description of amounts and types of plugging material used, the method employed for plugging, a description of formations that are sealed and a graphic log of the well showing formation location, formation thickness, and location of plugging structures.

(6) "Point of injection" means the last accessible sampling point prior to waste fluids being released into the subsurface environment through a class V injection well. For example, the "point of injection" of a class V septic system might be the distribution box, which would be the last accessible sampling point before the waste fluids drain into the underlying soils. For a dry well, it is likely to be the well bore itself.

(7) "POTW" or "publicly owned treatment works" means any device or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is owned by a state or municipality. This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment.

(8) "Pressure" means the total load or force per unit area acting on a surface.

(9) "Project" means a group of wells in a single operation.

(Q) [Reserved.]

(R) "Radioactive waste" means any waste that contains radioactive material in concentrations which exceed those listed in 10 CFR Part 20, "Appendix B," Table II," column 2.

(S)

(1) "Sanitary waste" means liquid or solid waste originating solely from humans and human activities, such as wastes collected from toilets, showers, wash basins, sinks used for cleaning domestic areas, sinks used for food preparation, cloths washing operations, and sinks or washing machines where food and beverage serving dishes, glasses, and utensils are cleaned. Sources of these wastes may include single or multiple residences, hotels and motels, restaurants, bunkhouses, schools, ranger stations, crew quarters, guard stations, campgrounds, picnic grounds, day-use recreational areas, other commercial facilities, and industrial facilities provided the waste is not mixed with industrial waste.

(2) "Schedule of compliance" means a schedule of remedial measures included in a permit, including an enforceable sequence of interim requirements (for example, actions, operations, or milestone events leading to compliance with the appropriate act and regulations).

(3) "Septic system" means a "well" that is used to emplace sanitary waste below the surface and is typically comprised of a septic tank and subsurface fluid distribution system or disposal system.

(4) "Sewage" means any liquid waste containing sludge, sludge materials, or animal or vegetable matter in suspension or solution, and may include household wastes as commonly discharged from residences and from commercial, institutional, or similar facilities.

(5) "Site" means the land or water area where any facility or activity is physically located or conducted, including adjacent land used in connection with the facility or activity.

(6) "Sole source aquifer" means any aquifer which has been so designated by the administrator of the United States environmental protection agency pursuant to section 1424 (a) or (e) of the SDWA.

(7) "Stratum (plural strata)" means a single sedimentary bed or layer, regardless of thickness, that consists of generally the same kind of rock material.

(8) "Subsidence" means the lowering of the natural land surface in response to: earth movement; lowering of fluid pressure; removal or underlying supporting material by mining or solution of solids, either artificially or from natural causes; compaction due to wetting (hydrocompaction); oxidation of organic matter in soils; or added load on the land surface.

(9) "Subsurface fluid distribution system" means an assemblage of perforated pipes, drain tiles, or other similar mechanisms intended to distribute fluids below the surface of the ground.

(10) "Surface casing" means the first string of well casing to be installed in the well.

(T)

(1) "Total dissolved solids (TDS)" means the total dissolved (filterable) solids as specified in 40 CFR part 136.

(2) "Transmissive fault or fracture" is a fault or fracture that has sufficient permeability and vertical extent to allow fluids to move between formations.

(U)

(1) "UIC" means the underground injection control program under part C of the Safe Drinking Water Act, or under sections 6111.043 and 6111.044 of the Revised Code.

(2) "Underground injection" means a well injection.

(3) "Underground source of drinking water" or "USDW" means an aquifer or its portion and is not an exempted aquifer, which does one of the following:

(a)

(i) Supplies any public water system as defined by Chapter 3745-81 of the Administrative Code.

(ii) Contains a sufficient quantity of ground water to supply a public water system as defined by Chapter 3745-81 of the Administrative Code and is one of one following:

(a) Currently supplies drinking water for human consumption.

(b) Contains fewer than ten thousand mg/l total dissolved solids.

(V) [Reserved.]

(W)

(1) "Well" means any one of the following:

(a) A bored, drilled, or driven shaft whose depth is greater than the largest surface dimension.

(b) A dug hole whose depth is greater than the largest surface dimension.

(c) An improved sinkhole.

(d) A subsurface fluid distribution system as defined in this rule.

(2) "Well injection" means the subsurface emplacement of fluids through a well.

(3) "Well plug" means a watertight and gastight seal installed in a borehole or well to prevent movement of fluids.

(4) "Well stimulation" means several processes used to clean the well bore, enlarge channels, and increase pore space in the interval to be injected, thus making it possible for wastewater to move more readily into the formation, and includes (1) surging, (2) jetting, (3) blasting, (4) acidizing, and (5) hydraulic fracturing.

(5) "Well monitoring" means the measurement, by on-site instruments or laboratory methods, of the quality of water in a well.

(6) "Well work over" means any work performed on a class I injection well which involves maintenance, repair or removal and reinstallation of injection tubing string.

(X) [Reserved.]

(Y) [Reserved.]

(Z) [Reserved.]

(AA) Incorporation by reference. This chapter includes references to certain matter or materials. The text of the referenced materials is not included in the rules contained in this chapter. Information on the availability of the referenced materials as well as the date of, or the particular edition or version of the material is included in this rule. For materials subject to change, only the specific versions specified in this rule are referenced. Material is referenced as it exists on the effective date of this rule.

(1) Availability. The materials incorporated by reference are available as follows:

(a) Code of Federal Regulations" (CFR). Information and copies may be obtained by writing to: "U.S. government printing office, P.O. Box 979050, St. Louis, MO 63197-9000." The full text of the CFR is also available in electronic format at www.ecfr.gov/. The CFR compilations are also available for inspection and use at most public libraries and "State Library of Ohio."

(b) Other publications. The availability of these documents is provided in paragraph (AA)(2) of this rule. However, many of the documents are also available for inspection and copying at most public libraries and "The State Library of Ohio."

(2) Incorporated materials.

(a) Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. 9601-9675, as amended through 2002.

(b) Resource Conservation and Recovery Act (RCRA), 42 U.S.C. 6901-6992k, as amended through 2012.

(c) Clean Water Act (CWA) of 1977, 33 U.S.C. Section 1252 et seq. as amended in 2002.

(d) Clean Air Act (CAA) of 1970, 42 U.S.C. Section 7401 et seq. as amended in 1990.

(e) Safe Drinking Water Act (SDWA) of 1974, 42 U.S.C. Section 300 f et seq. as amended in 1996.

(f) Marine Protection Research and Sanctuaries Act (MPRSA) of 1972, 33 U.S.C. Sections 1411, 1414b, 1415, and 1417 as amended in 1988.

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3745-34-02 Considerations under federal law.

Permits shall be issued in a manner and shall contain conditions consistent with requirements of applicable federal laws. These laws may include:

(A) The Wild and Scenic Rivers Act, 16 U.S.C. 1273 et seq.

(B) The National Historic Preservation Act of 1966, 16 U.S.C. 470 et seq.

(C) The Endangered Species Act, 16 U.S.C. 1531 et seq.

(D) The Coastal Zone Management Act, 16 U.S.C. 1451 et seq.

(E) The Fish and Wildlife Coordination Act, 16 U.S.C. 661 et seq.

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Five Year Review (FYR) Dates:	Exempt

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3745-34-03 **Confidentiality of information.**

(A) Any record, report, or other information obtained by the Ohio environmental protection agency shall be made available to the public unless making such record, report, or other information, or particular part thereof, would divulge methods or process entitled to protection as trade secrets in accordance with this rule.

(B) Information submitted to Ohio EPA pursuant to these regulations may be claimed as a trade secret by the submitter. Any such claim shall be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information" or "trade secret" on each page containing such information. If no claim is made at the time of submission, or if a claim is made in a manner inconsistent with rule 3745-49-03 of the Administrative Code, Ohio EPA may make the information available to the public without further notice. If a claim is properly asserted, the information will be treated in accordance with rule 3745-49-03 of the Administrative Code.

(C) Ohio EPA considers the information below public under all circumstances:

(1) The name and address of any permit applicant or permittee.

(2) Information which deals with the existence, absence, or level of contaminants in drinking water.

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3745-34-04 **Classification of wells.**

Injection wells are classified as follows:

(A) Class I.

(1) Wells used by generators of hazardous waste or owners or operators of hazardous waste management facilities to inject hazardous waste beneath the lowermost formation containing an underground source of drinking water (USDW) within one-quarter mile of the well bore.

(2) Other industrial and municipal disposal wells that inject fluids beneath the lowermost formation containing a USDW within one-quarter mile of the well bore.

(3) Radioactive waste disposal wells that inject fluids below the lowermost formation containing a USDW within one-quarter mile of the well bore.

(B) Class II. Wells that may inject brines and other fluids associated with oil and gas production, and hydrocarbons for storage. Requirements of this type of injection well are referenced in Chapter 1509. of the Revised Code and division 1509:9 of the Administrative Code.

(C) Class III. Wells that may inject fluids associated with solution mining of minerals beneath the lowermost USDW. Requirements for this type of injection well are referenced in Chapter 1509. of the Revised Code and division 1509:9 of the Administrative Code.

(D) Class IV.

(1) Wells used by generators of hazardous waste or of radioactive waste, by owners or operators of hazardous waste management facilities, or by owners or operators of radioactive waste disposal sites to dispose of hazardous waste or radioactive waste into a formation which contains a USDW within one-quarter mile of the well.

(2) Wells used by generators of hazardous waste or of radioactive waste, by owners or operators of hazardous waste management facilities, or by owners or operators of radioactive waste disposal sites to dispose of hazardous waste or radioactive waste above a formation that within one-quarter mile of the well contains a USDW.

(3) Wells used by generators of hazardous waste or owners or operators of hazardous waste management facilities to dispose of hazardous waste, which cannot be classified under paragraph (A)(1) or paragraphs (D)(1) and (D)(2) of this rule.

(E) Class V. Injection wells not included in class I, II, III, or IV. Typically, class V wells are shallow wells used to place a variety of fluids directly below the land surface into or above formations that contain USDWs. However, if the fluids placed in the ground qualify as a hazardous waste under the Resource Conservation and Recovery Act (RCRA), then the well is either a class I or class IV well, not a class V well. Class V wells include, but are not limited to the following:

(1) Air conditioning return flow wells used to return to the supply aquifer the water used for heating or cooling in a heat pump.

(2) Large capacity cesspools including multiple dwelling, community or regional cesspools, or other devices that receive sanitary wastes, containing human excreta, that have an open bottom and sometimes have perforated sides. The underground injection control requirements do not apply to single-family residential cesspools nor to non-residential cesspools that receive solely sanitary wastes and have the capacity to serve fewer than twenty persons a day.

(3) Cooling water return flow wells used to inject water previously used for cooling.

(4) Drainage wells used to drain surface fluid, primarily storm runoff, into a subsurface formation.

(5) Dry wells used for the injection of wastes into a subsurface formation.

(6) Recharge wells used to replenish the water in an aquifer or used as part of an aquifer storage and recovery project.

(7) Salt water intrusion barrier wells used to inject water into a fresh water aquifer to prevent the intrusion of salt water into the fresh water.

(8) Sand backfill and other backfill wells used to inject a mixture of water and sand, mill tailings or other solids into mined out portions of subsurface mines whether what is injected is a radioactive waste or not.

(9) Septic system wells used to inject the waste or effluent from a multiple dwelling, business establishment, community or regional business establishment septic tank. The underground injection control requirements do not apply to single-family residential septic system wells, nor to non-residential septic system wells that are used solely for the disposal of sanitary waste and have the capacity to serve fewer than twenty persons a day.

(10) Subsidence control wells (not used for the purpose of oil or natural gas production) used to inject fluids into a non-oil or gas producing zone to reduce or eliminate subsidence associated with the overdraft of fresh water.

(11) Injection wells associated with the recovery of geothermal energy for heating, aquiculture and production of electric power.

(12) Radioactive waste disposal wells other than class IV or class I wells that inject radioactive material listed in 10 CFR part 20, "appendix B," "table II," column 2.

(13) Wells used for solution mining of conventional mines such as stopes leaching.

(14) Wells used to inject spent brine into the same formation from which it was withdrawn after extraction of halogens or their salts.

(15) Injection wells used in experimental technologies.

(16) Injection wells used for in-situ recovery of lignite, coal, tar sands, and oil shale.

(17) Motor vehicle waste disposal wells as defined in rule 3745-34-01 of the Administrative Code.

(18) Wells used to inject fluids for the remediation of contaminated soils or ground water.

[Comment: This rule references the following "Code of Federal Regulations": 10 CFR Part 20, appendix B, table II, column 2, last amended September 30, 2015. Copies of this code may be obtained from the "U.S. Government Bookstore" toll-free at (866) 512-1800 or https://www.gpo.gov/fdsys, or from "Ohio EPA, Lazarus Government Center, 50 West Town Street, Suite 700, Columbus, OH, 43215," (614) 644-2752. The code is available for review at "Ohio EPA, Lazarus Government Center, 50 West Town Street, Suite 700, Columbus, OH, 43215."]

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3745-34-05 Identification of underground sources of drinking water.

The director may identify (by narrative description, illustrations, maps, or other means) and shall protect, as an underground source of drinking water, all aquifers or parts of aquifers which meet the definition of an underground source of drinking water in rule 3745-34-01 of the Administrative Code. Even if an aquifer has not been specifically identified by the director, it is an underground source of drinking water if it meets the definition in rule 3745-34-01 of the Administrative Code.

Effective:	7/25/1984
Five Year Review (FYR) Dates:	Exempt

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3745-34-06 Prohibition of unauthorized injection.

Any underground injection, except as authorized by permit or rule issued under this chapter is prohibited. The construction of any well required to have a permit is prohibited until the permit as been issued.

Effective:	7/25/1984
Five Year Review (FYR) Dates:	Exempt

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3745-34-07 **Prohibition of movement of fluid into underground sources of drinking water.**

(A) No owner shall construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into an underground source of drinking water, if the presence of that contaminant may cause an exceedance in the underground source of drinking water of any primary drinking water standard established under Chapter 3745-81 of the Administrative Code or may otherwise adversely affect the health of persons. The applicant for a permit has the burden of showing that the requirements of this paragraph are met.

(B) Injection into a Class V well shall not cause the migration of contaminants in a manner or at concentrations that cause an exceedance of water quality standards as established in Chapter 3745-01 of the Administrative Code.

(C) For class I wells, if any water quality monitoring of an underground source of drinking water indicates the movement of any contaminant into the underground source of drinking water, except as authorized under this chapter, the director may prescribe such additional requirements for construction, corrective action, operation, monitoring, or reporting (including closure of the injection well) as are necessary to prevent such movement. These additional requirements shall be imposed by modifying the permit in accordance with rule 3745-34-23 of the Administrative Code or the permit may be terminated under rule 3745-34-24 of the Administrative Code if cause exists, or appropriate enforcement action may be taken if the permit has been violated.

(D) For class V wells, if at any time the director learns that a class V well may cause an exceedance of any primary drinking water standard established under Chapter 3745-81 of the Administrative Code or cause an adverse ecological impact per paragraph (B) of this rule, the director may:

(1) Require the injector to obtain an individual permit.

(2) Order the injector to take such actions (including where required closure of the injection well) as may be necessary to prevent or correct the violation.

(3) Take enforcement action.

(E) Whenever the director learns that a class V well may be otherwise adversely affecting the health of persons, the director may prescribe such actions as may be necessary to prevent the adverse effect, including any action authorized under paragraph (C) of this rule.

(F) Notwithstanding any other provision of this rule, the director may take emergency action upon receipt of information that a contaminant which is present in or is likely to enter a public water system may present an imminent and substantial endangerment to the health of persons.

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3745-34-08 **Prohibition of class IV wells.**

[Comment: For dates of non-regulatory government publications, publications of recognized organizations, federal rules and federal statutory provisions referenced in this rule, see paragraph (AA) of rule 3745-34-01 of the Administrative Code.]

(A) The construction, operation or maintenance of any class IV well, as classified under rule 3745-34-04 of the Administrative Code is prohibited, except as provided in paragraph (C) of this rule.

(B) The owner or operator of a class IV well shall comply with the closure and post-closure requirements of paragraph (B) of rule 3745-34-09 of the Administrative Code. All class IV wells shall be closed in compliance with rule 3745-34-07 of the Administrative Code. Any soil, gravel, sludge, liquids, or other materials removed from or adjacent to the well being closed shall be disposed of or managed in accordance with all applicable federal, state or local regulations and requirements.

(1) The owner or operator of a class IV well shall notify the director of the intent to close the class IV well at least thirty days prior to commencing closure of the well. The intent to close notification shall include the submission of a plan for closing the well per the requirements of this paragraph. The submitted plan shall be approved by the director prior to implementation and be followed during closure of the well. This plan shall include the following:

(a) A copy of the information required in paragraph (L) of rule 3745-34-11 of the Administrative Code.

(b) Procedures for the removal of any solids and sludge from the class IV well being closed.

(c) Procedures for plugging the class IV well. This procedure shall be consistent with paragraph (A) of rule 3745-34-07 of the Administrative Code and all other applicable federal, state or local regulations and requirements.

(d) Any other information deemed necessary by the director.

(2) Upon completion of closure, the owner or operator shall certify to the director in a report per rule 3745-34-17 of the Administrative Code that the class IV well was closed in compliance with this rule.

(C) Injection wells used to inject contaminated ground water that has been treated and is being reinjected into the same formation from which it was drawn are authorized by

rule for the life of the well despite the requirements of paragraphs (A) and (B) of this rule, if such subsurface emplacement of fluids is approved by the director or U.S. EPA as part of a remediation program pursuant to provisions for cleanup of releases under Chapter 3734. of the Revised Code and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), or pursuant to requirements and provisions under the Resource Conservation and Recovery Act. The owner or operator shall submit to the director the information about the well required within paragraph (L) of rule 3745-34-11 of the Administrative Code.

