

SOUTH CAROLINA DEPARTMENT OF
HEALTH AND ENVIRONMENTAL CONTROL



R. 61-87

South Carolina Underground Injection Control

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**Bureau of Water
2600 Bull Street
Columbia, S.C. 29201**

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R61-87: Underground Injection Control Regulations

87.1 Purpose.

These regulations set forth the specific requirements for controlling underground injection in the State and include provisions for: the classification and regulation of injection wells; prohibiting unauthorized injection; protecting underground sources of drinking water from injection; classifying underground sources of drinking water; and, requirements for abandonment, monitoring, and reporting for existing injection wells used to inject wastes or contaminants.

87.2 Definitions.

The definition of any word or phrase used in these regulations shall be the same as defined in Section 48-1-10 of the 1976 Code, except that the following words and phrases shall have the following meaning and shall apply to the underground injection control program.

- (A) Abandoned well means a well the use of which has been permanently discontinued or which is in a state of disrepair such that it cannot be used for its intended purpose or for monitoring purposes.
- (B) Aquifer means a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of ground water to wells or springs.
- (C) 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 permeable strata, or to prevent fluids from entering or leaving the hole.
- (D) Cesspool means a drywell that receives untreated sanitary waste containing human excreta, and which sometimes has an open bottom and/or perforated sides.
- (E) Confining zone means a geological formation, group of formations, or part of a formation that is capable of significantly limiting fluid movement above or below an injection zone.
- (F) Contaminant means any substance or matter which degrades the quality of naturally occurring water either directly or indirectly as a result of man's activity.
- (G) Drywell means a well, other than an improved sinkhole or subsurface fluid distribution system, completed above the water table so that its bottom and sides are typically dry except when receiving fluids.
- (H) Facility, operation or activity means any injection well or system including land and appurtenances thereto.
- (I) Flow rate means the volume per unit of time of a fluid which emerges from an orifice, pump, turbine, or passes along a conduit or channel.
- (J) Fluid means material or substance which flows or moves whether in a semisolid, liquid, sludge, gas, or any other form or state.
- (K) Formation means a body of rock characterized by a degree of lithologic homogeneity which is prevailing, but not necessarily, tabular and is mappable on the earth's surface or traceable in the subsurface.
- (L) Formation fluid means fluid present in a formation under natural conditions as opposed to introduced fluids.
- (M) Ground water means water below the land surface in a zone of saturation.
- (N) Improved sinkhole means a naturally occurring karst depression or other natural crevice found in volcanic terrain and other geological settings which have been modified by man for the purpose of directing and emplacing fluids into the subsurface.
- (O) Injection means the emplacement of fluid into the subsurface or ground waters by an injection well except fluids used in association with well construction, development, or abandonment.
- (P) Injection well means any well which is used or intended to be used for injection.
- (Q) Injection zone means a geological formation, group of formations, or part of a formation which is receiving injection, has received injection, or is intended to receive injection.

- (R) Lithology means the description of rocks on the basis of their physical and chemical characteristics.
- (S) Non-contact system means a closed system which conveys water pumped from the aquifer through a process on a once-through basis without significantly altering the chemical quality of the water to be returned to the aquifer.
- (T) Owner/operator means the person who owns the land on which a facility is located and/or the person who is responsible for the overall operation of the facility.
- (U) Person means any individual, federal agency, public or private corporation, political sub-division, government agency, municipality, industry, copartnership, association, firm, trust, estate, or any legal entity whatsoever.
- (V) Point of injection for Class V wells means the last accessible point prior to waste fluids being released into the subsurface environment through a Class V well.
- (W) Pressure means the total load or force per unit area acting on a surface.
- (X) Septic system means a well that is used to emplace sanitary wastes below the surface and is typically comprised of a septic tank and subsurface fluid distribution system. The UIC requirements do not apply to single family residential septic systems nor to non residential septic systems which are used solely for disposal of sanitary waste and have the capacity to serve fewer than 20 persons a day.
- (Y) Stratum (plural strata) means a single sedimentary bed or layer, regardless of thickness, that consists of generally the same kind of rock material.
- (Z) 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.
- (AA) Subsidence means the lowering of the natural land surface in response to: Earth movements; lowering of fluid pressure; removal of underlying supporting material by mining or solution of solids, either artificially or from natural causes; compaction due to wetting (Hydro-compaction); oxidation of organic matter in soils; or added load on the land surface.
- (BB) Total dissolved solids (TDS) means the amount of material in solution gravimetrically determined after filtering the sample through a 0.45-um membrane filter and drying at 180°C.
- (CC) Underground source of drinking water (USDW) means an aquifer or its portion:
 - (1) Which supplies any public water system; or,
 - (2) Which contains a sufficient quantity of ground water to supply a public water system; and,
 - (a) Currently supplies drinking water for human consumption; or,
 - (b) Contains water with fewer than ten thousand milligrams per liter total dissolved solids.
- (DD) Waste shall mean and include the following:
 - (1) Sanitary waste means liquid or solid wastes 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 preparations, clothes washing operations, and sinks or washing machines where food and beverage serving dishes, glasses, and utensils are cleaned. Sources of the wastes may include single or multiple residences, hotels and motels, restaurants, bunkhouses, schools, ranger stations, crew quarters, guard stations, campgrounds, picnic grounds, day-use recreation areas, other commercial facilities, and industrial facilities provided the water is not mixed with industrial wastes.
 - (2) Industrial waste means any superfluous liquid, gaseous, solid or other substance or a combination thereof resulting from any process of industry, manufacturing, trade or business.
 - (3) Hazardous waste has the meaning given in Section 44-56-20 of the 1976 South Carolina Code of Laws as amended and regulations promulgated pursuant thereto.
- (EE) Well means any excavation which is cored, bored, drilled, jetted, dug, or otherwise constructed the depth of which is greater than its largest surface dimension; or, a dug hole whose depth is greater than the largest surface dimension; or, an improved sinkhole; or, a subsurface fluid distribution system.
- (FF) Well injection means the subsurface emplacement of fluids through a well.

