

CHAPTER 74:55:01
UNDERGROUND INJECTION CONTROL -- CLASS III WELLS

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74:55:01:01. Definitions. Terms used in this chapter mean:

(1) “Abandoned well,” a well whose use has been permanently discontinued or which is in such a state of disrepair that it cannot be used for its intended purpose or for observation purposes, or which is abandoned pursuant to SDCL 46-6-27;

(2) "Aquifer," ~~a saturated permeable geologic unit that can transmit significant quantities of water under ordinary hydraulic gradients~~ a geologic formation, group of geologic formations, or part of a geologic formation that contains sufficient saturated permeable material to yield economical quantities of water to wells and springs;

(3) "Aquifer restoration," the process of achieving or exceeding the water quality levels established by the secretary for any production area;

(4) "Area permit," a well permit which authorizes the construction and operation of two or more similar wells within a specified area;

(5) "Area of review," that area within one-quarter mile radius of the injection well;

(6) "Baseline," a pre-existing condition, concentration, quantity, or quality that is set as a specific value or guideline against which future values are compared;

(7) "Baseline well," a well from which groundwater is analyzed to define baseline quality in the mine area (a regional baseline well) or in the production area (a production area baseline well);

(8) "Best practicable technology," a technology-based process justifiable in terms of existing performance and achievability in relation to health and safety which minimizes, to the extent safe and practicable, disturbances and adverse impacts of the operation on human or animal life, fish, wildlife, plant life, and related environmental values;

(9) "Board," the South Dakota Board of Water Management;

(10) "Casing," a tubular structure, generally of metal, concrete, or thermoplastic, which is installed in a well bore to maintain the well opening;

(11) "Catastrophic collapse," the sudden and utter failure of overlying strata caused by removal of underlying materials;

(12) "Cementing," the operation whereby a cement slurry is pumped into a drilled hole and forced behind the casing the process of mixing and placing cement grout in a hole to prevent the vertical movement of fluids in the hole or the annulus;

(13) "Class III well," under the federal Underground Injection Control (UIC) program promulgated under Part C of the Safe Drinking Water Act, 42 U.S.C. 300 et seq (2003), a well that injects fluids for extraction of minerals, including solution mining of minerals. The term includes any well used in:

(a) Mining of sulfur by the Frasch process;

(b) In situ leach mining of uranium or other metals. This category includes only in situ production from ore bodies that have not been conventionally mined. Wells used for solution mining, such as stope leaching, are classified as Class V wells; or

(c) In situ mining of salts, trona, or potash;

(14) "Confining zone," a geological unit that is stratigraphically adjacent to one or more aquifers; and that restricts the movement of ground water into and out of the aquifer or aquifers it confines;

(15) "Contaminant," any physical, chemical, biological, or radiological substance or matter in water, soil, or air that is potentially harmful to human health or the health of animals or plants;

(16) "Control parameter," a chemical constituent of groundwater monitored on a routine basis and used to detect or confirm the presence of recovery fluids in a designated monitor well;

(17) "Excursion," ~~the movement of injection leaching solution from the production area to a monitor well, which confirms that a control parameter has increased in value to an amount equal to or greater than the upper limit established by the secretary~~ any unwanted and unauthorized movement of recovery fluid out of the production zone as a result of in situ leach mining activities;

(18) "Exempted aquifer," an aquifer or portion of an aquifer that meets the criteria in the definition of "underground source of drinking water" but which has been exempted according to § 74:55:01:24;

(19) "Facility," all contiguous land, structures, and improvements on the land used for underground injection activities associated with Class III wells;

(20) "Flow rate," the volume per time unit given to the flow of gases or other fluids which emerges from an orifice, pump, or turbine or which passes along a conduit or channel;

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

(22) "Formation," a body of consolidated or unconsolidated rock characterized by a degree of lithologic homogeneity that is prevailing, but not necessarily, tabular and is mapable on the earth's surface or traceable in the subsurface;

(23) "Formation fluid," fluid present in a formation under natural conditions as opposed to introduced fluids;

(24) "Groundwater," water below the land surface in a zone of saturation;

(25) "Ground water restoration," the condition achieved when the quality of ground water affected by the injection of mining solution in production and nonproduction zones is returned to restoration table values;