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3745-34-09 **Requirements for wells injecting hazardous waste.**

(A) Applicability. The requirements in this rule apply to all generators of hazardous waste, and to the owners or operators of all hazardous waste management facilities, using any class of well to inject hazardous wastes (see also rule 3745-34-08 of the Administrative Code).

(B) Requirements. In addition to complying with the applicable requirements of this chapter, the owner or operator of each facility meeting the requirements of paragraph (A) of this rule shall comply with the following:

(1) Notification. The owner or operator shall comply with the notification requirements of paragraph (C) of rule 3745-50-40 of the Administrative Code.

(2) Identification number. The owner or operator shall comply with the identification number requirements of rule 3745-54-11 of the Administrative Code.

(3) Manifest system. The owner or operator shall comply with the applicable recordkeeping and reporting requirements for manifested wastes in rule 3745-54-71 of the Administrative Code.

(4) Manifest discrepancies. The owner or operator shall comply with discrepancy requirements in rule 3745-54-72 of the Administrative Code.

(5) Operating record. The owner or operator shall comply with record requirements in paragraphs (A), (B)(1), and (B)(2) of rule 3745-54-73 of the Administrative Code.

(6) Annual report. The owner or operator shall comply with report requirements in rule 3745-54-75 of the Administrative Code.

(7) Unmanifested waste report. The owner or operator shall comply with report requirements in rule 3745-54-76 of the Administrative Code.

(8) Personnel training. The owner or operator shall comply with the applicable personnel training requirements of rule 3745-54-16 of the Administrative Code.

(9) Financial responsibility. The owner or operator shall comply with the financial responsibility requirements of rules 3745-55-42 to 3745-55-51 or rules 3745-66-42 to 3745-66-48 of the Administrative Code.

(10) Closure. The owner or operator shall comply with closure requirements of rules 3745-66-11 to 3745-66-15 or rules 3745-55-11 to 3745-55-15 of the Administrative Code.

(11) Post-closure. The owner or operator shall comply with post-closure requirements of rules 3745-66-17 to 3745-66-20 or rules 3745-55-17 to 3745-55-20 of the Administrative Code.

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3745-34-10 **Waiver of requirement by director.**

(A) When injection does not occur into, through or above an underground source of drinking water, the director may authorize a well or project with less stringent requirements for area of review, construction, mechanical integrity, operation, monitoring, and reporting than required in this chapter or rule 3745-34-27 of the Administrative Code to the extent that the reduction in requirements will not result in an increased risk of movement of fluids into an underground source of drinking water.

(B) When injection occurs through or above an underground source of drinking water, but the radius of endangering influence when computed under paragraph (A) of rule 3745-34-32 of the Administrative Code is smaller or equal to the radius of the well, the director may authorize a well or project with less stringent requirements for operation, monitoring, and reporting than required in this chapter or rule 3745-34-27 of the Administrative Code to the extent that the reduction in requirements will not result in an increased risk of movement of fluids into an underground source of drinking water.

(C) When reducing requirements under paragraph (A) or (B) of this rule, the director shall prepare a fact sheet under rule 3745-49-09 of the Administrative Code explaining the reasons for the action. Such fact sheet shall include, but not be limited to, an explanation for the following criteria:

(1) Impact on the zone of endangering influence.

(2) Nature and volume of injection fluid.

(3) Nature of native fluids or by-products of injection.

(4) Potentially affected population.

(5) Geology.

(6) Hydrology.

(7) History of the injection operation.

(8) Completion and plugging records.

(9) Abandonment procedures in effect at the time the well was abandoned.

(10) Hydraulic connections with underground sources of drinking water.

(11) Surface waste handling operations.

(12) Mechanical integrity test results.

(13) Demonstration that operating, monitoring, or reporting requirements can be reduced with no adverse health or environmental impact.

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3745-34-11 **Class V wells.**

(A) No person shall inject sanitary waste, sewage, industrial wastes or other wastes, into or above a USDW without first obtaining a UIC permit to drill and a permit to operate in accordance with rule 3745-34-12 of the Administrative Code. Examples of industrial waste include, but are not limited to, the following:

(1) Hair salon chemicals.

(2) Surgical or medical wastes.

(3) Chemicals or insecticides used for flea dips.

(4) Wastewater resulting from the treatment of drinking water unless authorized without a permit in accordance with paragraph (E) of this rule.

(5) Contact cooling water.

(6) Fluids and blood from embalming processes.

(7) Animal wastes from slaughter houses or food processing operations.

(B) Operation of and injection into large capacity cesspools is prohibited. All existing large capacity cesspools shall be closed in accordance with paragraph (O) of this rule.

(C) Operation of and injection into a motor vehicle waste disposal well is prohibited. All existing motor vehicle waste disposal wells shall be closed in accordance with paragraph (O) of this rule.

(D) The injection of sanitary waste or sewage into a class V well is authorized without a permit if all of the following conditions are satisfied:

(1) Only sanitary waste or sewage is injected. Examples of sanitary waste or sewage include, but are not limited to, the following:

(a) Wastes from toilets and showers.

(b) Fluids from sinks used for food preparation.

(c) Fluids discharged to floor drains during the cleaning of floors in food

preparation areas.

(d) Fluids from sinks or washing machines used to clean food and beverage serving dishes, glasses, or utensils.

(e) Fluids from the cleaning of animal cages, kennel runs, or livestock trailers.

(2) One of the following conditions has been met prior to the commencement of injection:

(a) A permit to install has been issued by the director in accordance with section 6111.44 or 6111.45 of the Revised Code.

(b) An installation permit and operation permit have been obtained in accordance with Chapter 3701-29 of the Administrative Code.

(3) The information required by paragraph (M) of this rule is submitted to the director.

(E) The injection of wastewater resulting from the treatment of drinking water into a class V well is authorized without a permit if all of the following conditions are satisfied:

(1) For wastewater resulting from ion exchange treatment:

(a) Less than two thousand five hundred gallons per month is injected into the class V well.

(b) The information required by paragraph (M) of this rule is submitted to the director.

(c) The injection of the fluid will comply with paragraph (A) of rule 3745-34-07 of the Administrative Code.

(2) For wastewater resulting from a filter system for removal of iron or manganese or both:

(a) The information required by paragraph (M) of this rule is submitted to the director.

(b) The injection of fluid will comply with paragraph (A) of rule 3745-34-07 of the Administrative Code.

(F) No person shall inject treated water as part of an aquifer storage and recovery operation, into or above a USDW without first obtaining a UIC permit to drill and a permit to operate in accordance with rule 3745-34-12 of the Administrative Code.

(G) Unless otherwise authorized under paragraph (C) of rule 3745-34-08 of the Administrative Code or under paragraph (H) of this rule, a permit to drill and a permit to operate shall be obtained in accordance with rule 3745-34-12 of the Administrative Code prior to construction of a class V well and prior to injection of fluids into a class V well for purposes of remediating ground water or soil contamination.

(H) Unless otherwise authorized under paragraph (C) of rule 3745-34-08 of the Administrative Code, the injection of fluids into a class V well for purposes of remediating ground water or soil contamination is authorized without a permit if all of the following conditions are satisfied:

(1) The injection of the fluid will comply with paragraph (A) of rule 3745-34-07 of the Administrative Code.

(2) At least thirty days prior to the commencement of injection activities a work plan is submitted to the director that includes at least the following information:

(a) A description of the nature of the ground water or soil contamination.

(b) A description of the hydrogeology of the injection site.

(c) A detailed description of the proposed remediation.

(d) A description of the injection well or well point construction including a description of all materials used.

(e) A complete chemical analysis of the fluids to be injected.

(f) The volume of fluid to be injected and rate of injection.

(g) Ground water quality analysis results for the aquifer being treated.

(3) The owner submits to the director all the following information monthly while fluids are being injected:

(a) A description of the fluids injected into the class V well.

(b) The volume of fluid injected into the class V well.

(c) The rate of injection of fluid into the class V well.

(d) Any monitoring results.

(4) The owner submits to the director the information required by paragraph (M) of this rule with the first report required by paragraph (H)(3) of this rule.

(5) The owner complies with paragraph (O) of this rule upon cessation of injection activities.

(I) Injection of fluids not specified in paragraphs (A) to (G) of this rule into class V wells is authorized without a permit pursuant to section 6111.043 of the Revised Code. Such injection is not authorized without a permit until the information required under paragraph (M) of this rule is submitted to the director. Authorization expires upon proper closure of the class V well in accordance with paragraph (O) of this rule.

(J) All class V injection wells used to dispose of storm water runoff constructed after April 23, 2009 shall be constructed so as to minimize the injection of contaminants including, but not limited to, sediment, fecal matter, motor vehicle fluids, fertilizer, and pesticides.

(K) A class V well is not authorized to operate without a permit if:

(1) The owner failed or is failing to comply with paragraph (A) of rule 3745-34-07 of the Administrative Code.

(2) The director requires a permit in accordance with rule 3745-34-12 of the Administrative Code or closure in accordance with paragraph (O) of this rule. The authorization to inject into a well without a permit expires upon receiving the director's notification of the requirement to apply for a permit unless the director's notification includes conditions to be followed by the owner for injecting into the well until a permit is issued. Authorization to inject into the

well without a permit ceases if the director determines that the conditions issued with the permit application notification are not being followed and notifies the owner of this determination.

(3) The owner fails to submit the information about the well in accordance with paragraph (M) of this rule. Authorization for injection into the class V well without a permit resumes upon submittal of the information in accordance with paragraph (M) of this rule.

(L) The director may require the owner or operator of any class V injection well otherwise authorized by this rule to apply for and obtain an individual or area UIC permit. Cases where individual or area UIC permits may be required include:

(1) The injection well is not in compliance with any requirement of this chapter pertaining to class V wells.

(2) The injection well is not or no longer is within a category of wells and types of well operations authorized in this rule.

(3) The protection of the USDWs requires that the injection operation be regulated by requirements, such as for corrective action, monitoring and reporting, or operation, that are not contained in this rule.

(4) The injection well is present in the drinking water source protection area for a public water supply.

(M) The owner or operator of any class V well shall notify the director of the existence of any well under the owner's or operator's control meeting the definition of a class V well contained within paragraph (E) of rule 3745-34-04 of the Administrative Code. The owner of a new class V well shall submit the notification within thirty days of installing the well. Unless the owner has previously submitted inventory information for a class V well to the director prior to March 11, 2002, the owner shall submit the following information for each well under the owner's control with the notification:

(1) Facility name, postal address of the well location, and location of each well given by latitude and longitude to the nearest second.

(2) Name and address of legal contact.

(3) Identification of the owner and operator of the well.

(4) Nature and type of well.

(5) Operating status of injection well.

(6) Date of completion of each well.

(7) Total depth of each well.

(8) Construction narrative.

(9) Nature of the injected fluid.

(10) Maintenance and inspection schedule.

(11) Average and maximum injection rate.

(N) The director may require the owner of a class V well to collect and submit other information determined to be necessary to protect underground sources of drinking water.

(1) Such information collection and submittal requirements may include, but are not limited to:

(a) Analyzing the ground water chemistry from the underground source of drinking water for constituents that may be elevated in due to the injection of fluids into the class V well and periodically submitting the analysis results to Ohio EPA.

(b) Analyzing the fluids being injected into the well and periodically submitting the results of the analysis.

(c) Describing the geological layers through which and into which the injection is taking place.

(d) Conducting other analyses and submitting other information, if needed to protect underground sources of drinking water.

(2) Any request by the director for the collection and submittal of information in paragraph (N)(1) of this rule will be in writing and will include a brief

statement on why and when the information is required to be collected and submitted.

(3) The owner is prohibited from using the injection well if the information required under paragraph (N)(1) of this rule is not submitted within the time frame specified by the director under paragraph (N)(2) of this rule. The owner shall only resume injection into the well upon receiving a permit under rule 3745-34-12 of the Administrative Code.

(O) All class V wells undergoing closure shall be closed in compliance with rule 3745-34-07 of the Administrative Code. Any soil, gravel, sludge, liquids, or other materials removed from or adjacent to the well being closed shall be disposed of or managed in accordance with all applicable federal, state, or local regulations and requirements.

(1) The owner of a class V well shall notify the director of the intent to close the class V well at least thirty days prior to commencing closure of the well.

(2) The intent to close notification for class V wells used to inject industrial or other wastes shall include the submission of a plan for closing the well that meets the requirements of this paragraph. The submitted plan shall be followed during closure of the well. This plan shall include:

(a) A copy of the information required in paragraph (M) of this rule.

(b) Procedures for the removal of any solids and sludge from the class V well being closed.

(c) Procedures for plugging the class V well. This procedure shall be consistent with paragraph (A) of rule 3745-34-07 of the Administrative Code and all other applicable federal, state, or local regulations and requirements.

(d) Any other information deemed necessary by the director to protect underground sources of drinking water.

(3) Upon completion of closure, the owner of class V wells that were used to inject industrial or other wastes shall, in accordance with rule 3745-34-17 of the Administrative Code, certify to the director in a report that the class V well was closed in compliance with this rule.

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3745-34-12 **Application by permit; authorization by permit.**

[Comment: For dates of non-regulatory government publications, publications of recognized organizations, federal rules and federal statutory provisions referenced in this rule, see paragraph (AA) of rule 3745-34-01 of the Administrative Code.]

(A) Permit application.

(1) Except for owners of class V wells authorized in accordance with the provisions of rule 3745-34-11 of the Administrative Code, all underground injection activities, including construction and operation of an injection well, are prohibited unless authorized by permit or rule.

(2) Pursuant to sections 6111.043 and 6111.044 of the Revised Code, an underground injection control well owner must apply for a permit to drill or a permit to operate, as applicable. Obtaining a permit to drill under section 6111.044 of the Revised Code and Chapter 3745-34 of the Administrative Code satisfies the requirements of division (J) of section 6111.03 and section 6111.45 of the Revised Code.

(3) Obtaining a permit for a class II or class III well under Chapter 1509. of the Revised Code exempts the permit holder from permit requirements under this rule.

(4) Authorization for class V well injections for which permit applications have been submitted shall lapse for a particular class V well injection or project upon the effective date of the permit or permit denial for that well injection or project.

(B) Who applies. The owner of the proposed or existing underground injection well shall submit a permit application signed pursuant to rule 3745-34-17 of the Administrative Code for the permit to drill and the permit to operate. The permit application shall be signed pursuant to rule 3745-34-17 of the Administrative Code.

(C) Time to apply. Any person who proposes an underground injection for which a permit will be required shall apply for and receive a permit to drill prior to drilling and constructing the underground injection well. Any person who proposes an underground injection for which a permit will be required shall apply for and receive a permit to operate before commencing injection into a well.

(1) Time to reapply. The conditions of an expired permit to operate continue in force in accordance with section 119.06 of the Revised Code if a complete renewal permit to operate application is submitted at least one hundred eighty days prior to the expiration date of the current permit to operate and the

director has failed to act on the application.

(2) Effect. Permits to operate continued under this paragraph remain fully effective and enforceable.

(3) Enforcement. When the permittee is not in compliance with the conditions of the expiring or expired permit the director may choose to do any or all of the following:

(a) Initiate enforcement action based upon the permit which has been continued.

(b) Issue a notice of intent to deny the new permit. If a final action becomes effective to deny a permit, the owner of operator shall immediately cease operation of the well.

(c) Issue a new permit under section 6111.044 of the Revised Code with appropriate conditions.

(d) Take other actions authorized by this chapter or any other applicable regulations or laws.

(D) Completeness. The director shall not issue a permit before receiving a complete application for a permit except for emergency permits. An application for a permit is complete when the director receives an application form and any supplemental information completed to the director's satisfaction. The completeness of any application for a permit shall be judged independently of the status of any other permit application or permit for the same facility or activity.

(E) Information requirements. All applicants for permits shall provide the following information to the director, using the application form provided by the director:

(1) The activities conducted by the applicant which require it to obtain permits under the following federal or state laws:

(a) The Resource Conservation and Recovery Act.

(b) The national pollution discharge elimination system (NPDES) program under the Clean Water Act if liquid or semi-liquid waste are discharged as a publicly owned treatment works (POTW). The applicant shall

provide the POTW NPDES permit number.

(c) Chapter 6111. of the Revised Code.

(d) The prevention of significant deterioration program (PSD) under the Clean Air Act (CAA).

(e) Chapter 3704. of the Revised Code.

(2) Name, mailing address, and location of the facility.

(3) Up to four standard industrial classification (SIC) codes which best reflect the principal products or services provided by the facility.

(4) The operator's name, address, telephone number, ownership status of federal, state, private, public or entity, and if a corporation, the name and address of the statutory agent.

(5) Whether the facility is located on tribal lands.

(6) A listing of all permits or construction approvals received or applied for under any of the following programs:

(a) Hazardous waste management program under RCRA and Chapter 3734. of the Revised Code.

(b) Underground injection control (UIC) program under the Safe Drinking Water Act (SDWA), and Chapter 6111. of the Revised Code.

(c) NPDES program under the CWA and Chapter 6111. of the Revised Code.

(d) Prevention of significant deterioration (PSD) program under the CAA and Chapter 3704. of the Revised Code.

(e) Nonattainment program under the CAA and Chapter 3704. of the Revised Code.

(f) National emissions for hazardous pollutants (NESHAPS) preconstruction approval under the CAA and Chapter 3704. of the Revised Code.

(g) Ocean dumping permits under the Marine Protection Research and Sanctuaries Act (MPRSA).

(h) Dredge and fill permits under Section 404 of CWA and Chapter 3745-32 of the Administrative Code.

(i) Other relevant environmental permits, including state permits.