87.3 Scope.

These regulations apply to all persons owning, using, or proposing to use any well for injection, but does not include any dug hole, or well which is not used for emplacement of fluids. Minimum standards for construction and abandonment of injection wells are as those stated for all wells in the SC Well Standards and Regulations (R.61-71).

87.4 Prohibition of Unauthorized Injection.

The injection of any fluids to the subsurface or ground waters of the State by means of an injection well is prohibited except as authorized by a Department permit or rule.

87.5 Protection of Underground Sources of Drinking Water.

The movement of fluids containing wastes or contaminants into underground sources of drinking water as a result of injection is prohibited if the presence of the waste or contaminant:

- (A) May cause a violation of any drinking water standard under R61-58.5; or,
- (B) May otherwise adversely affect the health of persons.

87.6 Classification of Underground Sources of Drinking Water.

The Department may classify (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.”

87.7 Area of Review Requirements for Class II and III Wells.

The area of review for an injection well or field, project or area of the State shall be a fixed radius around the well, field or project of one fourth mile or greater as determined by the Department. In determining the fixed radius, the following factors shall be taken into consideration by the Department:

- (A) Physical and chemical characteristics of the injected and formation fluids;
- (B) Injection rate and pressure;
- (C) Hydrogeology;
- (D) Population and ground-water use and dependence;
- (E) Historical practices in the area.
- (F) Well design and construction standards.

87.8 Corrective Action Requirements for Class II and III Wells.

- (A) Corrective action required under these regulations for improperly sealed, completed, or abandoned wells which penetrate the injection zone and are located within the area of review shall consist of such steps or modifications as are necessary to prevent movement of fluid into underground sources of drinking water.
- (B) The applicant shall identify all such wells and submit a plan for corrective action with the permit application.
- (C) If the plan is determined adequate, the Department shall incorporate it into the permit as a condition.
- (D) If review of the application indicates that the applicant’s plan is inadequate, the Department shall require the applicant to revise the plan, prescribe a plan for corrective action as a condition of the permit or deny the application.
- (E) To determine the adequacy of corrective action proposed by the applicant and the additional steps needed to prevent fluid movement into underground sources of drinking water the following criteria and factors shall be considered by the Department:
 - (1) Nature and volume of the injected fluid;
 - (2) Nature of formation fluids or by-products of injection;
 - (3) Potentially affected population;

- (4) Geology;
 - (5) Hydrology;
 - (6) History of the injection-operation;
 - (7) Completion and plugging records;
 - (8) Abandonment procedures in effect at the time the well was abandoned;
 - (9) Hydraulic connections with underground sources of drinking water.
 - (10) Well design and construction standards.
- (F) The Department 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 or water supply well within the area of review. This pressure limitation shall satisfy the corrective action requirement. Alternatively, such restrictions on injection pressure may be a part of the compliance schedule for corrective action and last until all other required corrective action has been taken.
- (G) No permit for a new injection well will be issued until all required corrective action has been taken.
- (H) The Department's corrective action requirements for Class III wells shall include the consideration of the overall effect of the project on the hydraulic gradient in potentially affected Underground Sources of Drinking Water and the corresponding changes in potentiometric surface(s) and flow direction(s) rather than the discrete effect of each well. If a decision is made that corrective action is not necessary based on the determinations above, the monitoring program shall be designed to verify the validity of such determinations.