(26) "Grout," a slurry that is used to form a permanent, impervious seal in the annular space or to fill and seal abandoned holes or wells;

(27) "Injection well," a well into which fluids are injected, a Class III well;

(28) "Injection zone or production zone," a geological formation, group of formations, or part of a formation receiving fluids through a well for the purposes of mineral recovery;

(29) In situ leach mining," a method of in-place surface mining in which limited quantities of overburden are disturbed to install a conduit or well and the mineral is mined by injecting or recovering a liquid, solid, sludge, or gas that causes the leaching, dissolution, gasification, liquefaction, or extraction of the mineral. In situ leach mining does not include the primary or enhanced recovery of naturally-occurring oil and gas;

(30) "Lithology," the description of rocks on the basis of their physical and chemical characteristics;

(31) "Lixiviant," leaching solution injected into a mineral containing formation;

(32) "Mechanical integrity," the condition of an injection well, when there is no significant leak in the casing, tubing, or packer, and there is no significant fluid

movement into an unauthorized zone or underground source of drinking water through vertical channels adjacent to the injection well bore. The determination that there are no significant leaks or fluid movement is based on the results of the mechanical integrity testing;

(33) "Mine area," a production area and that area encompassed by a radius around the production area not more than 400 feet out from the closest injection wells;

(34) "Mining solution," the injected fluid containing the chemicals used to mobilize the ore minerals into solution;

(35) "Monitor well," a well used for the sampling or measurement of a chemical or physical property of groundwater;

(36) "Negative pressure gradient," the condition that results from the creation of a localized hydrological cone of depression or pressure sink within the production zone caused by the production of more fluid than was injected. This pressure gradient provides containment of the recovery fluid by causing natural ground water to move from the surrounding area toward the production zone;

(37) "New injection well," a well or group of wells not in existence on December 24, 1981;

(38) "Nonproduction zone," an aquifer which is above or below the active production zone;

(39) "Owner or operator," a person who owns or operates a facility or activity subject to regulation under this chapter;

(40) "Permit area" ~~or "site," the land or water area where a facility or activity is physically located or conducted, including adjacent land used in connection with the facility or activity~~ the area, including the affected lands, within specified boundaries approved by the board;

(41) "Plugging," the process of filling a borehole or a well to restore hydrologic conditions and to prevent migration of ground water between formations;

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

(43) "Postclosure Period," For each Class III injection well operation, the operator shall begin postclosure care period immediately following the determination by the board

that the operator has achieved restoration of the aquifer(s) and continue postclosure care for thirty years. The board may modify the permit to reduce the length of the postclosure care period at any time after aquifer restoration has been achieved if a reduced period ensures compliance with all applicable performance standards. The board may modify the permit to extend the period beyond thirty years if necessary to ensure compliance with all applicable performance standards or design and operating criteria.

(44) "Pressure," the total force per unit area acting on a surface;

(45) "Production area," the plan view showing the area in which mineral extraction is taking place;

(46) "Production well," a well or conduit through which a recovery fluid, mineral, or product is produced from the subsurface. If a well is used for both injection and recovery, it is considered an injection well for the purposes of this chapter until the operator has adequately demonstrated to the department that the well has been converted to uses other than injection;

(47) "Production zone," the geologic interval into which mining solutions are to be injected and recovery fluids extracted;

(48) "Production area authorization," a document issued by the secretary under the terms of the permit, approving the initiation of mining activities in a specified production area within a permit area;

(49) "Receiving strata," the geologic units within which the production zones are contained;

(50) "Recovery fluid," the fluid resulting from the injection of mining solution that has dissolved or mobilized ore minerals from the production zone for extraction and recovery;

(51) "Restored aquifer," an aquifer whose local average water quality has, by natural or artificial processes, returned to at least restoration table values ~~levels or better~~;

(52) "Restoration table," a list of parameters with assigned ground water quality restoration values that are the compliance requirements for restoration of the production and nonproduction zones;

(53) "Satellite facility," a uranium recovery or ion exchange facility set up at a well field a remote distance from a central processing plant. The satellite facility extracts uranium from an in situ recovery fluid by loading it on an ion exchange resin. The loaded resin is then transported to a central processing plant where the uranium is removed from the resin and processed into yellowcake;