(7) The location of the well or the location where the well is proposed to be drilled given by the latitude and longitude to the nearest second, and the location of the tract on which the well is to be drilled identified by section or lot number, city, village, township, and county.

(8) Designation of the well by name and number.

(9) The name of the geological formation to be tested or used and the proposed total depth of the well.

(10) The type of drilling, completion, and injection equipment to be used.

(11) The plan for disposal of water and other waste substances resulted, obtained, or produced in connection with drilling, conversion, or testing.

(12) The chemical composition and physical properties of the substance to be injected.

(13) A topographic map (or other map if a topographic map is unavailable), on a scale not smaller than four hundred feet to the inch, prepared by an Ohio registered surveyor and extending one mile beyond the property boundaries of the source, shall depict the location of all of the following:

(a) The facility.

(b) Each of the facilities intake and discharge structures.

(c) The proposed injection wells.

(d) Each of the facilities hazardous waste treatment, storage, and disposal units.

(e) Solid waste disposal units at the facility.

(f) Each well where fluids from the facility are injected underground.

(g) All wells permitted to inject fluids underground.

(h) Active, closed, and temporarily abandoned oil and gas wells.

(i) Those wells, springs, and other surface water bodies; and drinking water wells listed in public records or otherwise known to the applicant including the drinking water source protection area for all public water supply wells identified.

(j) If the injection well is currently or is proposed to be located within the excavations and workings of an active mine, the map shall include all of the following:

(i) The location of the mine.

(ii) The name of the mine.

(iii) The name of the person operating the mine.

(k) If the well is currently or is proposed to be located within the excavations and workings of an abandoned mine, the map shall include all of the following:

(i) The location of the mine.

(ii) The name of the mine, if known.

(iii) The dates the mine operated, if known.

(14) A brief description of the nature of business.

(15) A plugging and abandonment plan that meets the provisions of either of the following:

(a) Rule 3745-34-36 of the Administrative Code for all class I wells and rule

3745-34-60 of the Administrative Code for class I hazardous waste wells.

(b) Paragraph (O) of rule 3745-34-11 of the Administrative Code for class V wells.

(16) A plan for the testing, drilling, and construction of the proposed new injection well shall be included within all permit to drill applications. The director may require a demonstration of knowledge and experience by the designer for projects containing a high degree of complexity, non-standard technology, unusual features, or deviations from standards and guidelines used by the agency.

(F) Record keeping. Applicants shall keep records of all data used to complete permit applications and any supplemental information submitted under this rule for a period of at least three years from the date the application is signed or for the duration of the permitted life of the well, whichever time period is longer. This period may be extended by request of the director at any time.

(G) Applications for permits and for modifications for permits shall be accompanied by a nonrefundable fee in accordance with the following:

(1) The fee for an application for an injection well permit to drill for a class I well or a new class I well is three thousand dollars.

(2) The fee for an application for an injection well permit to operate for a class V well or a new class V well is three thousand dollars.

(3) There is no application fee for an application for an existing class I well.

(4) The fee for a modification to a permit to operate for a class V well submitted pursuant to rule 3745-34-23 of the Administrative Code is seven hundred fifty dollars.

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3745-34-13 **Class I permit application.**

In addition to the information required in accordance with rule 3745-34-12 of the Administrative Code, the owner shall include the following in a permit application for a permit to drill or permit to operate a class I injection well:

(A) A statement of the relative expertise of the owner or operator of the proposed class I injection well in the operation of class I injection wells. Within the statement include:

(1) A listing of all class I injection wells that the owner or operator has operated and is operating.

(2) The date that each listed class I injection well was first placed in service or if the well was placed in service before the applicant acquired the well, the date that applicant acquired the well.

(3) The date of issuance, identification number, and expiration date of the permits issued for each listed class I injection well by the United States or the state in which the listed injection well is located and, for each such permit, the name and address of the federal or state agency that issued the permit.

(B) The owner or operator of any facility containing one or more active class I injection wells must conduct such preliminary site investigations as are necessary to determine whether a release outside the permitted injection zone is occurring, has occurred, or is likely to have occurred.

(C) Owners and operators of facilities with existing class I injection wells or that are re-permitting a currently operating class I injection well shall submit all of the following information:

(1) For each active class I injection well at a facility seeking a permit, both the following:

(a) Dates the well was operated.

(b) Specification of all wastes that have been injected into the well.

(2) All available information pertaining to any release of hazardous waste or constituents from any active injection well at the facility.

(D) Area of review. The owner shall identify the location of all known wells within the injection wells' area of review that penetrate the injection zone. The owner shall

submit all of the following:

(1) A calculation of the area of review of the proposed injection well. Include a description of the method of determination of the area of review including all relevant calculations and data used in the calculations. The area of review shall be calculated in accordance with rules 3745-34-32 and 3745-34-52 of the Administrative Code.

(2) A description of the procedures that were used to identify all wells penetrating the confining zone or injection zone within the area of review and that were used to determine if the identified wells are adequately completed or plugged.

(3) A map showing the class I injection wells for which the permit is sought and the applicable area of review. The map shall show the number or name, and the location of all of the following within the area of review:

(a) The location of all known wells that penetrate the injection zone within the injection well's area of review

(b) Actively producing oil and gas wells

(c) Active, temporarily abandoned, and abandoned injection wells

(d) Abandoned oil and gas wells including non-producing wells and boreholes

(e) Surface bodies of water

(f) Springs

(g) Mines (surface and subsurface)

(h) Quarries

(i) Water wells

(j) Other pertinent surface features including residences and roads

(k) Seismic areas and faults, if known or suspected

(l) Boundaries of the facility.

[Note: Only information of public record is required to be included on the map.]

(4) A tabulation of data on all wells within the area of review that penetrate into the proposed injection zone and are completed within three hundred vertical feet of the permitted injection interval. Such data shall include the following:

(a) Name of the well.

(b) Name of the owner and operator;.

(c) Description of each well's type.

(d) Construction data including casing size, setting depth and cementing data for surface, intermediate and long string casings

(e) Date drilled.

(f) Location in latitude and longitude to the nearest second.

(g) Depth.

(h) Record of plugging and/or completion.

(i) Note the wells that were inadequately plugged or abandoned.

(ii) Note the wells for which there are incomplete records and include all available records.

(5) The drilling logs and completion logs for all known wells within the injection well's area of review that penetrate the injection zone that were completed within three hundred vertical feet of the permitted injection interval.

(6) An applicable plan and compliance schedule for corrective action pursuant to rules 3745-34-30 and 3745-34-53 of the Administrative Code for all wells that are improperly sealed, completed, or abandoned and consisting of such steps or modifications as are necessary to prevent movement of fluid into or between USDW. The following information, criteria, and factors shall be

included in the plan for corrective action:

(a) Nature and volume of injected fluid.

(b) Nature of native fluids or by-products of injection.

(c) Potentially affected population.

(d) Geology.

(e) Hydrology.

(f) History of the injection operation.

(g) Completion and plugging records.

(h) Abandonment procedures in effect at the time the well was abandoned.

(i) Hydraulic connections with USDW.

(j) Surface waste handling operations.

(7) A report describing all actions taken to date in implementing the plan of corrective action, including the status of corrective action on defective wells in the area of review and the schedule for completion of all actions described within the plan.

(8) Any additional information the director deems necessary to protect USDW.

(E) Geologic evaluation. The owner shall submit the following:

(1) Maps and cross sections indicating the general vertical and lateral limits of all USDW within the area of review, their position relative to the injection formation and the direction of water movement, where known, in each USDW that may be affected by the proposed injection.

(2) Maps and cross sections detailing the geologic structure of the local area.

(3) Generalized maps and cross sections illustrating the regional geologic setting.

(4) Maps showing the location of, but not limited to, seismic areas, wetlands, flood hazard areas, carbonate formations that result in caverns, and underground mines, both active and abandoned.

(5) A plan for injectivity testing, including provisions to test for pressure/time relationships to determine permeability, transmissivity, and reservoir limits, if any.

(6) A description of the lithology of the injection and confining intervals.

(F) The owner shall submit an analysis of the geologic suitability of the proposed location of the well, that includes:

(1) An analysis of the structural and stratigraphic geology, the hydrogeology, and the seismicity of the region.

(2) An analysis of 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.

(3) A determination that the geology of the area can be described confidently and that limits of waste fate and transportation can be accurately predicted through the use of models.

(4) Lithology, permeability, porosity, thickness and areal extent of the injection and confining intervals.

(5) Maps and cross sections detailing the geologic structure and stratigraphy of the local area. Cross-sections should note the location of faults, major fractures, and carbonate formations that are known to contain or that may contain caverns.

(6) Generalized maps and cross sections illustrating the regional geologic setting. Cross-sections should note the location of faults, major fractures, and carbonate formations that are known to contain or that may contain caverns.

(7) A demonstration that shows one of the following:

(a) The confining zone is separated from the base of the lowermost USDW by at least one sequence of permeable and less permeable strata that will

provide an added layer of protection for the USDW in the event of fluid movement in an unlocated bore hole or transmissive fault.

(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, considering density effects, injection pressures and any significant pumping in the overlying USDW.

(c) There is no USDW present.

(8) A demonstration for applications for class I hazardous waste injection wells that the well is sited in compliance with paragraph (C) of rule 3745-34-51 of the Administrative Code.

(G) The owner shall submit the information required by rule 3745-34-59 of the Administrative Code for permit applications for class I hazardous waste injection wells.

(H) Financial assurance. The owner shall submit certification and evidence of financial responsibility for operation and closure of the well including surety bond or other adequate assurance, such as a financial statement or other materials acceptable to the director. This demonstration shall be consistent with the provisions of rules 3745-34-27, 3745-34-36, and 3745-34-62 of the Administrative Code.

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3745-34-14 **Class I permit to drill applications.**

In addition to the information required in accordance with rules 3745-34-12 and 3745-34-13 of the Administrative Code, the owner shall include the following in a permit application for a permit to drill a class I injection well:

(A) The final report on the seismic reflection data survey in compliance with rule 3745-34-40 of the Administrative Code.

(B) Well construction. The owner shall submit the following information for a permit to drill application:

(1) A plan for the testing, drilling and construction of the proposed new class I injection well. Whenever required by the director to protect the public welfare or to safeguard life, health, or property, or whenever the contemplated expenditure by the state, any of its political subdivisions, or any municipal corporation for the completed project exceeds five thousand dollars, plans for the design of new class I wells shall be prepared by a professional engineer registered under Chapter 4733. of the Revised Code. In addition, for projects containing a high degree of complexity, non-standard technology, unusual features, or deviations from standards or guidelines used by the agency, the director may require that the owner or operator demonstrate the knowledge and experience of the project designer.

(2) A schematic or other appropriate drawings of the proposed well with proper setting depths, including wellhead and gauges and a written description of the proposed surface and subsurface construction details of the well including all of the following:

(a) Hole size.

(b) Surface casing, intermediate, long string casing, and injection tubing packer information, including all of the following:

(i) Size.

(ii) Weight.

(iii) Grade.

(iv) Depth-GL.

(v) Thickness.

(vi) Diameter.

(vii) Nominal weight.

(viii) Length.

(ix) Joint specification.

(x) Construction material.

(xi) Tubing tensile, burst, and collapse strength.

(3) A written demonstration that for the design life of the well the casings, including any casing connections, are rated to have sufficient structural strength to withstand:

(a) The maximum burst and collapse pressures which may be experienced during the construction, operation, and closure of the well.

(b) The maximum tensile strength which may be experienced at any point along the length of the casing during the construction, operation, and closure of the well.

(4) Cement data, including the proposed type and class, additives, amount, and circulate for the surface casing, long string, and other casings.

(5) A description of the packer including all of the following:

(a) Proposed type.

(b) Name and model number.

(c) Setting depth.

(d) Compatibility with proposed annular fluid and proposed injection fluid.

(6) A description of the proposed bottom hole completion.

(7) A plan for the proposed stimulation program.

(8) Construction procedures including a cementing and casing program, logging procedures, deviation checks, and a drilling, testing, and coring program. These procedures should address the applicable factors and requirements in rules 3745-34-37, 3745-34-54, and 3745-34-55 of the Administrative Code.

(9) A written analysis demonstrating that the various parts of the casing, tubing, and cement will be compatible with or resistant to corrosion from the formation fluid and injection fluids to which they will respectively be exposed.

(10) Procedures for core analysis, if performed, including analysis for at least:

(a) Permeability.

(b) Porosity.

(c) Percent saturation.

(d) Sample description.

(e) Sieve analysis of sand.

(f) Compatibility testing of cores with waste stream for permeability reduction.

(C) Proposed formation testing program to obtain analysis of the chemical, physical and radiological characteristics of the receiving formation including, but not limited to:

(1) Fluid pressure.

(2) Temperature.

(3) Fracture pressure.

(4) Physical and chemical characteristics of the injection matrix.

(5) Compatibility of the injected fluids with the formation fluids.

(6) Corrosiveness.

(7) Other applicable information.

(D) Procedures for performing deviation checks in compliance with paragraph (D)(1) of rule 3745-34-37 of the Administrative Code.

(E) Procedures for performing the logging and testing requirements of paragraph (D) of rule 3745-34-37 of the Administrative Code.

(F) Procedures, forms, and methods for collecting all of the following information:

(1) Drilling and completion records including:

(a) Daily reports.

(b) Driller's log or record of strata.

(c) Casing and tubing records.

(d) Pipetallys.

(e) Detailed screen and liner setting.

(f) Details of centralizers, scratchers, and other such equipment.

(g) Engineering drawings of:

(i) Well completion.

(ii) Packer assembly and setting

(iii) Well head parts list.

(2) Testing records including the following:

(a) Well testing:

(i) Static fluid level.

(ii) Bottom hole temperature and pressure.

(iii) Injectivity test result; permeability determination; reservoir limits and storage.

(iv) Spinner or tracer surveys.

(v) Casing testing results including those to demonstrate mechanical integrity pursuant to the requirements of rule 3745-34-34 of the Administrative Code.

(b) Laboratory testing results:

(i) Cores for permeability.

(ii) Cores for compatibility.

(iii) Cores for porosity.

(iv) Analysis of formation water.

(v) Descriptive core analysis and sieve analysis.

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3745-34-15 **Class I permit to operate applications.**

In addition to the information required in accordance with rules 3745-34-12 and 3745-34-13 of the Administrative Code, the owner shall include the following in an application for a permit to operate a class I injection well:

(A) The results of the formation testing program, including a completion report for the injection well that includes all the following information:

(1) Drilling and completion reports including:

(a) Daily reports.

(b) Driller's log or record of strata.

(c) Casting and tubing records, including the pipetallys.

(d) Cement records.

(e) Details of centralizers, scratchers, and other such information.

(f) Engineering drawings of the following:

(i) Well completion.

(ii) Packer assembly and setting.

(iii) Well head, including the parts list.

(2) Testing records including the following:

(a) Well testing:

(i) Static fluid level and fluid pressure.

(ii) Bottom hole temperature and pressure.

(iii) Injectivity test result, permeability determination, reservoir limits, and storage.

(iv) Fracture pressure.

(v) Spinner or tracer surveys.

(vi) Casing testing results including a demonstration of mechanical integrity pursuant to rules 3745-34-34 and 3745-34-58 of the Administrative Code.

(b) Laboratory testing results:

(i) Cores for permeability.

(ii) Cores for compatibility.

(iii) Cores for porosity.

(iv) Descriptive core analysis and sieve analysis.

(3) The data from the formation testing program including the analysis of the chemical, physical and radiological characteristics of and other information on the receiving formation.

(B) The final report of the seismic reflection data survey in compliance with rule 3745-34-40 of the Administrative Code.

(C) A plan for conducting a passive seismic monitoring program if the director determines that the operation of the class I injection well may cause seismic disturbances.

(D) The proposed injection procedure including all of the following:

(1) Average and maximum daily rate and volume of the substance(s) to be injected.

(2) Average and maximum injection pressure.

(E) A description of all of the following:

(1) The chemical composition and physical properties of the substance(s) to be injected. This should include the source and an analysis of the chemical (including corrosiveness), physical (including density and temperature), radiological and biological characteristics of the injection fluid.

(2) The compatibility of substance(s) to be injected with the fluids in the injection zone and minerals in both the injection zone and confining zone.

(F) A determination accompanied by supporting documentation describing all areas around the well where formation pressures are predicted by the applicant to be increased due to the operation of the well and an evaluation of whether any resulting potential exists for contamination of any underground source of drinking water or migration of substances injected into the well outside the anticipated injection zone. The determination shall be made through the use of an hydraulic model acceptable to the director.

(G) A descriptive report interpreting the results of logs and tests performed during the drilling and construction of the injection well shall be submitted. This report shall be prepared by a knowledgeable log analyst. At a minimum, this report shall contain the applicable information required by paragraph (D) of rule 3745-34-37, and rule 3745-34-55 of the Administrative Code. This report shall include the final prints of all logs run on the well and the results of the directional and inclinational survey.

(H) 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.

(I) A plan for ensuring the annual review and testing of the integrity of the well casing and associated well features. This plan shall comply with the requirements of rule 3745-34-34 of the Administrative Code. Renewal permit applications shall include results of all mechanical integrity tests performed on the injection well since the issuance of the previous permit. If the results of the mechanical integrity tests have already been submitted to Ohio EPA they may be included in the permit application by reference.

(J) A plan for monitoring the lowermost underground source of drinking water near the injection well.

(K) A plan for plugging and abandonment pursuant to the applicable provisions of paragraph (B)(5) of rule 3745-34-27, rule 3745-34-36, paragraph (C) of rule 3745-34-39, rule 3745-34-60, and rule 3745-34-61 of the Administrative Code. The plugging and abandonment plan shall including all of the following information:

(1) The type and number of plugs to be used.

(2) The placement of each plug including the elevation of the top and bottom.