87.9 Mechanical Integrity Requirements for Class II and III Wells.

- (A) An injection well will be considered to have mechanical integrity if:
- (1) There is no measurable leak in the casing, tubing or packer; and,
 - (2) There is no measurable fluid movement into an underground source of drinking water through vertical channels adjacent to the injection well bore which would result in deterioration of the water quality in zones above or below the injection zone
- (B) The method used to determine the absence of any measurable leaks in the casing, tubing or packer shall be conducted as follows:
- (1) Monitoring of the annulus pressure; or,
 - (2) A pressure test with liquid or gas.
- (C) The method used to determine the absence of any measurable fluid movement into underground sources of drinking water shall be the results of a temperature or noise log.
- (D) In conducting and evaluating the tests for mechanical integrity, the owner or operator and the Department shall apply methods and standards generally accepted in the industry. When the owner or operator reports the results of mechanical integrity tests to the Department, the owner or operator shall include a description of the test(s) and the method(s) used. In making the evaluation, the Department shall review monitoring and other test data submitted since the previous evaluation.

87.10 Financial Responsibility Requirements for Class II and III Wells.

The permittee shall maintain financial responsibility and resources, in the form of performance bonds or other equivalent forms of financial assurances approved by the Department, as specified in the permit, to close, plug, and abandon the injection operation.

87.11 Classification and Regulation of Injection Wells.

- (A) Class I
- (1) This class applies to industrial, municipal and other injection wells for disposing of fluids into the subsurface or ground water and includes:
 - (a) Industrial disposal wells for disposing of waste other than hazardous or radioactive waste;
 - (b) Municipal or privately owned disposal wells for disposing of domestic sewage or other waste not hazardous or radioactive.

- (c) Wells used by generators of hazardous waste or owners or operators of hazardous waste management facilities to inject hazardous waste;
 - (2) No person shall construct, operate or use a well of this Class for injection.
- (B) Class II
 - (1) This Class applies to wells which inject fluids:
 - (a) Which are brought to the surface in connection with conventional oil or natural gas production and may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection;
 - (b) For enhanced recovery of oil or natural gas; and,
 - (c) For storage of hydrocarbons which are liquid at standard temperature and pressure.
 - (2) No person shall construct, use, or operate a well of this Class for injection except as authorized by a permit issued by the Department. A mining permit issued by the Department may be necessary before petroleum exploration and/or production is initiated.
- (C) Class III
 - (1) This Class applies to special process wells which use injection for extraction of minerals and includes but is not limited to:
 - (a) Mining of sulfur by the Frasch process;
 - (b) In-situ production of uranium or other metals;
 - (c) Solution mining of salts or potash;
 - (d) In-situ recovery of lignite, coal, tar sands, and oil shale.
 - (2) No person shall construct, use, or operate a well of this Class for injection except as authorized by a permit issued by the Department. A mining permit issued by the Department may be necessary before mineral extraction is initiated.
- (D) Class IV
 - (1) This Class applies to injection wells for disposing of hazardous or radioactive waste into the subsurface or ground water and includes those injection wells used by:
 - (a) Generators of hazardous or radioactive wastes;
 - (b) Owners or operators of hazardous waste management facilities or radioactive waste disposal sites.
 - (2) No person shall construct, use or operate a well of this class for injection:
 - (a) Except owners or operators of contaminated ground water remedial systems treating groundwater to be injected into the same formation from which it was drawn are authorized by rule for the life of the well if subsurface emplacement of fluids is approved by EPA, or the Department, pursuant to provisions for cleanup of releases under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. 9601-9675, or pursuant to requirements and provisions under the Resource and Conservation Act (RCRA), 42 U.S.C. 6901-6992k;
 - (b) In violation of R61-87.5.
- (E) Class V.A
 - (1) This Class applies to all injection wells not included in Class I, II, III, and IV and V.B. and includes but is not limited to:
 - (a) Drainage wells used to drain storm runoff into a subsurface formation;
 - (b) Recharge wells used to replenish the water in an aquifer;
 - (c) 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;
 - (d) 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;

- (e) 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;
 - (f) Injection wells associated with the recovery of geothermal energy of heating, aquaculture or production of electric power;
 - (g) Injection wells used in experimental technologies;
 - (h) Natural gas storage wells;
 - (i) Corrective action wells used to inject groundwater associated with aquifer remediation;
 - (j) Septic system wells used to inject the waste or effluent from a multiple dwelling, business establishment, community, or regional business establishment septic tank;
 - (k) Large capacity cesspools including multiple dwelling, community or regional cesspools, or other devices that receive sanitary wastes which have an open bottom and sometimes perforated sides. The UIC requirements do not apply to single family residential cesspools nor to non residential cesspools which receive sanitary waste and have the capacity to serve fewer than 20 persons a day;
 - (l) Motor vehicle waste disposal wells that receive or have received fluids from vehicular repair or maintenance activities.
- (2) No person shall construct, use or operate a well of this Class for injection:
 - (a) Except as authorized by a permit issued by the Department as provided by these regulations;
 - (b) In violation of R61-87.5.
 - (3) No person shall construct, use or operate:
 - (a) Large capacity cesspools including multiple dwelling, community or regional cesspools, or other devices that receive sanitary wastes which have an open bottom and sometimes perforated sides. The UIC requirements do not apply to single family residential cesspools nor to non residential cesspools which receive sanitary waste and have the capacity to serve fewer than 20 persons a day;
 - (b) Motor vehicle waste disposal wells that receive or have received fluids from vehicular repair or maintenance activities.