(54) "Secretary," the secretary of the South Dakota Department of Environment and Natural Resources or the secretary's designee;

(55) "Stratum," a single sedimentary bed or layer, regardless of thickness, that consists of generally the same kind of rock material;

(56) "Unauthorized zone," the area outside the production zone that is not permitted for the injection of mining solution or extraction of recovery fluid, or authorized for any excursion of recovery fluid out of the production zone;

(57) "Underground source of drinking water or USDW," an aquifer or part of an aquifer that meets any one of the following criteria. The aquifer or part of an aquifer:

- (1) Supplies any public water system;
- (2) Contains sufficient quantities of ground water to supply a public water system;
- (3) Currently supplies drinking water for human consumption;
- (4) Contains fewer than 10,000 milligrams per liter of total dissolved solids; and
- (5) Is not an exempted aquifer.

(58) "Upper limit," the uppermost value of any control parameter which has been found in baseline monitoring or as established by the secretary;

(59) "Upper limit value," a value greater than the maximum value of a chemical or physical parameter that can be attributed to natural fluctuations and analytical variability. Upper limit values are determined from the baseline sampling and agreed upon by the department and the operator prior to initiation of mining. Upper limit values are used to determine when there is movement of recovery fluid out of authorized areas or unapproved changes to a chemical or physical parameter. For certain parameters, such as pH, an upper limit value may be defined as an acceptable range of values;

(60) "Verifying analysis," a second sampling and analysis of control parameters for the purpose of confirming a routine sample analysis which indicates an increase in a control parameter to a level exceeding the upper limit;

(61) "Well," an artificial excavation or opening in the ground, made by digging, boring, drilling, jetting, or another artificial method and often walled or cased to prevent the sides from caving in;

(62) "Well injection" or "underground injection," the subsurface emplacement of fluids through a bored, drilled, or driven well or through a dug well where the depth of the dug well is greater than the largest surface dimension;

(63) "Well log," a record of physical parameters of a borehole obtained by techniques of borehole geophysics that can be interpreted in terms of the characteristics of the rocks, the fluids contained in the rocks, and the construction of the well; lithologic or driller's records derived from drill cuttings;

(64) "Well plug," a watertight and gastight seal installed in a borehole or well to prevent movement of fluids;

(65) "Well monitoring," the measurement, by on-site instruments or laboratory methods, of the quality of water in a well; and

(66) "Yellowcake," a processed oxide of uranium, U_3O_8 , that is extracted and concentrated from uranium ore.

Source: 8 SDR 71, effective December 24, 1981; 11 SDR 30, effective August 30, 1984; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:01, July 1, 1996.

General Authority: SDCL ~~34A-2-12, 34A-2-28.~~ 34A-2-93.

Law Implemented: SDCL 34A-2-12, 34A-2-28.

74:55:01:02. Class III injection wells subject to the provisions of this chapter. A Class III injection well for the in situ mining of uranium minerals shall comply with the

provisions of this chapter. "Well," as used in this chapter, means a well associated with a Class III mining operation.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:02, July 1, 1996.

General Authority: SDCL ~~34A-2-12, 34A-2-31~~ 34A-2-93.

Law Implemented: SDCL 34A-2-31.

74:55:01:03. Permit required for well injection -- Plans and specifications required. No person may begin injection or construction, installation, modification, or operation of a facility which may result in well injection into, above, or through an underground source of drinking water without a permit to do so from the board. Application for a permit shall be submitted on forms provided by the secretary. The permit shall not be issued until the application has been completed by the owner or operator of the site. Plans and specifications for the injection facilities shall be submitted to the secretary in accordance with § 74:53:04. Data used in completing the application shall be retained for at least three years after the date of submission.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:03, July 1, 1996.

General Authority: SDCL ~~34A-2-12, 34A-2-31~~ 34A-2-93.

Law Implemented: SDCL 34A-2-28, 34A-2-29.

74:55:01:04. Date of application for new wells. Operators of a new injection well shall submit a complete application at least 270 days before the date construction is expected to begin unless the new well is covered by an area permit.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:04, July 1, 1996.

General Authority: SDCL ~~34A-2-12, 34A-2-31~~ 34A-2-93.

Law Implemented: SDCL 34A-2-28.