(3) The type and grade and quantity of cement to be use.

(4) The method for placement of the plugs.

(5) The procedure to be used to meet the applicable requirements of paragraph (B)(5) of rule 3745-34-27, rule 3745-34-36, paragraph (C) of rule 3745-34-39, rule 3745-34-60, and rule 3745-34-61 of the Administrative Code.

(L) Plans (including maps) for meeting the applicable testing and monitoring requirements of rules 3745-34-38 and 3745-34-57 of the Administrative Code.

(M) If hazardous waste is to be injected and is generated at the same facility where the injection well will be placed, provide a certification that:

(1) The generator of the hazardous waste has a program to reduce the volume or quantity and toxicity of such waste to the degree determined by the generator to be economically practicable.

(2) 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.

(N) A report submitting the applicable information required by and demonstrating compliance with the applicable requirements of rules 3745-34-37, 3745-34-54, and 3745-34-55 of the Administrative Code.

(O) Procedures and forms for collecting and submitting the information required by rule 3745-34-58 of the Administrative Code.

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3745-34-16 **Class V permit requirements.**

(A) In addition to the information required in accordance with rule 3745-34-12 of the Administrative Code, the owner shall include the following in a permit application for a permit to drill a class V injection well:

(1) A map extending at least one thousand five hundred feet or the area of review, whichever is greater, from the injection well for which a permit is sought showing the number or name, and location of all of the following:

(a) The location of the injection well.

(b) The area of review as determined in accordance with rule 3745-34-32 of the Administrative Code.

(c) All producing and abandoned oil and natural gas wells for which public records exist.

(d) Injection wells including large capacity septic systems and storm water drainage wells.

(e) All active and abandoned water supply wells for which public records exist.

(f) Surface bodies of water.

(g) Springs.

(h) Mines (surface and subsurface).

(i) Quarries.

(j) Other pertinent surface features including residences and roads.

(k) Faults, if known or suspected.

(l) Storm and sanitary sewers.

(2) Maps and cross sections extending at least one thousand five hundred feet or the area of review, whichever is greater, from the injection well for which a permit is sought showing:

(a) 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 that may be affected by the proposed injection.

(b) The geologic structure of the local area.

(c) The regional geologic setting.

(3) Geologic description of the injection zone including: name of formation, depth, thickness, and lithology.

(4) Proposed injection procedure.

(5) Schematic or other appropriate drawings of the proposed surface and subsurface construction details of the well.

(6) Any information deemed necessary by the director to determine that the requirements of rule 3745-34-07 of the Administrative Code are satisfied.

(B) In addition to the information required in accordance with rule 3745-34-12 of the Administrative Code and paragraphs (A)(1) to (A)(3) of this rule, an owner shall include in a permit application for a permit to operate a class V injection well, the following:

(1) If applicable, the date the well construction was completed.

(2) If applicable, a construction narrative and as built engineering plans for the well.

(3) An anticipated maintenance and inspection schedule for the well.

(4) Evidence of financial responsibility for operation, maintenance and closure of the well including surety bond, or other adequate assurance, such as financial statement or other materials acceptable to the director.

(5) Except where a demonstration is made that the injection formation is dry, the chemical characteristics of the fluid within the injection formation, including complete chemical analysis for all of the following parameters:

(a) Calcium.

(b) Magnesium.

(c) Sodium.

(d) Carbonate.

(e) Bicarbonate.

(f) Sulfate.

(g) Chloride.

(h) Fluoride.

(i) Nitrate.

(j) Conductivity.

(k) Temperature.

(l) Total dissolved solids.

(m) Potassium.

(n) Manganese.

(o) Barium.

(p) Boron.

(q) Strontium.

(r) Cadmium.

(s) Iron.

(t) pH.

(6) Unless a determination is made by the director that such an analysis is unnecessary, a description of the fluid to be injected including, the concentrations of all chemical parameters needed to determine compliance with rule 3745-34-07 of the Administrative Code.

(7) For an existing well being converted to a class V well or a permit renewal, provide a chronology of all major workovers and well malfunctions, a brief description of reasons for the well failure, and the corrective actions taken.

(8) Any additional information deemed necessary by the director to determine that the requirements of rule 3745-34-07 of the Administrative Code are satisfied.

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3745-34-17 **Signatories to permit applications and reports.**

(A) Applications. All permit applications shall be signed as follows:

(1) For a corporation; by a principal executive officer of at least the level of vice president;

(2) For a partnership or sole proprietorship; by a general partner or the proprietor, respectively; or

(3) For a municipality, state, federal, or other public agency; by either a principal executive or ranking elected official.

(B) Reports. All reports required by permits, other information requested by the director, and all permit applications submitted under rule 3745-34-12 of the Administrative Code shall be signed by a person described in paragraph (A) of this rule, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described in paragraph (A) of this rule;

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility (a duly authorized representative may thus be either a named individual or any individual occupying a named position); and

(3) The written authorization is submitted to the director.

(C) Changes to authorization. If an authorization under paragraph (B) of this rule is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (B) of this rule must be submitted to the director prior to or together with any reports, information, or applications to be signed by an authorized representative.

(D) Certification. Any person signing a document under paragraph (A) or (B) of this rule shall make the following certification:

"I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

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3745-34-18 **Class V injection well area permits.**

(A) The director may issue a class V injection well permit on an area basis, rather than for each well individually, provided that the permit is for class V injection wells:

(1) Described and identified by location in permit application(s) if they are existing wells, except that the director may accept a single description of wells with substantially the same characteristics; and

(2) Within the same well field, facility site, reservoir, project, or similar unit within the state of Ohio; and

(3) Operated by a single owner or operator; and

(4) Used to inject other than hazardous waste.

(B) Area permits shall specify:

(1) The area within which underground injections are authorized, and

(2) The requirements for construction, monitoring, reporting, operation, and abandonment, for all wells authorized by the permit.

(C) The area permit may authorize the permittee to construct, and operate, convert, or plug and abandon, wells in excess of the number specified in the current class V injection well area permit, provided:

(1) The permittee notifies the director at such time as the permit requires; and

(2) The additional well satisfies the criteria in paragraph (A) of this rule and meets the requirements specified in the permit under paragraph (B) of this rule; and

(3) The cumulative effects of drilling and operation of additional injection wells are considered by the director during evaluation of the area permit application and are acceptable to the director.

(D) The director may modify, or revoke and reissue the permit in accordance with rule 3745-34-23 of the Administrative Code, terminate the permit under rule 3745-34-24 of the Administrative Code, or take enforcement action upon a finding that any well authorized by the permit is not in compliance with the terms of the permit.

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3745-34-19 **Emergency permits.**

(A) Coverage. Notwithstanding any other provision of this chapter, the director may temporarily permit a specific underground injection which has not otherwise been authorized by rule or permit if:

(1) An imminent and substantial endangerment to the health of persons will result unless a temporary emergency permit is granted.

(2) Timely application for a permit could not practicably have been made.

(3) The injection will not result in the movement of fluids into underground sources of drinking water.

(B) Requirements for issuance.

(1) Any temporary permit under paragraph (A) of this rule shall be for no longer term than required to prevent the hazard.

(2) Notice of any temporary permit under this paragraph shall be published in accordance with rule 3745-47-07 of the Administrative Code within ten days of the issuance of the permit.

(3) The temporary permit under this rule may be either oral or written. If oral, the temporary permit shall be followed within five calendar days by a written temporary emergency permit.

(4) The director may condition the temporary permit in any manner the director determines is necessary to ensure that the injection will not result in the movement of fluids into an underground source of drinking water.

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3745-34-20 Effect of a permit.

(A) Compliance with a permit during its term constitutes compliance, for purposes of enforcement, with sections 6111.043 and 6111.044 of the Revised Code. However, a permit may be modified, revoked and reissued, or terminated during its term for cause as set forth in rules 3745-34-23 and 3745-34-24 of the Administrative Code.

(B) The issuance of a permit does not convey any property rights of any sort, or any exclusive privilege.

(C) The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of state or local laws or regulations.

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Five Year Review (FYR) Dates:	Exempt

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Prior Effective Dates:	12/15/1982, 7/25/1984

3745-34-21 **Duration of permits.**

(A) Permits to drill and permits to operate for class I and class V wells shall be effective for a fixed term not to exceed five years, except that in the case of the renewal of an injection well operating permit that is issued for a class I injection well that was in operation on May 28, 1992 shall be not less than four years and not more than six years as determined by the director.

(B) The term of a permit to operate shall not be extended by modification beyond the maximum duration specified in this rule.

(C) The director may issue any permit for a duration that is less than the full allowable term under this rule.

(D) Termination of permits to drill.

(1) Permits to drill for class I and class V wells shall terminate within eighteen months of the effective date of the permit to drill if the owner or operator has not undertaken a continuing program of installation or modification or has not entered into a binding contractual obligation to undertake and complete within a reasonable time a continuing program of installation or modification.

(2) The director may extend these termination dates of expiration by up to twelve months if the applicant submits, within a reasonable time before the termination date, information that, in the judgment of the director, adequately justifies an extension of time. No appeal taken from denial of extension of an expiration date shall prevent termination of a permit during the period between denial of extension and final disposition of the appeal.

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3745-34-22 Transfer of permits.

(A) Transfers by modification. Except as provided in paragraph (B) of this rule, a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued (under paragraph (B)(2) of rule 3745-34-23 of the Administrative Code), or a minor modification made under paragraph (D) of rule 3745-34-25 of the Administrative Code, to identify the new permittee and incorporate such other requirements as may be necessary under Chapter 6111. of the Revised Code.

(B) Automatic transfers. As an alternative to transfers under paragraph (A) of this rule, any UIC permit for a well not injecting hazardous waste may be automatically transferred to a new permittee if:

(1) The current permittee notifies the director at least thirty days in advance of the proposed transfer date referred to in paragraph (B)(2) of this rule;

(2) The notice includes a written agreement between the existing and new permittees containing a specific date for transfer or permit responsibility, coverage, and liability between them, and the notice demonstrates that the financial responsibility requirements of paragraph (B)(6) of rule 3745-45-27 of the Administrative Code will be met by the new permittee; and

(3) The director does not notify the existing permittee and the proposed new permittee of his or her intent to modify or revoke and reissue the permit. A modification under this paragraph may also be a minor modification under rule 3745-34-25 of the Administrative Code. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph (B)(2) of this rule.

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Five Year Review (FYR) Dates:	Exempt

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Prior Effective Dates:	12/15/1982

3745-34-23 **Modification or revocation and reissuance of permits.**

When the director receives any information (for example, inspects the facility, receives information pertinent to the permit submitted by the permittee as required in the permit [see rule 3745-34-26 of the Administrative Code], receives a request for modification or revocation and reissuance or conducts a review of the permit file), the director may determine whether or not one or more of the causes listed in paragraphs (A) and (B) of this rule for modification, revocation and reissuance, or both exist. If cause exists, the director may modify or revoke and reissue the permit accordingly, subject to the limitations of paragraph (C) of this rule, and may request an updated application if necessary. When a permit is modified, only the conditions subject to modification are reopened. If a permit is revoked and reissued, the entire permit is reopened and subject to revision, and the permit is then reissued for a new term. If cause does not exist under this rule or rule 3745-34-25 of the Administrative Code, the director shall not modify or revoke and reissue the permit. If a permit modification satisfies the criteria in rule 3745-34-25 of the Administrative Code for minor modifications, the permit may be modified without a draft permit or public review. Otherwise, a draft permit shall be prepared and other procedures in Chapter 3745-49 of the Administrative Code shall be followed.

(A) Causes for modification. The following are causes for modification. For class I hazardous waste injection wells the following may be cause for revocation and reissuance or modification; and for all other wells the following may be cause for revocation or modification when the permittee requests or agrees.

(1) Alterations. There are material and substantial alterations or additions to the permitted facility or activity which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit.

(2) Information. The director has received information pertinent to the permit. Permits may be modified during their terms for this cause only if the information was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and would have justified the application of different permit conditions at the time of issuance. For underground injection control area permits (rule 3745-34-18 of the Administrative Code), this cause shall include any information indicating that cumulative effects on the environment are unacceptable.

(3) New rules. The standards or regulations on which the permit was based have been changed by promulgation of amended rules. Permits may be modified during their terms for this cause only as follows.

(a) For promulgation of amended standards or regulations, when all of the following criteria are met:

(i) The permit condition requested to be modified was based on a rule within this chapter.

(ii) The director has revised, withdrawn, or modified that portion of the regulation on which the permit condition was based.

(iii) A permittee requests modification within ninety days after the effective date of the rule or director's action on which the request is based.

(4) For judicial decisions when a state court of competent jurisdiction has remanded and stayed Ohio EPA promulgated regulations if the remand and stay concern that portion of the regulations on which the permit condition was based and a request is filed to Ohio EPA by the permittee within ninety days of judicial remand.

(5) Compliance schedules. The director determines good cause exists for modification of a compliance schedule, such as an act of God, strike, flood, or materials shortage or other events over which the permittee has little or no control and for which there is no reasonably available remedy. See also paragraph (C) of rule 3745-34-25 of the Administrative Code (minor modifications).

(B) Causes for modification or revocation and reissuance. The following are causes to modify, or, alternatively, revoke and reissue a permit:

(1) Cause exists for termination under rule 3745-34-24 of the Administrative Code and the director determines that modification or revocation and reissuance is appropriate.

(2) The director has received notification (as required in the permit-see paragraph (D) of rule 3745-34-25 of the Administrative Code) of a proposed transfer of the permit. A permit also may be modified to reflect a transfer after the effective date of an automatic transfer (paragraph (B) of rule 3745-34-22 of the Administrative Code) but will not be revoked and reissued after the effective date of the transfer except upon the request of the new permittee.

(3) A determination that the waste being injected is a hazardous waste as defined in rule 3745-34-01 of the Administrative Code either because the definition has been revised, or because a previous determination has been changed.

(C) Facility siting. Suitability of the facility location will not be considered at the time of permit modification or revocation and reissuance unless new information or standards indicate that a threat to human health or the environment exists which was unknown at the time of permit issuance.

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3745-34-24 Termination of permits.

(A) The director may terminate a permit during its term, or deny a permit renewal application for the following causes:

(1) Noncompliance by the permittee with any condition of the permit;

(2) The permittee's failure in the application or during the permit issuance process to disclose fully all relevant facts, or the permittee's misrepresentation of any relevant facts at any time; or

(3) A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination.

(B) The director shall follow the applicable procedures in Chapter 3745-47 of the Administrative Code in terminating any permit under this rule.

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3745-34-25 Minor modifications of permits.

Upon the consent of the permittee, the director may modify a permit to make the corrections or allowances for changes in the permitted activity listed in this rule, without following the procedures of Chapter 3745-47 of the Administrative Code. Any permit modification not processed as a minor modification under this rule must be made for cause and with draft permit and public notice as required in Chapter 3745-47 of the Administrative Code and rule 3745-34-23 of the Administrative Code. Minor modifications may only:

(A) Correct typographical errors;

(B) Require more frequent monitoring or reporting by the permittee;

(C) Change an interim compliance date in a schedule of compliance, provided the new date is not more than one hundred twenty days after the date specified in the existing permit and does not interfere with attainment of the final compliance date requirement; or

(D) Allow for a change in ownership or operational control of a facility where the director determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittee has been submitted to the director.

(E) Change quantities or types of fluids injected which are within the capacity of the facility as permitted and, in the judgment of the director, would not interfere with the operation of the facility or its ability to meet conditions described in the permit and would not change its classification.

(F) Change construction requirements in a permit to drill, approved by the director pursuant to paragraph (A)(1) of rule 3745-34-27 of the Administrative Code (establishing UIC permit conditions), provided that any such alteration shall comply with the requirements of this chapter.

(G) Amend a plugging and abandonment plan which has been updated under paragraph (B)(5) of rule 3745-34-27 of the Administrative Code.

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3745-34-26 **Conditions applicable to all permits.**

The following conditions apply to all UIC permits. All conditions applicable to all permits shall be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to these rules must be given in the permit.

(A) Duty to comply. The permittee must comply with all conditions of the permit. Any permit noncompliance constitutes a violation of sections 6111.043 and 6111.044 of the Revised Code and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application; except that the permittee need not comply with the provisions of the permit to the extent and for the duration such noncompliance is authorized in an emergency permit under rule 3745-34-19 of the Administrative Code.

(B) Duty to reapply. If the permittee wishes to continue an activity regulated by the permit after the expiration date of the permit, the permittee must apply for and obtain a new permit.

(C) Need to halt or reduce activity not a defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit.

(D) Duty to mitigate. The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with the permit.

(E) Proper operation and maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit. "Proper operation and maintenance" includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

(F) Permit actions. The permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

(G) Property right. The permit does not convey any property rights of any sort, or any exclusive privilege.

(H) Duty to provide information. The permittee shall furnish to the director, within a time specified, any information which the director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit, or to determine compliance with the permit. The permittee shall also furnish to the director, upon request, copies of records required to be kept by the permittee.

(I) Inspection and entry. The permittee shall allow the director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

(1) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;

(2) Have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;

(3) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under the permit; and

(4) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by Chapter 6111. of the Revised Code, any substances or parameters at any location.

(J) Monitoring and records.

(1) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(2) The permittee shall retain records of all monitoring information, including the following:

(a) Calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, a period of at least three years from the date of the sample, measurement, report, or application. This period may be extended by request of the director at any time; and

(b) The nature and composition of all injected fluids until three years after the

completion of any plugging and abandonment procedures specified under paragraph (B)(5) of rule 3745-34-27 of the Administrative Code. The director may require the owner or operator to deliver the records to the director at the conclusion of the retention period.