(F) Class V. B

- (1) This Class applies to all injection wells used to return to the supply aquifer the water which has passed through a non-contact system and includes, but is not limited to:
 - (a) Heat pump return flow wells;
 - (b) Cooling water return flow wells.
- (2) This Class is authorized by rule and does not require a permit, however, no person shall construct, use or operate a well of this Class for injection in violation of R61-87.5.
- (3) Reporting requirements: All Class V. B. well owners or operators shall report to the Department no later than one year after the effective date of these regulations for existing wells of this Class, and no later than thirty days for new wells of this Class, on forms provided by the Department or on an alternative approved form the following information:
 - (a) Facility name and location description with direction and distance from two nearby map reference points;
 - (b) Name and mailing address of facility owner;
 - (c) Name and mailing address of facility operator;
 - (d) Nature and type of injection facility and well(s) including drawings of the surface and subsurface construction details of the well(s);
 - (e) Operating status of the injection facility and well(s).
- (4) Failure to submit information to the Department regarding R.61-78(f)(3) will result in the prohibition from injecting until the reporting requirements are satisfied.

87.12 Abandonment, Monitoring and Reporting Requirements Applicable to Existing Injection Wells Used to Inject Waste or Contaminants.

- (A) Any well, used for the injection of wastes or contaminants, and constructed or in operation prior to the effective date of these regulations, must be reported by the owner to the Department within thirty days after the effective date. The information shall include:
 - (1) Location of the injection well and any associated monitoring wells;
 - (2) Name and address of injection well owner;
 - (3) Name and address of injection well operator;
 - (4) Construction drawings of the injection well and injection systems to include depths, composition of construction, and injection system materials, etc.;
 - (5) Analysis of injected fluid;
 - (6) Date injection initially began;
 - (7) Records of injection rates, pressures, volumes, etc. during the operating period of the well; and,
 - (8) Background ground-water quality data.
- (B) Any Class II, III, IV(2)(a) or V.A. injection well constructed or in operation prior to the effective date of these regulations shall be permitted in accordance with R.61-87.13 or abandoned by the owner in a manner specified by the Department. Any Class I, Class IV (other than specified above), V.A. -(j), (k), (l) injection well constructed or in operation prior to the effective date of these regulations will be abandoned by the owner in a manner specified by the Department. As part of abandonment, the Department may require the owner to:
 - (1) Install monitor wells in the injection zone and adjacent zones as necessary to detect the dispersion and migration of injection fluids within and from the injection zone;
 - (2) Monitor the fluid levels and water quality in the injection and monitor wells at specified intervals;
 - (3) Submit the results of monitoring at such frequencies and in such form as specified.

87.13 Permitting Requirements for Class II, III, IV(2)(a), and V. A. Wells.

- (A) A permit shall be obtained from the Department prior to constructing, operating, or using any Class II, III, IV(2)(a) or V. A. well for injection.
- (B) 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 officer or ranking elected official.
- (C) The person signing the application certifies the well will be operated in accordance with approved specifications and conditions of the permit.
- (D) All reports required by permits, other information requested by the Department, and all permit applications submitted for Class II wells under the UIC program shall be signed by a person described in paragraph B of this section, 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 B. of this section;
 - (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.);
 - (3) The written authorization is submitted to the Department.
- (E) If an authorization under D. of this section 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 D. of this section must be submitted to the Department prior to or together with any reports, information, or applications to be signed by an authorized representative.

- (F) Any person signing a document under paragraphs B., D., or E. of this section shall make the following certification:

“I certify under 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.”

- (G) An application shall be submitted in triplicate to the Department on forms furnished by the Department and shall include the following:

- (1) Class II and III Wells;
 - (a) The activities conducted by the applicant which require it to obtain a permit.
 - (b) Name, mailing address, and location of the facility for which the application is submitted.
 - (c) Up to four Standard Industrial Codes which best reflect the principal products or services provided by the facility.
 - (d) The owner’s and (if different than the owner) operator’s name, address, telephone number, ownership status, and status as federal, state, private, public, or other entity.
 - (e) A listing of all permits or construction approvals received or applied for under any of the following programs:
 - (i) Hazardous Waste Management program under RCRA;
 - (ii) UIC program under SDWA;
 - (iii) NPDES programs under CWA;
 - (iv) Prevention of Significant Deterioration (PSD) program under the Clean Air Act;
 - (v) Nonattainment program under the Clean Air Act;
 - (vi) National Emission Standards for Hazardous Pollutants (NESHAPS) preconstruction approval under the Clean Air Act;
 - (vii) Ocean dumping permits under the Marine Protection Research and Sanctuaries Act;
 - (viii) Dredge or fill permits under section 404 of CWA;
 - (ix) Other relevant environmental permits, including State permits.
 - (f) A topographic map (or other map if a topographic map is unavailable) extending one mile beyond the property boundaries of the source, depicting the facility and each of its intake and discharge structures; each of its hazardous waste treatment, storage or disposal facilities; each well where fluids from the facility are injected underground; and other wells, springs, surface water bodies, mines (surface and subsurface), and quarries in the map area.
 - (g) A brief description of the nature of the business.
 - (h) 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 name and location of all producing wells, injection wells, abandoned wells, dry wells, and water wells. The map shall also show faults, or other geological discontinuities if known or suspected.
 - (i) A tabulation of data reasonably available from public records or otherwise known to the applicant on all wells within the area of review included on the map required under paragraph (h) of this section which penetrate the proposed injection zone or, in the case of Class II wells operating over the fracture pressure of the injection formation, all known wells within the area of review which penetrate formations affected by the increase in pressure. Such data shall include a description of each well’s type, construction, date drilled, location, depth, record of plugging and completion, and any additional information the Department may require. In cases where the information would be repetitive and the wells are of similar age, type, and construction the Department may elect to only require data on a representative number of wells.
 - (j) Illustrations (maps, cross-sections, fence diagrams) prepared by a geologist showing:

- (i) The regional geologic setting;
 - (ii) The detailed hydrogeologic structure of the local area;
 - (iii) The vertical and lateral limits of all underground sources of drinking water, confining zones, and injection zones within the area of review, their position relative to the injection formation and the direction of water movement in every underground source of drinking water and injection zone which may be affected by the proposed injection.
- (k) Proposed operating data as follows:
 - (i) Average and maximum daily rate and volume of fluid to be injected;
 - (ii) Average and maximum injection pressure; and
 - (iii) Source and a qualitative analysis and ranges in concentrations of the constituents in the injected fluid;
 - (l) Proposed formation testing program.
 - (m) Proposed stimulation program.
 - (n) Proposed injection procedure.
 - (o) Drawings of the surface and subsurface construction details of the well.
 - (p) Plans for meeting the monitoring requirements for the Class proposed.
 - (q) Expected changes in pressure, formation fluid displacement, and direction of movement of injected fluid.
 - (r) Contingency plans to cope with all shut-ins or well failures so as to prevent the migration of contaminating fluids into underground sources of drinking water.
 - (s) A plan for plugging and abandonment that will prevent the movement of fluids either into an underground source of drinking water or from one underground source of drinking water to another.
 - (t) 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 these regulations.
 - (u) The corrective action proposed to be taken as required by these regulations.
- (2) Class IV(2)(a) and Class V. A. Wells;
 - (a) The activities conducted by the applicant which require it to obtain a permit.
 - (b) Name, mailing address, and location of the facility for which the application is submitted.
 - (c) The owner's and (if different than the owner) operator's name, address, telephone number, ownership status, and status as federal, state, private, public, or other entity.
 - (d) A brief description of the nature of the business.
 - (e) Proposed operating data as follows:
 - (i) Average and maximum daily rate and volume of fluid to be injected;
 - (ii) Average and maximum injection pressure; and
 - (iii) Source and an analysis of the chemical, physical, biological and radiological characteristics of the injected fluid.
 - (f) Drawings of the surface and subsurface construction details of the well.
- (H) All applications for a new permit and renewal or transfer of an existing permit shall be filed in sufficient time prior to commencement of well construction, or transfer to allow compliance with all legal procedures.
 - (I) If the Department finds the application is complete, the Department shall prepare a draft permit or issue a notice of intent to deny the application. If the Department finds that the tentative decision to deny or terminate was incorrect, the Department shall withdraw the notice of intent and prepare a draft permit.
 - (J) The Department shall prepare a Statement of Basis for each notice of intent to deny or terminate, and for each draft permit for non-major facilities. A Fact Sheet shall be prepared for each draft permit for a major facility and for each draft permit which the Department finds is the subject of widespread public interest. The Statement of Basis shall briefly describe the derivation of the conditions of the draft permit and the