74:55:01: 05. Signatories of permit application. 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 proprietor: by a general partner or proprietor; or
- (3) For a municipal, state, federal, or other public agency: by either a principal executive officer or ranking elected official.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:05, July 1, 1996.

General Authority: SDCL 34A-2-~~30~~ 93.

Law Implemented: SDCL 34A-2-28.

74:55:01:06. Qualifications for duly authorized representative of signatory.
All reports shall be signed by a duly authorized representative of the official signatory or

by the official signatory. A person is a duly authorized representative if the authorization meets the following criteria:

- (1) It is made in writing by the legal signatory;
- (2) It specifies an individual or position having responsibility for the overall operation; and
- (3) It is submitted to the secretary either prior to or along with documents signed by the authorized representative.

Changes in authorization shall be submitted in writing to the secretary.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:06, July 1, 1996.

General Authority: SDCL 34A-2-~~30~~ 93.

Law Implemented: SDCL 34A-2-28.

74:55:01:07. Certification requirements of signatory. A person signing a permit application or report 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 or imprisonment."

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:07, July 1, 1996.

General Authority: SDCL 34A-2-~~30~~ 93.

Law Implemented: SDCL 34A-2-28.

74:55:01:08. Duration of permits. A permit for a well may be effective for up to five years.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:08, July 1, 1996.

General Authority: SDCL 34A-2-~~30~~ 93.

Law Implemented: SDCL 34A-2-36.

74:55:01:09. Permit transfer. Permits may be transferred from a permittee to another person by providing written notice to the secretary at least ~~390~~ days before the proposed transfer. The permittee must submit the following information to the secretary in writing by certified mail before the proposed transfer date:

- (1) The name and address of the current facility;
- (2) The name and address of the new owners;
- (3) The permit number;
- (4) The names of the new principal persons responsible for the permit; and

(5) A notarized statement signed by the new principal officer stating that the principal officer has read the permit and will abide by all the conditions of the permit.

The current permittee must include in the notice of proposed transfer a written agreement between the current and the new permittee which includes a specific date for transfer of responsibility for the permit, its coverage, and the liability between the parties.

The secretary shall provide notice to the board of the proposed transfer. A permit is automatically transferred to the new permittee if the secretary does not petition the board to review the permit prior to the proposed transfer date. If no petition is filed, the transfer becomes effective on the proposed transfer date. The new permittee may demonstrate financial resources in the form of bonding or other financial assurance approved by the secretary.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:09, July 1, 1996.

General Authority: SDCL 34A-2-~~30~~ 93.

Law Implemented: SDCL 34A-2-28.

74:55:01:10. Issuance of area permit. A permit may be issued for an area, rather than for each individual well, provided that the injection wells meet the following requirements:

(1) They are described and identified by location in the permit applications if they are existing wells;

- (2) They are within the same well field, permit area, or similar unit;
- (3) They are of similar construction;
- (4) They are of the same well class; and
- (5) They are operated by a single owner or operator.

Area permits shall specify the area within which underground injections are authorized and the requirements for construction, monitoring, reporting operations, and abandonment for all wells authorized by the permit.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:10, July 1, 1996.

General Authority: SDCL 34A-2-~~30~~93.

Law Implemented: SDCL 34A-2-36.

74:55:01:11. Authorizing new injection wells under area permit. The area permit may authorize the permittee to construct and operate new injection wells within the permit area provided the following requirements are met:

- (1) The permittee notifies the secretary quarterly when and where new wells have been or will be located;
- (2) The additional well meets the area permit criteria in § 74:55:01:10; and

(3) The cumulative effect of drilling and operation of additional injection wells is considered by the secretary during evaluation of the area permit application and is acceptable to the secretary.

If the additional well does not meet the area permit requirements, the secretary may modify, terminate, or enforce the permit.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:11, July 1, 1996.

General Authority: SDCL 34A-2-~~30~~ 93.

Law Implemented: SDCL 34A-2-36.

74:55:01:12. Secretary recommendation on permit applications. ~~The a~~After reviewing the application and any other pertinent information, the secretary shall recommend in writing to the board, including the reasons for the recommendation, whether the permit should be issued or denied. A recommendation that a permit be issued shall include a proposed permit with the conditions necessary to ensure compliance with SDCL 34A-2 and this chapter.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:12, July 1, 1996.