(3) Records of monitoring information shall include:

(a) The date, exact place, and time of sampling or measurements;

(b) The individual(s) who performed the sampling or measurements;

(c) The date(s) analyses were performed;

(d) The individual(s) who performed the analyses;

(e) The analytical techniques or methods used; and

(f) The results of such analyses.

(K) Signatory requirement. All applications, reports, or information submitted to the director shall be signed and certified (see rule 3745-34-17 of the Administrative Code).

(L) Reporting requirements.

(1) Planned changes. The permittee shall give written notice to the director as soon as possible of any planned physical alterations or additions to the permitted facility.

(2) Anticipated noncompliance. The permittee shall give advance written notice to the director as soon as possible of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(3) Transfers. The permit is not transferable to any person except after written notice to the director. The director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under sections 6111.043 and 6111.044 of the Revised Code. (See rule 3745-34-22 of the Administrative Code; in some cases, modification or revocation and

reissuance is mandatory.)

(4) Monitoring reports. Monitoring results shall be reported in writing at the intervals specified elsewhere in the permit.

(5) Compliance schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted in writing no later than thirty days following each schedule date.

(6) Twenty-four hour reporting. The permittee shall report any noncompliance which may endanger health or the environment, including:

(a) Any monitoring or other information which indicates that any contaminant may cause an endangerment to a USDW; or

(b) Any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between USDWs.

Any information shall be provided orally within twenty-four hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within five days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance including exact dates and times, and if the noncompliance including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

(7) Other noncompliance. The permittee shall report in writing all instances of noncompliance not reported under paragraphs (L)(4), (L)(5), and (L)(6) of this rule, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph (L)(6) of this rule.

(8) Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the director, it shall promptly submit such facts or information in writing.

(M) Requirements prior to commencing injection. Except for all new wells authorized by a class V injection well area permit under rule 3745-34-18 of the Administrative

Code, a new injection well may not commence injection until construction is complete; and

(1) The permittee has applied for and obtained a permit to operate in accordance with the requirements of this chapter, and

(2)

(a) The director has inspected or otherwise reviewed the new injection well and finds it is in compliance with the conditions of the permit to drill and the permit to operate; or

(b) The permittee has not received notice from the director of the intent to inspect or otherwise review the new injection well within thirty days of the date of notice of completion of construction, in which case prior inspection or review is waived and the permittee may commence injection. The director will include a reasonable time period for the well inspection in the notice.

(N) The permittee shall notify the director at such times as the permit requires before conversion or abandonment of the well or in the case of area permits before closure of the project.

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3745-34-27 **Establishing drilling permit and operating permit conditions.**

(A) Drilling permits shall include conditions meeting the following requirements:

(1) Construction requirements as set forth in this chapter. Existing wells shall achieve compliance with such requirements according to a compliance schedule established as a permit condition. The owner or operator of a proposed new injection well shall submit plans for testing, drilling, and construction as part of the permit application. No construction may commence until a permit has been issued containing construction requirements (see rule 3745-34-06 of the Administrative Code). New wells shall be in compliance with paragraph (A) of this rule prior to commencing injection operations. Changes in construction plans during construction may be approved by the director as minor modifications (rule 3745-34-25 of the Administrative Code). No such changes may be physically incorporated into construction of the well prior to approval of the modification by the director.

(2) Monitoring and reporting requirements as set forth in this chapter shall be complied with by the permittee.

(3) Additional conditions. The director may impose on a case-by-case basis such additional conditions as are necessary to prevent the migration of fluids into USDW.

(B) Injection permits shall include conditions meeting the following requirements:

(1) Corrective action as set forth in rules 3745-34-30 and 3745-34-33 of the Administrative Code.

(2) Operation requirements as set forth in this chapter. The permit shall establish any maximum injection volumes and/or pressures necessary to assure that fractures are not initiated in the injection zone or the confining zone, that injected fluids do not migrate into any underground source of drinking water, that formation fluids are not displaced into any underground source of drinking water, and to assure compliance with the operating requirements of this chapter.

(3) Requirements for wells managing hazardous waste, as set forth in rule 3745-34-09 of the Administrative Code.

(4) Monitoring and reporting requirements as set forth in this chapter. The permittee shall be required to identify types of tests and methods used to generate the monitoring data.

(5) Plugging and abandonment. Any class I permit shall include, and any class V permit may include, conditions to ensure that plugging and abandonment of the well will not allow the movement of fluids either into an underground source of drinking water or from one underground source of drinking water to another. Applicants for a UIC permit shall submit a plan for plugging and abandonment. For class I hazardous injection wells, such plan shall be the same as that required under rule 3745-34-36 of the Administrative Code. Where the plan meets the requirements of this paragraph, the director may incorporate the plan into the permit as a condition. Where the director's review of an application indicates that the permittee's plan is inadequate, the director may require the applicant to revise the plan, prescribe conditions meeting the requirements of this paragraph, or deny the application. For purposes of this paragraph, temporary intermittent cessation of injection operations is not abandonment.

(6) After a cessation of operations of two years, the owner or operator shall plug and abandon the well in accordance with the plugging and abandonment plan. The owner or operator may request approval from the director to not plug and abandon the well. Such a request shall include a description of actions and procedures the owner or operator will take to ensure that the well will not endanger USDW during the period of temporary abandonment. These actions and procedures shall include compliance with all technical requirements applicable to active injection wells.

(7) Financial responsibility. The permittee is required to maintain financial responsibility and resources to close, plug, and abandon the underground injection operation. The permittee shall show evidence of financial responsibility to the director by the submission of surety bond, or other materials acceptable to the director. For class I hazardous injection wells, financial responsibility must be demonstrated as required under paragraph (D) of rule 3745-34-36 of the Administrative Code.

(8) Mechanical integrity. A permit for any call I well or injection project which lacks mechanical integrity shall include, and for any class V well may include, a condition prohibiting injection operations until the permittee shows to the satisfaction of the director under rule 3745-34-34 of the Administrative Code that the well has mechanical integrity.

(9) Additional conditions. The director may impose on a case-by-case basis such additional conditions as are necessary to prevent the migration of fluids into underground sources of drinking water.

(C) In addition to conditions required in rule 3745-34-26 of the Administrative Code, the

director may establish conditions, as required on a case-by-case basis under rule 3745-34-21 of the Administrative Code (duration of permits), paragraph (A) of rule 3745-34-28 of the Administrative Code (schedules of compliance), rule 3745-34-29 of the Administrative Code (monitoring), paragraph (B) of rule 3745-34-28 of the Administrative Code (alternate schedules of compliance), and rule 3745-34-02 of the Administrative Code (considerations under federal law).

(1) In addition to conditions required in all permits, the director may establish conditions in permits as required on a case-by-case basis, to provide for and assure compliance with all applicable requirements of sections 6111.043 and 6111.044 of the Revised Code and this chapter.

(2) An "applicable requirement" is any requirement which takes effect prior to the modification or revocation and reissuance of a permit, to the extent allowed in rule 3745-34-23 of the Administrative Code.

(3) New or reissued permits, and to the extent allowed under rule 3745-34-23 of the Administrative Code, modified or revoked and reissued permits, shall incorporate each of the applicable requirements referenced in rule 3745-34-27 of the Administrative Code.

(4) Permits for owners or operators of hazardous waste injection wells shall include conditions meeting the requirements of rule 3745-34-09 and rules 3745-34-50 to 3745-34-62 of the Administrative Code.

(D) Incorporation. All permit conditions shall be incorporated either expressly or by reference. If incorporated by reference, a specific citation to the applicable regulations or requirements must be given in the permit.

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3745-34-28 Schedule of compliance.

(A) General. The permit may, when appropriate, specify a schedule of compliance leading to compliance with sections 6111.043 and 6111.044 of the Revised Code and this chapter.

(1) Time for compliance. Any schedules of compliance shall require compliance as soon as possible, and in no case later than three years after the effective date of the permit.

(2) Interim dates. Except as provided in paragraph (B)(1)(b) of this rule, if a permit establishes a schedule of compliance which exceeds one year from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievement.

(a) The time between interim dates shall not exceed one year.

(b) If the time necessary for completion of any interim requirement is more than one year and is not readily divisible into stages for completion, the permit shall specify interim dates for the submission of reports of progress toward completion of the interim requirements and indicate a projected completion date.

(3) Reporting. The permit shall be written to require that if paragraph (A)(1) of this rule is applicable, progress reports be submitted no later than thirty days following each interim date and the final date of compliance.

(B) Alternative schedules of compliance. A permit applicant or permittee may cease conducting regulated activities (by plugging and abandonment) rather than continue to drill or inject and meet permit requirements as follows.

(1) If the permittee decides to cease conducting regulated activities at a given time within the term of a permit which has already been issued:

(a) The permit may be modified to contain a new or additional schedule leading to timely cessation of activities; or

(b) The permittee shall cease conducting permitted activities before noncompliance with any interim or final compliance schedule requirement already specified in the permit.

(2) If the decision to cease conducting regulated activities is made before issuance of a permit whose term will include the termination date, the permit shall contain a schedule leading to termination which will ensure timely compliance with applicable requirements.

(3) If the permittee is undecided whether to cease conducting regulated activities, the director may issue or modify a permit to contain two schedules as follows:

(a) Both schedules shall contain an identical interim deadline requiring a final decision on whether to cease conducting regulated activities no later than a date which ensures sufficient time to comply with applicable requirements in a timely manner if the decision is to continue conducting regulated activities;

(b) One schedule shall lead to timely compliance with applicable requirements;

(c) The second schedule shall lead to cessation of regulated activities by a date which will ensure timely compliance with applicable requirements;

(d) Each permit containing two schedules shall include a requirement that after the permittee has

made a final decision under paragraph (B)(3)(a) of this rule, it shall follow the schedule leading to compliance if the decision is to continue conducting regulated activities, and follow the schedule leading to termination if the decision is to cease conducting regulated activities.

(4) The applicant's or permittee's decision to cease conducting regulated activities shall be evidenced by a firm public commitment satisfactory to the director, such as a resolution of the board of directors of a corporation.

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3745-34-29 Requirements for recording and reporting of monitoring results.

All permits shall specify:

(A) Requirements concerning the proper use, maintenance, and installation, when appropriate, of monitoring equipment or methods (including biological monitoring methods when appropriate);

(B) Required monitoring including type, intervals, and frequency sufficient to yield data which are representative of the monitored activity including when appropriate, continuous monitoring;

(C) Applicable reporting requirements based upon the impact of the regulated activity as specified in this chapter. Reporting shall be no less frequent than specified in rule 3745-34-26 of the Administrative Code.

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3745-34-30 Plan of corrective action.

(A) Coverage. Applicants for class I well permits shall identify the location of all known wells within the injection well's area of review which penetrate the injection zone. For such wells which are improperly sealed, completed, or abandoned, as determined by the director, the applicant shall also submit a plan consisting of such steps or modifications as are necessary to prevent movement of fluid into underground sources of drinking water ("corrective action"). Where the plan is adequate, the director shall incorporate it into the permit as a condition. Where the director's review of an application indicates that the permittee's plan is inadequate (based on the factors in rule 3745-34-33 of the Administrative Code), the director shall require the applicant to revise the plan, prescribe a plan for corrective action as a condition of the permit under paragraph (B) of this rule, or deny the application.

(B) Requirements.

(1) Existing injection wells. Any permit issued for an existing injection well requiring corrective action shall include a compliance schedule requiring any corrective action accepted or prescribed under paragraph (A) of this rule to be completed as soon as possible.

(2) New injection wells. No owner or operator of a new injection well may begin injection until all required corrective action has been taken.

(3) Injection pressure limitation. The director may require as a permit condition that injection pressure be so limited that pressure in the injection zone does not exceed hydrostatic pressure at the site of any improperly completed or abandoned well within the area of review. This pressure limitation shall satisfy the corrective action requirement. Alternatively, such injection pressure limitation can be part of a compliance schedule and last until all other required corrective action has been taken.

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3745-34-32 Area of review.

The area of review of each injection well or each field or project shall be determined according to either paragraph (A) or (B) of this rule. The director may solicit input from the owners or operators of injection wells within the state as to which method is most appropriate for each geographic area or field.

(A) Zone of endangering influence.

(1) In the case of an application for a well permit under rule 3745-34-12 of the Administrative Code, the zone of endangering influence is the area for which the radius is the lateral distance where the pressures in the injection zone may cause the migration of the injection and/or formation fluid into an underground source of drinking water~~; or~~.

(2) Computation of the zone of endangering influence may be based upon the parameters listed below and should be calculated for an injection time period equal to the expected life of the injection well or pattern. The following modified Theis equation illustrates one form which the mathematical model may take.

$r = [(2.25KHt) \setminus (S10^{x})]^{1/2}$

where

$x = (4piKH\ [h_w - h_{bo}(S_pG_b)\ ]\ ) \setminus 2.3Q$

r = Radius of endangering influence from injection well (length)

K = Hydraulic conductivity of the injection zone (length/time)

H = Thickness of the injection zone (length)

t = Time of injection (time)

S = Storage coefficient (dimensionless)

Q = Injection rate (volume/time)

H_{bo} = Observed original hydrostatic head of injection zone (length) measured from the base of the lowermost underground source of drinking water

h_w = Hydrostatic head of underground source of drinking water (length) measured from the base of the lowest underground source of drinking water

S_pG_b = Specific gravity of fluid in the injection zone (dimensionless)

~~π~~pi = 3.142 (dimensionless)

The above equation is based on the following assumptions:

(a) The injection zone is homogenous and isotropic;.

(b) The injection zone has infinite area extent.

(c) The injection well penetrates the entire thickness of the injection zone.

(d) The well diameter is infinitesimal compared to "r" when injection time is longer than a few minutes.

(e) The emplacement of fluid into the injection zone creates instantaneous increase in pressure.

(B) Fixed radius.

(1) In the case of an application for a well permit(s) under rule 3745-34-12 of the Administrative Code, a fixed radius around the well of not less than one-fourth mile may be used.

(2) In determining the fixed radius, the following factors shall be taken into consideration: chemistry of injected and formation fluids; hydrogeology; population and ground water used and dependence; and historical practices in the area.

(C) If the area of review is determined by a mathematical model pursuant to paragraph (A) of this rule, the permissible radius is the result of such calculation even if the area of review is less than one-fourth mile.

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3745-34-33 **Corrective action.**

In determining the adequacy of corrective action proposed by the applicant under rule 3745-34-30 of the Administrative Code and in determining the additional steps needed to prevent fluid movement into underground sources of drinking water, the following criteria and factors may be considered by the director:

(A) Nature and volume of injected fluid.

(B) Nature of native fluids or by-products of injection.

(C) Potentially affected population.

(D) Geology.

(E) Hydrology.

(F) History of the injection operation.

(G) Completion and plugging records.

(H) Abandonment procedures in effect at the time the well was abandoned.

(I) Hydraulic connections with underground sources of drinking water.

(J) Surface waste handling operations.

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3745-34-34 **Mechanical integrity.**

(A) An injection well has mechanical integrity if the following are met:

(1) There are no significant leaks in the casing, tubing or packer.

(2) There is no significant fluid movement into an underground source of drinking water (USDW) through vertical channels adjacent to the injection well bore.

(B) One of the following methods shall be used to evaluate the absence of leaks under paragraph (A)(1) of this rule:

(1) Monitoring of the tubing-casing annulus pressure with sufficient frequency to be representative, as determined by the director, while maintaining an annulus pressure different from atmospheric pressure measured at the surface.

(2) Pressure test with liquid or gas.

(C) The results of a temperature or noise log shall be used to determine the absence of significant fluid movement under paragraph (A)(2) of this rule.

(D) The director may allow the use of a test to demonstrate mechanical integrity other than those listed in paragraphs (B) and (C) of this rule with the written approval of the administrator of the United States environmental protection agency (USEPA). To obtain approval, the director shall submit a written request to the administrator of USEPA setting forth the proposed test and all technical data supporting its use. Any alternate method approved by the director shall be published pursuant to the requirements of Chapter 3745-49 of the Administrative Code.

(E) In conducting and evaluating the tests enumerated in this rule or others to be allowed by the director, the owner or operator and the director shall apply methods and standards generally accepted in the industry. When the owner or operator reports the results of mechanical integrity tests to the director, a description of any test and any method used shall be included. In making an evaluation, the director shall review monitoring and other test data submitted since the previous evaluation.

(F) The director or the director's authorized representative may be present during the test for demonstration of mechanical integrity, unless the director or the director's authorized representative waives this requirement before the test occurs.

(G) The director may require additional or alternative tests if the results presented by the owner or operator under paragraph (E) of this rule are not satisfactory to the director to demonstrate that there is no movement of fluid into or between USDWs resulting from the injection activity.

(H) No injection without the director's approval shall occur into a class I well that cannot maintain technical integrity as defined by paragraph (A) of this rule unless the injection of fluids is intended to prevent the flow of waste up the well to the surface. In the event that a loss of mechancial integrity of a class I well is discovered, the owner or operator shall follow the requirements of paragraph (H) of rule 3745-34-56 of the Administrative Code.

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3745-34-35 **Criteria for establishing permitting priorities.**

In determining priorities for setting times for owners to submit applications for authorization to operate under the procedures of paragraphs (A) and (C) of rule 3745-34-12, and paragraphs (B) and (C) of rule 3745-34-13 of the Administrative Code, the director bases these priorities upon consideration of the following factors:

(A) Injection wells known or suspected to be contaminating underground sources of drinking water.

(B) Injection wells known to be injecting fluids containing hazardous contaminants.

(C) Likelihood of contamination of underground sources of drinking water.

(D) Potentially affected population.

(E) Injection wells violating existing requirements of this chapter and Chapters 6111. and 3734. of the Revised Code.

(F) Coordination with the issuance of permits required by other permit programs.;

(G) Age and depth of the injection well.