- reasons for them or, in the case of notices of intent to deny or terminate, reasons supporting the tentative decision. Fact Sheets prepared when applicable shall include:
- (1) A brief description of the type of facility or activity which is the subject of the draft permit;
 - (2) The type and quantity of fluids which are proposed to be injected;
 - (3) A brief summary of the basis for the draft permit conditions including references to applicable statutory or regulatory provisions;
 - (4) Reasons why any requested variances or alternatives to required standards do or do not appear justified;
 - (5) Name and telephone number of a person to contact for additional information; and,
 - (6) A description of the procedures for reaching a final decision on the draft permit including:
 - (a) The beginning and ending dates of the public comment period and the address where comments will be received;
 - (b) Procedures for requesting a hearing and the nature of that hearing; and,
 - (c) Any other procedures by which the public may participate in the final decision.
- (K) The Department will issue a public notice when any of the following actions have occurred:
- (1) A permit action has been tentatively denied;
 - (2) A draft permit has been prepared;
 - (3) A public hearing has been scheduled; or,
 - (4) An appeal has been granted.
- (L) The contents of the public notice will include:
- (1) Name, address and phone number of the office processing the permit action;
 - (2) Name and address of each applicant whose application is being considered;
 - (3) A brief discussion of the business conducted at the facility;
 - (4) Name, address and phone number of person from whom interested person may obtain additional information;
 - (5) The purpose of the hearing;
 - (6) Reference to the date of previous public notices relating to the permit; and,
 - (7) A brief description of the comment procedures and the date, time, and place of any hearing that will be held, including procedures to request a hearing.
- (M) The public notice shall allow at least thirty days for public comment.
- (N) No public notice will be issued for Class V.B. Wells or non-major Class V.A. Wells. No public notice will be issued for other classes of wells when a request for permit modification, revocation and reissuance, or termination is denied. In such cases, written notice only will be given to the requestor and permittee.
- (O) The Department will hold a public hearing whenever the Department finds, on the basis of requests, a significant degree of public interest in draft permits and whenever such hearing might clarify one or more issues involved in the permit decision. Public notice of a public hearing may be given at the same time as public notice of a draft permit and the two notices combined.
- (P) Public notices will be circulated in the geographical area of the proposed facility at least thirty days prior to the date of the hearing:
- (1) By posting a copy of the notice at the Courthouse in the county in which the facility is located;
 - (2) By publishing the notice three times in a newspaper having general circulation in the said county;
 - (3) By mailing to all appropriate government agencies;
 - (4) By mailing to any person or group upon request; and,
 - (5) By mailing a copy to all persons on the Department's mailing lists for receiving such notices.
- (Q) The Department shall issue a final permit decision after the close of the public comment period. A final permit decision shall become effective thirty days after serving notice of the final decision to the applicant and each person who has submitted written comments or requested notice of the final permit decision; unless:
- (1) A later date is specified by the Department; or,

- (2) A participant in the public hearing or public review process petitions the decision within thirty days after the final decision is issued; or,
 - (3) No comments requested a change in the draft permit, in which case the permit shall become final upon issuance.
- (R) The Department will respond to comments received at the time a final permit is issued. The response will be made available to the public and include:
- (1) Which provisions, if any, of the draft permit have been changed in the final permit decision and the reasons for the changes; and,
 - (2) A description and response to all significant comments on the draft permit raised during the public comment period or during any hearing.
- (S) All records, reports and information required to be submitted to the Department; public comment on these records, reports or information; and the draft and final permits shall be disclosed to the public unless the person submitting the information can show that such information, if made public, would disclose methods or processes entitled to protection as trade secrets. The Department shall determine which information is entitled to confidential treatment. In the event the Department determines that such information is entitled to confidential treatment, the Department shall take steps to protect such information from disclosure. The Department shall submit the information considered to be confidential in the Department's determination of confidentiality.
- (T) The Department shall:
- (1) Provide facilities for the inspection of information relating to UIC permit applications and permits;
 - (2) Ensure the employees handle requests for such inspections promptly; and,
 - (3) Ensure that copying machines or devices are available for a reasonable fee.
- (U) Injection may not commence until construction is complete, the permittee has submitted notice of completion of construction to the Department, and the Department has inspected or otherwise reviewed the injection well and finds it in compliance with these regulations.
- (1) Prior to granting approval for the operation of any injection well, the Department shall require a satisfactory demonstration of mechanical integrity pursuant to these regulations.
 - (2) Prior to granting approval for the operation of any injection well, the Department shall consider the following information when such information is required by these regulations:
 - (a) All available logging and testing data on the well;
 - (b) The proposed operating procedures;
 - (c) The results of the formation testing program; and,
 - (d) The status of corrective action on defective wells in the area of review.
- (V) The Department may establish maximum injection volumes and pressures and such other permit conditions as necessary to assure that fractures are not initiated in the confining zone adjacent to an underground source of drinking water; that injected fluids do not migrate into underground sources of drinking water; that formation fluids are not displaced into any underground sources of drinking water; and to assure compliance with operating requirements.
- (W) A permit shall be issued for a period not to exceed ten years from the date of issuance for a Class IV(2)(a) and Class V. A. wells. On expiration of the permit, the permit shall become invalid unless a complete application is made, prior to the expiration date, for a renewal of the subject permit. For Class II and III wells the permit shall be issued for a period up to the operating life of the facility. The Department shall review each issued Class II or III U.I.C. permit at least once every five years to determine whether it should be modified, revoked and reissued, or terminated.
- (X) 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.