(H) Expiration dates of existing permits, if any.

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3745-34-36 Plugging and abandoning class I wells.

(A) Prior to abandoning class I wells, the well shall be plugged with cement in a manner which will not allow the movement of fluids either into or between underground sources of drinking water.

(B) Placement of the cement plugs shall be accomplished by one of the following:

(1) The balance method;

(2) The dump bailer method;

(3) The two-plug method; or

(4) An alternative method approved by the director, which will reliably provide a comparable level of protection to underground sources of drinking water.

(C) The well to be abandoned shall be in a state of static equilibrium with the mud weight equalized top to bottom, either by circulating the mud in the well at least once or by a comparable method prescribed by the director, prior to the placement of the cement plug(s).

(D)

(1) Class I hazardous waste wells subject to standards for existing facilities, Chapters 3745-65 to 3745-69 of the Administrative Code, shall comply with:

(a) Rules 3745-66-11 to 3745-66-15 of the Administrative Code for closure; and

(b) Rules 3745-66-17 to 3745-66-20 of the Administrative Code for post-closure care; and

(c) Rules 3745-66-42 to 3745-66-48 of the Administrative Code for financial responsibility of owners and operators of hazardous waste facilities.

(2) Class I hazardous waste wells subject to standards for new facilities, Chapters 3745-54 to 3745-57 of the Administrative Code, shall comply with:

(a) Rules 3745-55-11 to 3745-55-15 of the Administrative Code for closure; and

(b) Rules 3745-55-17 to 3745-55-20 of the Administrative Code for post-closure care; and

(c) Rules 3745-55-42 to 3745-55-51 of the Administrative Code for financial responsibility of owners and operators of hazardous waste facilities.

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3745-34-37 **Construction requirements for class I wells.**

(A) All class I wells shall be sited in such a fashion that they inject into a formation which is beneath the lowermost formation containing, within one-quarter mile of the well bore, an underground source of drinking water.

(B) All class I wells shall be cased and cemented to prevent the movement of fluids into or between underground sources of drinking water. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements, the following factors shall be considered:

(1) Depth to the injection zone.

(2) Injection pressure, external pressure, internal pressure, and axial loading.

(3) Hole size.

(4) Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, and construction material).

(5) Corrosiveness of injected fluid, formation fluids, and temperatures.

(6) Lithology of injection and confining intervals.

(7) Type or grade of cement.

(C) All class I injection wells, except those municipal wells injecting non-corrosive wastes, shall inject fluids through tubing with a packer set immediately above the injection zone, or tubing with an approved fluid seal as an alternative. The tubing, packer, and fluid seal shall be designed for the expected service.

(1) The use of other alternatives to a packer may be allowed with the written approval of the director. To obtain approval, the operator shall submit a written request to the director, which shall set forth the proposed alternative and all technical data supporting its use. The director shall approve the request if the alternative method will reliably provide a comparable level of protection to underground sources of drinking water. The director may approve an alternative method solely for an individual well or for general use.

(2) In determining and specifying requirements for tubing, packer, or alternatives, the following factors shall be considered:

(a) Depth of setting.

(b) Characteristics of injection fluid (chemical content, corrosiveness, and density).

(c) Injection pressure.

(d) Annular pressure.

(e) Rate, temperature and volume of injected fluid.

(f) Size of casing.

(3) All areas of a well that may come into contact with corrosive wastes shall be constructed of corrosion-resistant materials.

(D) Appropriate logs and other tests shall be conducted during the drilling and construction of new class I wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a knowledgeable log analyst and submitted to the director. At a minimum, such logs and tests shall include:

(1) Deviation checks on all holes constructed by first drilling a pilot hole, and then enlarging the pilot hole by reaming or another method. Such checks shall be at sufficiently frequent intervals to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling.

(2) Such other logs and tests as may be needed after taking into account the availability of similar data in the area of the drilling site, the construction plan, and the need for additional information, that may arise from time to time as the construction of the well progresses. In determining which logs and tests shall be required, the following logs shall be considered for use in the following situations:

(a) For surface casing intended to protect underground sources of drinking water:

(i) Resistivity, spontaneous potential, and caliper logs before the casing is installed.

(ii) A cement bond, temperature, or density log after the casing is set and cemented.

(b) For intermediate and long strings of casing intended to facilitate injection:

(i) Resistivity, spontaneous potential, porosity, and gamma ray logs before the casing is installed;

(ii) Fracture finder logs.

(iii) A cement bond, temperature, or density log after the casing is set and cemented.

(E) At a minimum, the following information concerning the injection formation shall be determined or calculated for new class I wells:

(1) Fluid pressure.

(2) Temperature.

(3) Fracture pressure.

(4) Other physical and chemical characteristics of the injection matrix.

(5) Physical and chemical characteristics of the formation fluids.

(6) Compatibility of injected fluids with formation fluids.

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3745-34-38 **Operating, monitoring, and reporting requirements for class I wells.**

(A) Operating requirements. Operating requirements shall, at a minimum, include:

(1) Except during stimulation, injection pressure at the wellhead shall not exceed a maximum which shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone. In no case shall injection pressure initiate fractures in the confining zone or cause the movement of injection or formation fluids into an underground source of drinking water.

(2) Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited.

(3) Unless an alternative to a packer has been approved under paragraph (C) of rule 3745-34-37 of the Administrative Code, the annulus between the tubing and the long string of casings shall be filled with a fluid approved by the director, and a pressure, also approved by the director, shall be maintained on the annulus.

(B) Monitoring requirements. Monitoring requirements shall, at a minimum, include:

(1) The analysis of the injected fluids with sufficient frequency to yield representative data of their characteristics.

(2) Installation and use of continuous recording devices to monitor injection pressure, flow rate and volume, and the pressure on the annulus between the tubing and the long string of casing.

(3) A demonstration of mechanical integrity pursuant to rule 3745-34-34 of the Administrative Code every three years during the life of the well or more frequently, if public health, safety, or environmental circumstances so warrant.

(4) Pressure testing of the entire casing length every three years during the life of the well or more frequently, if public health, safety, or environmental circumstances so warrant, instead of using as the standard a pressure of fifty per cent greater than the average pressure.

(5) The type, number and location of wells within the area of review to be used to monitor any migration of fluids into and pressure in the underground sources of drinking water, the parameters to be measured and the frequency of

monitoring.

(C) The director may require the owner or operator to submit, for approval, a monitoring program plan which meets the requirements set forth in rule 3745-34-57 of the Administrative Code.

(D) Reporting requirements. Reporting requirements shall, at a minimum, include:

(1) Monthly reports to the director on:

(a) The physical, chemical and other relevant characteristics of injection fluids.

(b) Monthly average, maximum and minimum values for injection pressure, flow rate in gpm and volume, and annular pressure. For each minimum and maximum injection rate reported, list in the report the injection pressure and annulus pressure occurring during the time the well was operating at this minimum or maximum rate. Also include a listing of the date, duration and cause of any non-operating period for each well during the month.

(c) The results of monitoring prescribed under paragraph (B)(5) of this rule.

(2) Reporting the results, with the first monthly report after the completion, of:

(a) Periodic tests of mechanical integrity.

(b) Any other test of the injection well conducted by the permittee if required by the director.

(c) Any well work over.

(3) Any procedures conducted at the injection well other than routine operational procedures.

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3745-34-39 **Information to be considered by the director in authorizing class I wells.**

This rule sets forth the information which shall be considered by the director in authorizing class I wells. For an existing or converted new class I well, the director may rely on the existing permit file for those items of information listed below which are current and accurate in the file. For a newly drilled class I well, the director requires the submission of all the information listed below. For both existing and new class I wells, certain maps, cross sections, tabulations of wells within the area of review and other data may be included in the application by reference provided they are current, readily available to the director (for example in the permitting agency's files) and sufficiently identified to be retrieved.

(A) Prior to the issuance of a permit for an existing class I well to operate or the construction or conversion of a new class I well, the director shall consider the following:

(1) Information required in rules 3745-34-12, 3745-34-13, and 3745-34-14 of the Administrative Code.

(2) 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 shall 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.

(3) A tabulation of data on all wells within the area of review which 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 director may require.

(4) 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.

(5) Maps and cross sections detailing the geologic structure of the local area.

(6) Generalized maps and cross sections illustrating the regional geologic setting.

(7) Proposed operating data:

(a) Average and maximum daily rate and volume of the fluid to be injected.

(b) Average and maximum injection pressure.

(c) Source and an analysis of the chemical, physical, radiological and biological characteristics of injection fluids.

(8) Proposed formation testing program to obtain an analysis of the chemical, physical and radiological characteristics of and other information on the receiving formation.

(9) Proposed stimulation program.

(10) Proposed injection procedure.

(11) Schematic or other appropriate drawings of the surface and subsurface construction details of the well.

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

(13) Plans (including maps) for meeting the monitoring requirements in paragraph (B) of rule 3745-34-38 of the Administrative Code.

(14) 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 rule 3745-34-30 of the Administrative Code.

(15) Construction procedures including a cementing and casing program, logging procedures, deviation checks, and a drilling, testing, and coring program.

(16) A certificate that the applicant has assured, through a performance bond or other appropriate means, the resources necessary to close, plug or abandon the well as required by paragraph (B)(6) of rule 3745-34-27 of the Administrative Code.

(17) Location, including, but not limited to, seismic areas, wetlands, flood hazard areas, carbonate formations that result in caverns, and underground mines,

both active and abandoned.

(18) The means to dispose of any sludges, solid wastes, or semi-solids or liquids generated in the treatment of any wastes received.

(B) Prior to granting approval for the operation of a class I well, the director shall consider the following information:

(1) All available logging and testing program data on the well.

(2) A demonstration of mechanical integrity pursuant to rule 3745-34-34 of the Administrative Code.

(3) The anticipated maximum pressure and flow rate at which the permittee will operate.

(4) The results of the formation testing program.

(5) The actual injection procedure.

(6) The compatibility of injected waste with fluids in the injection zone and minerals in both the injection zone and the confining zone.

(7) The status of corrective action on defective wells in the area of review.

(C) Prior to granting approval for the plugging and abandonment of a class I well, the director shall consider the following information:

(1) The type and number of plugs to be used.

(2) The placement of each plug including the elevation of the top and bottom.

(3) The type and grade and quantity of cement to be used.

(4) The method for placement of the plugs.

(5) The procedure to be used to meet the requirements of rule 3745-34-36 of the Administrative Code.

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3745-34-40 **Seismic reflection survey requirements for class I wells.**

(A) A seismic reflection data survey shall be conducted at each injection site where a class I injection well is located or is proposed to be located in order to determine the presence or absence of such geologic faults or fractures as may be identified by seismic reflection survey data within or near the area around the well where the formation pressures may be increased due to the operation of the well.

(B) A new seismic reflection data survey is not required, if a seismic reflection data survey was conducted at an injection site in accordance with a work plan approved by the director or a seismic reflection data survey was conducted at an injection site and the results were approved in writing by the director.

(C) The owner of a class I injection well shall re-evaluate the seismic reflection data collected per paragraph (A) or (B) of this rule, if there is a change in the area of review of an injection well or if the owner or operator is proposing a new well to be located at the injection site. The director may require the owner or operator to submit additional seismic reflection data as may be necessary or appropriate, if the director determines that the existing data are inadequate to determine the presence or absence of geologic faults or fractures as may be identified by seismic reflection survey data within the altered area of review or within the area of pressure buildup of the new well.

(D) Prior to conducting a seismic reflection data survey, the owner or operator shall submit for approval by the director, a work plan detailing the activities and methods to be used to fulfill the requirements of paragraph (A) of this rule. The activities and methods described in the plan shall include those used in data acquisition, processing, interpreting and reporting the seismic reflection data. This work plan shall, at a minimum, include the following:

(1) Provisions for data acquisition, processing, and plotting no less than three seconds of data.

(2) Proposed line locations and appropriate acquisition and processing parameters for the data. The survey shall include adequate horizontal data coverage which will image and properly identify any known or unknown geologic features that may affect the site, both during operation and post-closure periods of the wells.

(3) Provisions for keeping detailed and dated field notes and records of all geophysical investigations.

(4) Provisions for headers on final line plots to indicate the shotpoint ranges of the various energy sources, if multiple energy sources are utilized within a survey. Any changes in shooting or processing parameters utilized should be specified within the headers as well.

(5) Provisions for having lines plotted at an appropriate vertical scale.

(6) Other additional information determined necessary by the director.

(E) The owner or operator shall conduct the seismic reflection survey per the plan approved by the director under paragraph (D) of this rule, unless during the conducting of the seismic reflection survey unanticipated conditions cause a reasonable deviation from the approved plan. Any deviation from the plan shall be reported to Ohio EPA within one business day of the deviation taking place. Any deviations from the approved plan shall continue to allow the resulting seismic reflection survey to meet the requirements of paragraph (A) of this rule. All deviations from the approved plan shall be listed within the report required by paragraph (F) of this rule with an explanation as to why the deviation was necessary and how the deviation continued to allow the seismic reflection survey to continue to meet the requirements of paragraph (A) of this rule.

(F) The owner shall submit to the director a final report and digital data with all appropriate header information detailing the results of the seismic reflection data survey required by paragraph (A) of this rule. This report shall be submitted with the permit to drill application required by rules 3745-34-12 and 3745-34-13 of the Administrative Code. The report shall be certified in accordance with rule 3745-34-17 of the Administrative Code. The report shall describe, where present, the faults and fractures within or near the area around the well where the formation pressures may be increased due to the operation of the well. Where there are no faults and fractures present within or near the area around the well where the formation pressures may be increased due to the operation of the well, the report shall state this. The report shall, at a minimum, include the following:

(1) A copy of the seismic reflection field digital data. The field digital data shall be submitted in a format approved by the director within the work plan required.

(2) A surveyed base map illustrating the following:

(a) Surveyed line locations with shot points annotated.

(b) All wells in the area that penetrate the confining zone, with permit numbers, total depth and standard symbols utilized to denote these wells. The producing zone(s) of these wells should be listed within the final report.

(c) The facility property boundaries.

(d) County and township boundaries and names (or numbers).

(e) Highways, pipelines, railways and transmission lines.

(3) Provisions for including processed digital data of seismic profiles in the final report.

(a) Brute stack.

(b) Structure stack.

(c) Migration stack.

(4) The compilation and presentation of processing step notes with the data. These notes should be detailed so the entire processing sequence may be duplicated by an outside party. Intermediate data, specific procedures and the technical basis for selected procedures applied in all static corrections should be provided in digital form.

(5) A copy of interpreted profile sections as requested by the director with all significant geologic horizons annotated. The stratigraphic nomenclature shall be that currently in use by the Ohio department of natural resources, division of geologic survey. Wellbores shall be projected along regional geologic strike and annotated on nearby sections. The distance and azimuth of the projection shall be noted on any seismic lines for each well location. One copy of the uninterpreted seismic sections shall be included within the report.

(6) Other additional information determined necessary by the director.

(G) The director may require a passive seismic monitoring program be maintained at or near the injection site if the director determines that the operation of a class I injection well may cause seismic disturbances. The director may require that a microseismicity monitoring program be maintained at an injection site when determined to be necessary or appropriate.

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3745-34-50 Criteria and standards for class I injection wells.

The requirements set forth in rule 3745-34-50 to 3745-34-62 of the Administrative Code apply to owners and operators of class I hazardous waste injection wells, and in some cases, the owners and operators of all class I injection wells. These rules supplement the requirements set forth in rules 3745-34-01, 3745-34-04, and 3745-34-32 to 3745-34-39 of the Administrative Code.

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3745-34-51 **Minimum criteria for siting class I hazardous waste injection wells.**

(A) All class I hazardous waste injection wells shall be sited such that they inject into a formation that is beneath the lowermost formation containing, within one quarter mile of the well bore, an underground source of drinking water.

(B) Upon a finding by the director, the siting of class I hazardous waste injection wells shall be limited to areas that are geologically suitable. The director shall determine geologic suitability based upon information submitted by the applicant including the following:

(1) An analysis of the structural and stratigraphic geology, the hydrogeology, and the seismicity of the region.

(2) 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.

(3) 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 models.

(C) Class I hazardous waste injection wells shall be sited such as follows:

(1) The injection zone has sufficient permeability, porosity, thickness and areal extent to prevent migration of fluids into USDWs.

(2) The confining zone:

(a) Is laterally continuous and free of transecting, transmissive faults or fractures over an area sufficient to prevent the movement of fluids into USDW.

(b) Contains at least one formation of sufficient thickness and with lithologic and stress characteristics capable of preventing vertical propagation of fractures.

(D) The owner or operator shall submit information to the director adequate to demonstrate one of the following:

(1) The confining zone is separated from the base of the lowermost USDW by at

least one sequence of permeable and less permeable strata that will provide an added layer of protection for the USDW in the event of fluid movement in an unlocated bore hole or transmissive fault.

(2) 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, considering density effects, injection pressures and any significant pumping in the overlying USDW.

(3) There is no USDW present.

(E) All new class I injection wells and wells converted to a class I injection well permitted after the effective date of rules in this chapter shall comply with the location restrictions in paragraph (F) of this rule unless the new class I injection well is located at a commercial complex, or industrial complex, or site, or location, or tract of land with an existing class I injection well initially permitted prior to the effective date of this rule. Existing class I injection wells initially permitted prior to the effective date of this rule are not required to meet the location restrictions in paragraph (F) of this rule.

(F) On and after the effective date of this rule, all of the following apply to a new class I injection well, and a well proposed to be converted to a class I injection well. A new class I injection well, and a well proposed to be converted to a class I injection well shall not be located:

(1) Within the boundary of a flood hazard area as delineated on the "National Flood Insurance Rate Map."

(2) Nearer than five hundred feet from the boundary of the facility or property the Class I well is to be located on. This requirement does not apply if the class I injection well is proposed to be on a site that is zoned industrial.

(3) Within one thousand feet of and within any of the following:

(a) The five-year time of travel associated with a public drinking water supply, as delineated or endorsed under the "Source Water Assessment and Protection Program"; and

(b) The emergency management zone of a public water system intake.

(4) Within seven hundred fifty feet of an occupied private dwelling or a public

building that may be used as a place of assembly, education, entertainment, lodging, or occupancy by the public. However, the owner or the person with legal authority for the private dwelling or public building may consent in writing to a location of the class I injection well to a distance less than seven hundred fifty feet if the applicant for the class I injection well submits the written consent with the application.

(5) In or within one hundred feet of a wetland or any surface waters that are waters of the state as defined in section 6111.01 of the Revised Code.

(6) Within one hundred feet of ponds, developed springs, and water wells. However, the owner or the person with legal authority for the ponds, developed springs, and water wells may consent in writing to a location of the class I injection well to a distance less than one hundred feet if the applicant for the class I injection well submits the written consent with the application.

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3745-34-52 **Area of review.**

For the purposes of class I hazardous waste wells, this rule shall apply to the exclusion of rule 3745-34-32 of the Administrative Code. The area of review for class I hazardous waste injection wells shall be a two-mile radius around the well bore. The director may specify a larger area of review based on the calculated cone of influence of the well.

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3745-34-53 **Corrective action for wells in the area of review.**

For the purposes of class I hazardous waste wells, this rule applies in lieu of rule 3745-34-33 of the Administrative Code.

(A) As part of the permit to install or operate a class I injection well application, the owner or operator of a class I hazardous waste injection well shall submit a plan to the director outlining the protocol used to do the following:

(1) Identify all wells penetrating the confining zone or injection zone within the area of review.

(2) Determine whether wells are adequately completed or plugged.

(B) The owner or operator of a class I hazardous waste injection well shall identify the location of all wells within the area of review that penetrate the injection zone or the confining zone and in accordance with rules 3745-34-13 and 3745-34-59 of the Administrative Code, submit the following:

(1) A tabulation of all wells within the area of review that penetrate the injection zone or the confining zone.

(2) A description of each well or type of well and any records of the well's plugging or completion.

(C) The owner or operator of a class I hazardous waste injection well, shall as part of the application for a permit to drill or operate submit a plan consisting of such steps or modification as are necessary to prevent movement of fluids into or between USDWs, for wells that the director determines are improperly plugged, completed, or abandoned, or for which plugging or completion information is unavailable. Where the plan is adequate, the director shall incorporate the plan into the permit as a condition. Where the director's review of an application indicates that the permittee's plan is inadequate, the director may do one of the following:

(1) Require the applicant to revise the plan.

(2) Prescribe a plan for corrective action as a condition of the permit.

(3) Deny the application.

(D) Any permit issued for an existing class I hazardous waste injection well requiring corrective action other than pressure limitations shall include a compliance schedule requiring any corrective action accepted or prescribed under this section.

Any such compliance schedule shall provide for compliance as soon as possible but no later than two years following issuance of the permit and require observance of appropriate pressure limitations under paragraph (D)(2) of this rule until all other corrective action measures have been implemented.

(1) No owner or operator of a new class I hazardous waste injection well may begin injection until all corrective actions required under this rule have been taken.

(2) The director may require pressure limitations in lieu of plugging. If pressure limitations are used in lieu of plugging, the director may require as a permit condition that injection pressure be so limited that pressure in the injection zone at the site of any improperly completed or abandoned well within the area of review would not be sufficient to drive fluids into or between USDWs. This pressure limitation satisfies the corrective action requirement. Alternatively, such injection pressure limitation may be made part of a compliance schedule and may be required to be maintained until all other required corrective actions have been implemented.

(E) In determining the adequacy of corrective action proposed by the applicant under this rule and in determining the additional steps needed to prevent fluid movement into and between USDWS, the director will consider the following from, rule 3745-34-33 of the Administrative Code:

(1) Nature and volume of injected fluid.

(2) Nature of native fluids or byproducts of injection.

(3) Potentially affected populations.

(4) Geology.

(5) Hydrology.

(6) History of the injection operation.

(7) Completion and plugging records.

(8) Closure procedures in effect at the time the well was closed.

(9) Hydraulic connections with USDWs.

(10) Surface waste handling operations.

(11) Reliability of the procedures used to identify abandoned wells.

(12) Any other factors which might affect the movement of fluids into or between USDWs.

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3745-34-54 **Construction requirements.**

(A) All existing and new class I hazardous waste injection wells shall be constructed and completed by owners and operators to do the following:

(1) Prevent the movement of fluids into or between USDWs or into any unauthorized zones.

(2) Permit the use of appropriate testing devices and work over tools.

(3) Permit continuous monitoring of injection tubing and long string casing as required pursuant to rule 3745-34-56 of the Administrative Code.

(B) All well materials used in the construction or repair of existing and new class I hazardous waste injection wells shall be compatible with fluids with which the materials may be expected to come into contact. All areas of a well that may come into contact with corrosive wastes shall be constructed of corrosion resistant materials. A class I injection well shall be deemed by the director to have compatibility as long as the materials used in the construction of the well meet or exceed the requirements of this rule.

(C) Casing and cementing of new wells.

(1) Casing and cement used in the construction of each newly drilled class I injection well or the repair of an existing class I injection well shall be designed for the life expectancy of the well, including the post-closure care period. The casing and cementing program shall be designed to prevent the movement of fluids into or between USDWs, and to prevent potential leaks of fluids from the class I injection well. In establishing casing and cementing requirements of the permit or the repair plan, the director shall consider the following information as required by rule 3745-34-59 of the Administrative Code:

(a) Depth to the injection zone.

(b) Injection pressure, external pressure, internal pressure and axial loading.

(c) Hole size.

(d) Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification and construction material).

(e) Corrosiveness of injected fluid, formation fluids and temperature.

(f) Lithology of injection and confining zones.

(g) Type or grade of cement.

(h) Quantity and chemical composition of the injected fluid.

(2) One surface casing string shall, at a minimum, extend into the confining bed below the lowest formation that contains a USDW and be cemented by circulating cement from the base of the casing to the surface, using a minimum of one hundred twenty per cent of the calculated annular volume. The director may require more than one hundred twenty per cent when the geology or other circumstances warrant to protect underground sources of drinking water.

(3) At least one long string casing, using a sufficient number of centralizers, shall extend to the injection zone and shall be cemented by circulating cement to the surface in one or more of the following stages:

(a) Of sufficient quantity and quality to withstand the maximum operating pressure.

(b) In a quantity no less than one hundred twenty per cent of the calculated volume necessary to fill the annular space. The director may require more than one hundred twenty per cent when the geology or other circumstances warrant to protect underground sources of drinking water.

(4) Circulation of cement may be accomplished by staging. The director may approve an alternative method of cementing in cases where the cement cannot be recirculated to the surface, provided the owner or operator can demonstrate by using logs that the cement is continuous and does not allow fluid movement behind the well bore and it is still protective of underground sources of drinking water.

(5) Casings, including any casing connections, shall be rated to have sufficient structural strength to withstand, for the design life of the well the following:

(a) The maximum burst and collapse pressures that may be experienced during the construction, operation, and closure of the well.

(b) The maximum tensile stress that may be experienced at any point along the length of the casing during the construction, operation, and closure of the well.

(6) At a minimum, cement and cement additives must be of sufficient quality and quantity to maintain integrity over the design life of the well.

(D) Tubing and packer.

(1) All class I hazardous waste injection wells shall inject fluids through tubing with a packer, both designed for the expected service, set at a point approved by the director.

(2) In determining and specifying requirements for tubing and packer, the director shall consider the following factors, among others:

(a) Depth of setting.

(b) Characteristics of injection fluid (chemical content, corrosiveness, temperature and density).

(c) Injection pressure.

(d) Annular pressure.

(e) Rate (intermittent or continuous), temperature and volume of injected fluid.

(f) Size of casing.

(g) Tubing tensile, burst, and collapse strengths.

(3) At the written request of the operator, the director may approve the use of an alternative to the packer if the alternative method will reliably provide a comparable level of protection to underground sources of drinking water.

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3745-34-55 Logging, sampling, and testing prior to new well operation.

(A) During the drilling and construction of a new Class I hazardous waste injection well, appropriate logs and tests shall be run to determine or verify the depth, thickness, porosity, permeability, and rock type of, and the salinity of any entrained fluids in, all relevant geologic units to assure conformance with performance standards of rule 3745-34-54 of the Administrative Code and to establish accurate baseline data against which future measurements may be compared. A descriptive report interpreting results of such logs and tests shall be prepared by a knowledgeable log analyst and submitted to the director. Such logs and tests shall include:

(1) Deviation checks during drilling on all holes constructed by drilling a pilot hole which is enlarged by reaming or another method. Such checks shall be at sufficiently frequent intervals to determine the location of the bore hole and to assure that vertical avenues for fluid movement in the form of diverging holes are not created during drilling; and

(2) Such other logs and tests as may be required by the director after taking into account the availability of similar data in the area of the drilling site, the construction plan, and the need for additional information that may arise from time to time as the construction of the well progresses. At a minimum, the following logs shall be required in the following situations:

(a) Upon installation of the surface casing:

(i) Resistivity, spontaneous potential, and caliper logs before the casing is installed; and

(ii) A cement bond and variable density log, and a temperature log after the casing is set and cemented.

(b) Upon installation of the long string casing;

(i) Resistivity, spontaneous potential, porosity, caliper, gamma ray, and fracture finder logs before the casing is installed; and

(ii) A cement bond and variable density log, and a temperature log after the casing is set and cemented.

(c) The director may allow the use of an alternative to the above logs when an alternative will provide equivalent or better information; and

(3) A mechanical integrity test consisting of:

(a) A pressure test with liquid or gas; and

(b) A radioactive tracer survey; and

(c) A temperature or noise log; and

(d) A casing inspection log, if required by the director; and

(e) Any other test required by the director.

(B) Whole cores or sidewall cores of the confining and injection zones and formation fluid samples from the injection zone shall be taken. The director may accept cores from nearby wells if the owner or operator can demonstrate that core retrieval is not possible and that such cores are representative of conditions at the well. The director may require the owner or operator to core other formations in the

bore hole.

(C) The fluid temperature, pH, conductivity, pressure and the static fluid level of the injection zone must be recorded.

(D) At a minimum, the owner or operator of a Class I hazardous waste injection well shall submit for review by the director determinations or calculations of the following for the injection and confining zones:

(1) Fracture pressure; and

(2) Other physical and chemical characteristics of the injection and confining zones; and

(3) Physical and chemical characteristics of the formation fluids in the injection zone.

(E) Upon completion, but prior to operation, the owner or operator shall conduct the following tests to verify hydrogeologic characteristics of the injection zone:

(1) A pump test; or

(2) Injectivity tests.

(F) The director reserves the right to witness all logging and testing required by this rule. The owner or operator shall submit a schedule of such activities to the director thirty days prior to conducting the initial test.

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3745-34-56 **Operating requirements.**

(A) Except during stimulation, the owner or operator of a class I injection well shall assure the director in writing, that injection pressure at the wellhead does not exceed a maximum which shall be calculated so as to ensure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone. The owner or operator shall operate a class I injection well such that the injection pressure does not initiate fractures or propagate existing fractures in the confining zone, or cause the movement of injection or formation fluids into a USDW.

(B) Injection between the outermost casing protecting USDWs and the well bore is prohibited.

(C) The owner or operator of a class I hazardous waste injection well shall fill the annulus between the tubing and the long string of casing with a fluid approved by the director, and maintain an annulus pressure approved by the director that exceeds the operating injection pressure, unless the director determines that such a requirement might harm the integrity of the well. The fluid in the annulus shall be noncorrosive, or shall contain a corrosion inhibitor.

(D) The owner or operator of a class I hazardous waste injection well shall maintain mechanical integrity of the injection well at all times.

(E) Permit requirements for owners or operators of hazardous waste class I hazardous waste injection wells which inject wastes which have the potential to react with the injection formation to generate gases shall include the following:

(1) Conditions limiting the temperature, pH or acidity of the injected waste.

(2) Procedures necessary to assure that pressure imbalances which might cause a backflow or blowout do not occur.

(F) The owner or operator of a class I hazardous waste injection well shall install and use continuous recording devices to monitor the injection pressure; the flow rate, volume, and temperature of injected fluids and the pressure on the annulus between the tubing and the long string casing, and shall install and use either of the following:

(1) Automatic alarm and automatic shut-off systems, designed to sound and shut-in the well when pressures and flow rates or other parameters approved by the director exceed a range or gradient specified in the permit.

(2) Automatic alarms, designed to sound when the pressures and flow rates or other parameters approved by the director exceed a rate and/or gradient specified in

the permit, in cases where the owner or operator certifies that a trained operator will be on-site at all times when the well is operating.

(G) If an automatic alarm or shutdown is triggered, the owner or operator shall investigate immediately and identify as expeditiously as possible the cause of the alarm or shutoff. If, upon such investigation, the well appears to be lacking mechanical integrity, or if monitoring required under paragraph (F) of this rule otherwise indicates that the well may be lacking mechanical integrity, the owner or operator shall do the following:

(1) Immediately cease injection of waste fluids unless authorized by the director to continue or resume injection.

(2) Take all necessary steps to determine the presence or absence of a leak.

(3) Notify the director within twenty-four hours after the alarm or shutdown.

(H) In the event that a loss of mechanical integrity is discovered pursuant of this rule or during periodic mechanical integrity testing, the owner or operator shall do the following:

(1) Immediately cease injection of waste fluids.

(2) Take all steps reasonably necessary to determine whether there may have been a release of hazardous wastes or hazardous waste constituents into any unauthorized zone.

(3) Notify the director within twenty-four hours after loss of mechanical integrity is discovered.

(4) Notify the director when injection can be expected to resume.; and

(5) Restore and submit a demonstration of mechanical integrity for approval by the director prior to resuming injection of waste fluids.

(I) Whenever the owner or operator of a class I hazardous waste injection well obtains evidence that there may have been a release of injected wastes into an unauthorized zone the owner or operator shall do the following:

(1) Immediately cease injection of waste fluids.

(a) Notify the director within twenty-four hours of obtaining such evidence.;

(b) Take all necessary steps to identify and characterize the extent of any releases.

(c) Comply with any remediation plan specified by the director.

(d) Where such release is into a USDW currently serving as a water supply, immediately notify the public water system using that USDW and place a notice in a newspaper of general circulation.

(2) The director may allow the operator to resume injection prior to completing cleanup action if the owner or operator demonstrates that the injection operation will not endanger USDWs.

(J) The owner or operator of a class I hazardous waste injection well shall submit a plan for approval to the director prior to conducting:

(1) Any changes or repairs to the casing or cement of the class I injection well.

(2) Any well work over which requires the removal of the injection tubing.

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3745-34-57 **Testing and monitoring requirements.**

(A) Testing and monitoring requirements for all class I injection wells shall include monitoring of the injected wastes as described in paragraphs (B) to (L) of this rule.

(B) The owner or operator of a class I injection well shall submit a written waste analysis plan to the director for approval that describes the procedures to be carried out to obtain a detailed chemical and physical analysis of a representative sample of the injected waste, including the quality assurance procedures used. The plan shall include the following:

(1) The parameters for which the waste will be analyzed and the rationale for the selection of these parameters.

(2) The test methods that will be used to test for these parameters.

(3) The sampling method that will be used to obtain a representative sample of the waste to be analyzed.

(C) The owner or operator of a class I injection well shall repeat the analysis of the injected wastes as described in the waste analysis plan at sufficient frequencies to yeild representative data of the injection fluids characteristics as specified in the waste analysis plan and when process or operating changes occur that may significantly alter the characteristics of the waste stream.

(D) The owner or operator of a class I injection well shall conduct continuous or periodic monitoring of selected parameters as may be required by the director.

(E) The owner or operator of a class I injection well shall assure that the waste analysis plan remains accurate and the analyses remain representative.

(F) The owner or operator of a class I injection well shall as part of the waste analysis plan submit information demonstrating to the satisfaction of director that the waste stream and its anticipated reaction products will not alter the permeability, thickness or other relevant characteristics of the confining or injection zones such that they would no longer meet the requirements specified in rule 3745-34-51 of the Administrative Code.

(G) The owner or operator of a class I injection well shall as part of the waste analysis plan demonstrate that the waste stream will be compatible with the well materials with which the waste is expected to come into contact, and submit to the director a description of the methodology used to make that determination. Compatibility for purposes of this requirement is established if contact with injected fluids will not

cause the well materials to fail to satisfy any design requirement imposed by rule 3745-34-54 of the Administrative Code.

(H) The owner or operator of a class I hazardous waste injection well that injects corrosive waste, or any other waste determined by the director to be potentially interactive with the materials of well construction, shall continuously monitor for corrosion of the construction materials used in the well by doing one of the following:

(1) Placing coupons of the well construction materials in contact with the waste stream.

(2) Routing the waste stream through a loop constructed with the material used in the well.

(3) Using an alternative method approved by the director.

(I) The owner or operator of a class I hazardous waste injection well that injects corrosive waste, or any other waste determined by the director to be potentially interactive with the materials of well construction, shall implement a corrosion monitoring program including the following:

(1) Using materials identical to those used in the construction of the well, and such materials must be continuously exposed to the operating pressures and temperatures (measured at the wellhead) and flow rates of the injection operation.

(2) Monitoring the materials of construction for loss of mass, thickness, cracking, pitting and other signs of corrosion on a quarterly basis to ensure that the well components meet the minimum standards for material strength and performance set forth in rule 3745-34-54 of the Administrative Code.

(J) Mechanical integrity testing.