- (1) 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.
 - (2) The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with the permit.
 - (3) The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility.
 - (4) The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
 - (5) Monitoring results shall be reported at the intervals specified elsewhere in the permit.
 - (6) Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date.
 - (7) 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 Department, it shall promptly submit such facts or information.
- (Y) 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.
- (1) Causes for permit modification or revocation and reissuance:
 - (a) 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;
 - (b) The Department has received information not available at the time of permit issuance that would have justified application of different permit conditions at the time of issuance. This cause shall include any information indicating that cumulative effects on the environment are unacceptable;
 - (c) The standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued. The Department may determine 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 reasonable available remedy.
 - (2) The Department may terminate a permit during its term or deny a permit renewal application for the following causes:
 - (a) Noncompliance by the permittee with any condition of the permit;
 - (b) 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
 - (c) A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit termination.
 - (d) The Department shall follow the procedures as prescribed in Section 48-1-50 of the 1976 South Carolina Code of laws.
- (Z) The permit does not convey any property rights of any sort, or any exclusive privilege.
- (AA) The permittee shall furnish to the Department any information which the Department 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 Department, upon request, copies of records required by the permit to be kept.
- (BB) The permittee shall allow the Department, or an authorized representative, upon their presentation of credentials 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 compliances or as otherwise authorized, any substances or parameters.
- (CC) The permittee shall:
- (1) Retain copies of records of all monitoring information, including all calibration and maintenance records, all original strip chart recordings for continuous monitoring instrumentation and copies of all reports required by the permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended up to five years by request of the Department at any time. 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 any such sampling, measurements and analyses.
 - (2) Retain all records concerning the nature and composition of injected fluids until five years after completion of any plugging and abandonment. The Department may require the owner or operator to deliver the records to the Department at the conclusion of the retention period.
- (DD) The permit shall not be transferable to any person except after notice to and approval by the Department. The Department 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 appropriate.
- (EE) The permittee shall report any monitoring or other information which indicates that any contaminant may cause an endangerment to an underground source of drinking water and any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between underground sources of drinking water. The permittee shall immediately stop injection upon determination that the injection system has malfunctioned and could cause fluid migration into or between underground sources of drinking water. The permittee shall not restart the injection system until the malfunction has been corrected and written approval is issued by the Department. The information shall be provided, to the Department, orally within eight hours of the occurrence. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the cause for the noncompliance has not been corrected, the anticipated time required for correction, and any steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance.

87.14 Criteria and Standards for Class II, III, IV(2)(a) and V.A. Wells.

- (A) All Class II and III wells shall be sited in such a fashion that they inject into a formation which is separated from any Underground Sources of Drinking Water by a confining zone that is free of known open faults or fractures, or other geological discontinuities within the area of review.
- (B) All Class II and III injection wells shall be cased and cemented to prevent 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.
 - (1) In determining and specifying casing and cementing requirements, the following factors shall be considered:
 - (a) Depth to the injection zone;
 - (b) Depth to the bottom of all Underground Sources of Drinking Waters; and,

- (c) Estimated maximum and average injection pressures.
- (2) In addition, the Department may consider information on:
 - (a) Corrosiveness of injected fluids and the physical and chemical characteristics of formation fluids;
 - (b) Lithology of injection and confining zones;
 - (c) External pressure, internal pressure, and axial loading;
 - (d) Hole size; (depth, diameter)
 - (e) Size and grade of all casing strings; and,
 - (f) Type and grade of cement and additives.
- (C) Appropriate logs and other tests shall be conducted during drilling and construction. A descriptive report interpreting the results of that portion of those logs and tests which specifically relate to an Underground Source of Drinking Water and the confining zone adjacent to it, and the injection and adjacent formations shall be prepared by a knowledgeable log analyst and submitted to the Department. At a minimum, these 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 movement 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 shall be considered by the Department in setting logging and testing requirements:
 - (a) For surface casing intended to protect underground sources of drinking water in areas where the lithology has not been determined:
 - (i) Electric and caliper logs before casing is installed; and,
 - (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) Electric, porosity and gamma ray logs before the casing is installed;
 - (ii) Fracture finder log; and,
 - (iii) A cement bond, temperature, or density log after the casing is set and cemented.
- (D) At a minimum, the following information concerning the injection formation shall be determined or calculated:
 - (1) Fluid pressure;
 - (2) Estimated fracture pressure;
 - (3) Physical and chemical characteristics of the injection zone.
- (E) Operating Requirements. Operating requirements shall, at a minimum specify that:
 - (1) Injection pressure at the wellhead shall not exceed a maximum which shall be calculated so as to assure that the pressure during injection does not initiate new fractures or propagate existing fractures in the confining zone adjacent to the Underground Sources of Drinking Waters. In no case shall injection pressure 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.
- (F) Monitoring Requirements for Class II Wells. Monitoring requirements shall, at a minimum, include:
 - (1) Monitoring of the nature of injected fluids at time intervals sufficiently frequent to yield data representative of their characteristics;
 - (2) Observation of injection pressure, flow rate, and cumulative volume at least with the following frequencies:
 - (a) Weekly for produced fluid disposal operations;