The owner or operator of a class I hazardous waste injection well shall conduct the mechanical integrity testing required by rule 3745-34-34 of the Administrative Code and approved by the administrator of U.S. EPA as follows:

(1) The long string casing, injection tube, and annular seal shall be tested by means of a pressure test approved by the director, utilizing a liquid or gas, annually and whenever there has been a well work over.

(2) On an annual basis the bottom-hole cement shall be tested by means of a radioactive tracer survey approved by the director.

(3) A temperature, noise, or other log approved by the director shall be run at least once every three years to test for movement of fluid along the bore hole. The director may require such tests whenever the well is worked over.

(4) Casing inspection logs shall be run whenever the owner or operator conducts a workover in which the injection string is pulled, unless the director waives this requirement due to well construction or other factors which limit the test's reliability, or based upon the satisfactory results of a casing inspection log run within the previous five years. The director may require that a casing inspection log be run every five years, if he has reason to believe that the integrity of the long string casing of the well may be adversely affected by naturally occurring or man-made events.

(5) Any other test approved by the administrator of U.S. EPA and the director in accordance with the procedures in rule 3745-34-34 of the Administrative Code may also be used.

(K) Monitoring program

(1) Based on a site specific assessment of the potential for fluid movement from the well or injection zone, and on the potential value of monitoring wells to detect such movement, the director may require the owner or operator to submit for approval, a monitoring program plan. The director shall require monitoring of the pressure buildup in the injection zone annually, including at a minimum, a shut down of the well for a time sufficient to conduct a valid observation of the pressure fall-off curve.

(2) When prescribing a monitoring system the director may also require the following:

(a) Continuous monitoring for pressure changes in the first aquifer overlying the confining zones. When such a well or wells is/are installed, the owner or operator shall, on a quarterly basis, sample the aquifer and analyze for constituents specified in the approved monitoring program plan.

(b) The use of indirect geophysical techniques to determine the position of the waste front, the water quality in a formation(s) designated in the approved monitoring program plan, or to provide other site specific

data.

(c) Periodic monitoring of the pressure and ground water quality in the first permeable zone (that is, a zone from which a representative sample may be obtained within seventy-two hours) overlying the injection zone.

(d) Periodic monitoring of the ground water quality in the lowermost USDW.

(e) Any additional monitoring necessary to determine whether fluids are moving into or between USDWs.

(L) The director may require the owner or operator of a class I injection well to submit a seismicity monitoring plan for approval when the director has reason to believe that injection activity may have the capacity to cause seismic disturbances.

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3745-34-58 Reporting requirements.

(A) The owner or operator of a class I hazardous waste injection well shall submit a report to the director each calendar quarter, in writing, including:

(1) The maximum injection pressure; and

(2) A description of any event that exceeds operating parameters for annulus pressure or injection pressure as specified in the permit; and

(3) A description of any event which triggers an alarm or shutdown device required by rule 3745-34-56 of the Administrative Code and the owner or operators response; and

(4) The total volume of fluid injected; and

(5) Any change in the annular fluid volume; and

(6) The physical, chemical and other relevant characteristics of injected fluids; and

(7) The results of monitoring required under rule 3745-34-57 of the Administrative Code.

(B) The owner or operator of a class I hazardous waste injection well shall report to the director within thirty days or with the next quarterly report whichever comes later, the results of:

(1) Periodic tests of mechanical integrity; and

(2) Any other test of the injection well conducted by the permittee if required by the director; and

(3) Any well work over.

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3745-34-59 **Information to be evaluated by the director.**

(A) For a new class I hazardous waste injection well, the owner shall submit all information listed in paragraph (B) of this rule as part of the permit application except for those items of information which are current, accurate, and available in the existing permit record. For both existing and new class I hazardous waste injection wells, certain maps, cross-sections, tabulations of wells within the area of review and other data may be included in the application by reference provided they are current and readily available to the director and sufficiently identifiable to be retrieved.

(B) Prior to the issuance of a permit for an existing class I hazardous waste injection well to operate or the construction or conversion of a new class I hazardous waste injection well, the director shall review the following to assure that the requirements of this chapter are met:

(1) Information required by rules 3745-34-12, 3745-34-13, and 3745-34-14 of the Administrative Code.

(2) A map showing the injection well for which a permit is sought and the applicable area of review. Within the area of review, the map shall 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.

(3) A tabulation of all wells within the area of review which penetrate the proposed injection zone or confining 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 director may require.

(4) 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.

(5) 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.

(6) Maps and cross-sections detailing the geologic structure of the local area.

(7) Maps and cross-sections illustrating the regional geologic setting.

(8) Proposed operating data:

(a) Average and maximum daily rate and volume of the fluid to be injected.

(b) Average and maximum injection pressure and calculation of proposed maximum injection pressure.

(9) Proposed formation testing program to obtain an analysis of the chemical, physical and radiological characteristics of and other information on the injection formation and the confining zone.

(10) Proposed stimulation program.

(11) Proposed injection procedure.

(12) Schematic or other appropriate drawings of the surface and subsurface construction details of the well.

(13) Contingency plans to cope with all shut-ins or well failures so as to prevent migration of fluids into any USDW.

(14) Plans (including maps) for meeting monitoring requirements of rule 3745-34-57 of the Administrative Code.

(15) For wells within the area of review which penetrate the injection zone or the confining zone but are not properly completed or plugged, the plan and comprehensive schedule for corrective action to be taken under rule 3745-34-53 of the Administrative Code.

(16) Construction procedures including a cementing and casing program, well materials specifications and their life expectancy, logging procedures, deviation checks, and a drilling, testing and coring program.

(17) A certificate that the applicant has assured, through a performance bond or other appropriate means, the resources necessary to close, plug or abandon the well and for post closure care.

(C) Prior to the director's granting approval for the operation of a Class I hazardous waste

injection well, the owner shall submit to the director for review the following information, which shall be included in the completion report:

(1) All available logging and testing program data on the well.

(2) A demonstration of mechanical integrity pursuant to rule 3745-34-58 of the Administrative Code.

(3) The anticipated maximum pressure and flow rate at which the permittee will operate.

(4) The results of the injection zone and confining zone testing program as required in rule 3745-34-60 of the Administrative Code.

(5) The actual injection procedure.

(6) The compatibility of injected waste with fluids in the injection zone and minerals in both the injection zone and confining zone and with materials used to construct the well.

(7) The calculated area of review based on data obtained during logging and testing of the well and the formation, and where necessary revisions to the information submitted under rule 3745-34-60 of the Administrative Code.

(8) The status of corrective action on wells identified in rule 3745-34-60 of the Administrative Code.

(D) Prior to granting approval for the plugging and abandonment or closure of a Class I hazardous waste injection well, the director shall review the information required by rules 3745-34-61 and 3745-34-62 of the Administrative Code.

(E) Any permit issued for a Class I hazardous waste injection well for disposal on the premises where the waste is generated shall contain a certification by the owner or operator that:

(1) The generator of the hazardous waste has a program to reduce the volume or quantity and toxicity of such waste to the degree determined by the generator to be economically practicable.

(2) 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.

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3745-34-60 **Closure.**

(A) The owner or operator of a class I hazardous waste injection well shall prepare, maintain, and comply with a plan for closure of the well that meets the requirements of this rule, is in compliance with rule 3745-34-09 of the Administrative Code and is acceptable to the director. The owner or operator shall implement the approved closure plan upon termination of a permit or the cessation of injection activities:

(1) The owner or operator of a class I hazardous waste injection well shall submit the plan as a part of the permit application and, upon approval by the director, such plan shall be a condition of any permit issued.

(2) The owner or operator of a class I hazardous waste injection well shall submit any proposed significant revision to the method of closure reflected in the closure plan for approval by the director no later than the date on which notice of closure is required to be submitted to the director under this rule.

(3) The closure plan shall assure continuing financial responsibility as required by rule 3745-34-09 of the Administrative Code.

(4) The closure plan shall include the following information:

(a) The type and number of plugs to be used.

(b) The placement of each plug including the elevation of the top and bottom of each plug.

(c) The type, grade, and quantity of material to be used in plugging.

(d) The method of placement of the plugs.

(e) Any proposed test or measure to be made.

(f) The amount, size, and location (by depth) of casing and any other materials to be left in the well.

(g) The method and location where casing is to be parted, if applicable.

(h) The procedure to be used to meet the requirements of this rule.

(i) The estimated cost of closure.

(j) Any proposed test or measure to be made.

(5) An owner or operator of a class I hazardous waste injection well who ceases injection temporarily, may keep the well open provided the owner or operator:

(a) Has received prior authorization from the director.

(b) Has submitted a plan to the director, for approval, that the owner or operator will follow to ensure that the well will not endanger USDWS during the period of temporary disuse. These actions and procedures shall include compliance with the technical requirements applicable to active injection wells unless waived by the director.

(6) The owner or operator of a class I hazardous waste injection well that has ceased operations for more than two years shall notify the director thirty days prior to resuming operation of the well.

(B) The owner or operator of a class I hazardous waste injection well shall notify the director at least sixty days before closure of a well. At the discretion of the director, a shorter notice period may be allowed.

(C) Within sixty days after closure or at the time of the next quarterly report (whichever is sooner) the owner or operator of a class I injection well shall submit a closure report to the director. If the quarterly report is due less than fifteen days after completion of closure, then the report shall be submitted within sixty days after closure. The report shall be certified as accurate by the owner or operator and by the person who performed the closure operation (if other than the owner or operator). Such report shall consist of either:

(1) A statement that the well as closed in accordance with the closure plan previously submitted and approved by the director.

(2) Where actual closure differed from the plan previously submitted, a written statement specifying the differences between the previous plan and the actual closure.

(D) Standards for well closure.

(1) Prior to closing a class I hazardous waste injection well, the owner or operator shall observe and record the pressure decay for a time specified by the

director. The director shall determine whether the injection activity has conformed with predicted values by analysis of the pressure decay and the transient pressure observations conducted pursuant to rule 3745-34-57 of the Administrative Code.

(2) Prior to well closure, the owner or operator of a class I hazardous waste injection well shall conduct appropriate mechanical integrity testing to ensure the integrity of that portion of the long string casing and cement that will be left in the ground after closure. Testing methods may include:

(a) Pressure tests with liquid or gas.

(b) Radioactive tracer surveys.

(c) Noise, temperature, pipe evaluation, or cement bond logs.

(d) Any other test required by the director.

(3) Prior to well closure, the well shall be flushed with a buffer fluid.

(4) Upon closure, a class I well shall be plugged with cement in a manner that will not allow the movement of fluids into or between USDWs.

(5) Placement of the cement plugs shall be accomplished by one of the following:

(a) The balance method.

(b) The dump bailer method.

(c) The two-plug method.

(d) An alternate method, approved by the director, that will reliably provide a comparable level of protection.

(6) Each plug used shall be appropriately tagged and tested for seal and stability before closure is completed.

(7) The well to be closed shall be in a state of static equilibrium with the mud weight equalized top to bottom, either by circulating the mud in the well at

least once or by a comparable method approved by the director, prior to the placement of one or more cement plugs.

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3745-34-61 **Post closure.**

(A) The owner or operator of a Class I hazardous waste injection well shall prepare, maintain, and comply with a plan approved by the director for post-closure care that meets the requirements of this rule and is in compliance with rule 3745-34-09 of the Administrative Code. The owner or operator shall implement the approved post closure plan upon termination of a permit or the cessation of injection activities. The requirement to maintain and implement the approved post-closure plan is enforceable irrespective of the permit.

(B) The owner or operator of a Class I hazardous waste injection well shall submit the post closure plan as part of the permit application and, upon approval by the director, such plan shall be a condition of any permit issued.

(C) The owner or operator of a Class I hazardous waste injection well shall submit any proposed significant revision to the post closure plan as appropriate over the life of the well, but no later than the date of the closure report required under rule 3745-34-59 of the Administrative Code.

(D) The post closure plan shall assure financial responsibility as required by rule 3745-34-62 of the Administrative Code.

(E) The post closure plan shall include the following information:

(1) The pressure in the injection zone before injection began.

(2) The anticipated pressure in the injection zone at the time of closure.

(3) The predicted time until pressure in the injection zone decays to the point that the well's cone of influence no longer intersects the base of the lowermost USDW.

(4) Predicted position of the waste front at closure.

(5) The status of any cleanups required under rule 3745-34-53 of the Administrative Code.

(6) The estimated cost of proposed post-closure care.

(F) The owner or operator of a Class I hazardous waste injection well shall:

(1) Continue and complete any cleanup action required under rule 3745-34-53 of

the Administrative Code if applicable.

(2) Continue to conduct any ground water monitoring required under the permit until pressure in the injection zone decays to the point that the well's cone of influence no longer intersects the base of the lowermost usdw.

(3) Submit a survey plat to the local zoning authority designated by the director and to the director, indicating the location of the well relative to permanently surveyed benchmarks.

(4) Provide appropriate notification and information to such state and local authorities as have cognizance over drilling activities to enable such state and local authorities to impose appropriate conditions of subsequent drilling activities that may penetrate the well's confining or injection zone.

(5) Retain, for a period of three years following well closure, records reflecting the nature, composition and volume of all injected fluids, which will be delivered to the director at the conclusion of the retention period, and the records shall thereafter be retained at a location designated by the director for that purpose.

(G) The director may extend the period of post-closure monitoring upon a finding that the well may endanger a USDW.

(H) Each owner of a Class I hazardous waste injection well, and the owner of the surface or subsurface property on or in which a Class I hazardous waste injection well is located, shall record a notation on the deed to the facility property or on some other instrument which is normally examined during title search that will, in perpetuity, provide any potential purchaser of the property with the following information:

(1) The fact that land has been used to manage hazardous waste.

(2) The name of the state agency or local authority with which the plat was filed, as well as the address of the regional environmental protection agency office to which it was submitted.

(3) The type and volume of waste injected, the injection interval or intervals into which it was injected, and the period over which injection occurred.

Effective: 12/12/2024

Five Year Review (FYR) Dates: 9/11/2024 and 09/11/2029

CERTIFIED ELECTRONICALLY

Certification

11/26/2024

Date

Promulgated Under: 119.03
Statutory Authority: 6111.043
Rule Amplifies: 6111.043
Prior Effective Dates: 12/16/1991

3745-34-62 **Financial responsibility for closure and post closure care.**

The owner or operator shall comply with the financial responsibility requirements of rules 3745-55-42 to 3745-55-51 or 3745-66-42 to 3745-66-48 of the Administrative Code.

Five Year Review (FYR) Dates: 9/11/2024 and 09/11/2029

CERTIFIED ELECTRONICALLY

Certification

09/11/2024

Date

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Prior Effective Dates:	12/16/1991

3745-34-63 **Class I annual permit fee; fee per ton of waste injected.**

(A) The owner of a class I injection well for which the director has issued a permit or renewal of a permit for the disposal of any hazardous waste identified in or listed under section 3734.12 of the Revised Code or the rules adopted thereunder, and that waste is generated on the premises where the injection well is located shall pay an annual permit fee of thirty thousand dollars. Said fee shall be payable by certified check drawn to the "Director of Environmental Protection - Underground Injection Control Fund," within thirty days of the issuance of a permit or renewal of a permit, and annually thereafter during the term of the permit or renewal of the permit. Annual payment shall be tendered within thirty days prior to the anniversary date of the issuance of the permit or renewal of the permit. Failure to timely remit the annual permit fee shall be a violation of the permit or renewal of the permit, this rule, and section 6111.046 of the Revised Code.

(B) The owner of a class I injection well for which the director has issued a permit or renewal of a permit for the injection of any waste other than that identified in paragraph (A) of this rule, shall pay an annual permit fee of twelve thousand five hundred dollars. Said fee shall be payable by certified check drawn to the "Director of Environmental Protection - Underground Injection Control Fund," within thirty days of the issuance of a permit or renewal of a permit, and annually thereafter during the term of the permit or renewal of the permit. Annual payment shall be tendered within thirty days prior to the anniversary date of the issuance of the permit or renewal of the permit. Failure to timely remit the annual permit fee shall be a violation of the permit or renewal of the permit, this rule and section 6111.046 of the Revised Code.

(C) The owner of each class I injection facility shall act as trustee for the state of Ohio and collect a fee of one dollar per ton of industrial waste or other waste, to a maximum of twenty-five thousand dollars per year, irrespective of the number of wells at that facility. The owner or operator shall maintain appropriate records of the amount of waste injected at the facility. The owner or operator shall remit said fees payable by certified check drawn to the "Director of Environmental Protection - Underground Injection Control Fund" within thirty days prior to the anniversary date of the permit or renewal of the permit. For facilities where multiple permits are held, for purposes of this fee, the anniversary date shall be the date of issuance of the permit or the renewal of the permit closest to January first of the year of issuance. A penalty of ten per cent of the amount of the fee shall be assessed for each month of late payment. Failure to remit the appropriate fee shall be a violation of the permit or renewal of the permit, this rule and section 6111.047 of the Revised Code.

(1) This fee does not apply to the owner of any well injecting hazardous waste as identified or listed under section 3734.12 of the Revised Code or the rules adopted thereunder.

(2) This fee does not apply to the owner of an existing well that disposes of naturally occurring formation fluids extracted during salt mining processes by injection into a zone consisting of the Oriskany sandstone at depths of not more than one thousand five hundred feet.

(D) Pursuant to section 6111.046 of the Revised Code, on or about July first of each year, the director shall request, in writing, that the office of budget and management transfer fifteen per cent of the money in the "Underground Injection Control Fund" to the "Geologic Mapping Fund" created in section 1505.09 of the Revised Code.

Effective:	2/14/2021
Five Year Review (FYR) Dates:	9/15/2020 and 02/04/2026

CERTIFIED ELECTRONICALLY

Certification

02/04/2021

Date

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