- (b) Monthly for enhanced recovery operations;
 - (c) Daily during the injection of liquid hydrocarbons and injection for withdrawal of stored hydrocarbons; and,
 - (d) Daily during the injection phase of cyclic steam operations; And recording of one observation of injection pressure, flow rate and cumulative volume at reasonable intervals no greater than thirty days.
- (3) A demonstration of mechanical integrity at least once every five years during the life of the injection well;
 - (4) Maintenance of the results of all monitoring until the next permit review; and,
 - (5) Hydrocarbon storage and enhanced recovery may be monitored on a field or project basis rather than on an individual well basis by manifold monitoring. Manifold monitoring may be used in cases of facilities consisting of more than one injection well, operating with a common manifold. Separate monitoring systems for each well are not required provided the owner/operator demonstrates that manifold monitoring is comparable to individual well monitoring.
- (G) Monitoring Requirements for Class III, IV(2)(a) and V.A. Wells.
- (1) An appropriate number of monitoring wells shall be completed into the injection zone and into any underground sources of drinking water which could be affected by the injection operation. These wells shall be located in such a fashion as to detect any excursion of injection fluids, process by-products, or formation fluids outside the injection area or zone. If the operation may be affected by subsidence or catastrophic collapse the monitoring wells shall be located so that they will not be physically affected.
 - (2) In determining the number, location, construction and frequency of monitoring of the monitoring wells the following criteria shall be considered:
 - (a) The population relying on the USDW affected or potentially affected by the injection operation;
 - (b) The proximity of the injection operation to points of withdrawal of drinking water;
 - (c) The local geology and hydrology;
 - (d) The operating pressures and whether a negative pressure gradient is being maintained;
 - (e) The nature and volume of the injected fluid, the formation water, and the process by-products; and
 - (f) The injection well density.
 - (3) Monitoring requirements shall, at a minimum, specify:
 - (a) Monitoring of the nature of injected fluids with sufficient frequency to yield representative data on its characteristics;
 - (b) Monitoring of injection pressure and either flow rate or volume semi-monthly, or metering and daily recording of injected and produced fluid volumes as appropriate;
 - (c) Demonstration of mechanical integrity at least once every five years during the life of the well;
 - (d) Monitoring of the fluid level in the injection zone semi-monthly, where appropriate and monitoring of the parameters chosen to measure water quality in the monitoring wells semi-monthly; and,
 - (e) All Class III wells may be monitored on a field or project basis rather than an individual well basis by manifold monitoring. Manifold monitoring may be used in cases of facilities consisting of more than one injection well, operating with a common manifold. Separate monitoring systems for each well are not required provided the owner/operator demonstrates that manifold monitoring is comparable to individual well monitoring.
- (H) Reporting Requirements for Class II Wells.
- (1) Reporting requirements include a quarterly report to the Department summarizing the results of monitoring required. Such summary shall include monthly records of injected fluids, and any major

changes in characteristics or sources of injected fluid. Previously submitted information may be included by reference.

- (2) Owners or operators of hydrocarbon storage and enhanced recovery projects may report on a field or project basis rather than an individual well basis where manifold monitoring is used.
- (I) Reporting Requirements for Class III and Class V.A. Wells. Reporting requirements include:
- (1) Quarterly reporting to the Department on required monitoring;
 - (2) Results of mechanical integrity and any other periodic test required by the Department reported with the first regular quarterly report after the completion of the test; and
 - (3) Monitoring may be reported on a project or field basis rather than individual well basis where manifold monitoring is used.

87.15 Plugging and Abandonment Requirements for Injection Wells.

- (A) Prior to the plugging or abandonment of any injection well the permittee shall:
- (1) Provide advance notice of 180 days to the Department;
 - (2) Submit a revised plugging and abandonment plan to the Department which shall include:
 - (a) The type and number of plugs to be used;
 - (b) The type, grade and quantity of cement to be used;
 - (c) The proposed location in the well of each plug including the elevation of the top and bottom;
 - (d) A description of the placement method for the plugs. (Placement of the cement plugs shall be by the balance method, **the** dump bailer method, the two-plug method, or an alternative method approved by the Department which will reliably provide a comparable level of protection to underground sources of drinking water.)
 - (e) Well construction design details.
- (B) The well to be abandoned shall be in a state of static equilibrium with the mud weight equalized top to bottom, by a method prescribed by the Department prior to the placement of the cement plug(s).
- (C) Prior to granting final approval to abandon an injection well, the permittee shall demonstrate to the satisfaction of the Department that the well has been plugged in such a manner which will not allow the movement of fluids either into or between underground sources of drinking water.

87.16 Violations and Penalties.

- (A) Any person or persons violating these regulations shall be subject to the penalties provided in Section 48-1-320 and Section 48-1-330, of the 1976 Code of Laws as amended.
- (B) The Department will:
- (1) Investigate all citizen complaints;
 - (2) Not oppose intervention by any citizen when permissive intervention may be authorized by statute, rule, or regulation; and
 - (3) Publish notice of and provide at least 30 days for public comment on any proposed settlement of a State enforcement action. Where the violation(s) poses an imminent and/or substantial hazard to the health of persons or to the environment, the Department may waive this requirement.