General Authority: SDCL 34A-2-~~30~~ 93.

Law Implemented: SDCL 34A-2-31.

74:55:01:13. Notice of recommendation. The secretary shall mail a copy of the recommendation to the applicant, board members, and county commissioners for the county in which the proposed permit area lies, along with a copy of the newspaper notice to be published pursuant to this section. Notice of the recommendation shall be published twice in a legal newspaper in the county where the injection is to take place. The notice shall include a brief statement describing the recommendation and the reasons for it. It shall also include a statement that persons desiring to contest the recommendation must file a petition within ~~the secretary by a certain date, not less than 30 days or more than 40 days~~ after the date of publication, to contest the recommendation and a statement describing where copies of the recommendation or other information may be obtained.

Source: 8 SDR 71, effective December 24, 1981; 11 SDR 30, effective August 30, 1984; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:13, July 1, 1996.

General Authority: SDCL 34A-2-30 93.

Law Implemented: SDCL 34A-2-28, 34A-2-35.

74:55:01:14. Recommendation becomes final if uncontested. The secretary's recommendation shall be the final decision of the board and a proposed permit shall be considered as having been approved by the board unless a petition is filed to contest the recommendation pursuant to § 74:55:01:13 or the secretary initiates a contested case by filing a written motion. The applicant or an interested person may appeal the decision of

the secretary to the board by petitioning for a contested case hearing pursuant to § 74:50:02.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:14, July 1, 1996.

General Authority: SDCL 34A-2-~~30~~ 93.

Law Implemented: SDCL 34A-2-28.

74:55:01:15. Contents of petition. ~~A petition contesting the secretary's recommendation shall contain the following:~~

- ~~—— (1) A statement describing the petitioner's interest in the permit;~~
- ~~—— (2) The reasons which the petitioner alleges for its opposition to the secretary's recommendations; and~~
- ~~—— (3) The signature of the petitioner or its legal counsel Repealed.~~

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:15, July 1, 1996.

~~—— **General Authority:** SDCL 34A-2-30.~~

~~—— **Law Implemented:** SDCL 34A-2-28.~~

74:55:01:16. Intervention. ~~Whenever a contested case hearing has been initiated, whether by petition or on the motion of the secretary, an interested person may intervene~~

~~to support or contest the secretary's recommendation. Petitions to intervene should contain the following:~~

- ~~—— (1) A statement describing the petitioner's interest in the permit;~~
- ~~—— (2) The intervenor's reasons for supporting or opposing the secretary's~~
~~—— recommendations; and~~
- ~~—— (3) The signature of the intervenor or its legal counsel.~~

~~—— Petitions to intervene shall be filed at least 15 days before the date scheduled for the hearing Repealed.~~

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:16, July 1, 1996.

~~—— **General Authority:** SDCL 34A-2-30.~~

~~—— **Law Implemented:** SDCL 34A-2-28.~~

74:55:01:17. Answers to petitions. ~~All parties have ten days from the date of service to file answers to petitions contesting a recommendation or to intervene. The chair of the board may allow additional time if, in the chair's discretion, the complexity of the issues or convenience of the parties requires an extension. Requests for extension shall be in writing and filed with the secretary. The party requesting the extension shall mail copies to the chair of the board and to all parties. Response to requests for extension~~

~~shall also be in writing and shall be filed with the secretary. Copies shall be mailed to all parties Repealed.~~

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:17, July 1, 1996.

~~— **General Authority:** SDCL 34A-2-30.~~

~~— **Law Implemented:** SDCL 34A-2-28.~~

74:55:01:18. Filing procedures. ~~The originals of all pleadings, including petitions to contest, petitions to intervene, motions, and answers shall be filed with the secretary, either personally or by mail. The secretary shall mail copies to all board members and parties. Whenever these rules allow filing by mail, filing shall be complete upon mailing Repealed.~~

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:18, July 1, 1996.

~~— **General Authority:** SDCL 34A-2-30.~~

~~— **Law Implemented:** SDCL 34A-2-28.~~

74:55:01:19. Hearing date. ~~Upon receipt of a copy of a petition, request, or motion, the chair of the board shall set a hearing date not later than 30 days after the date designated in the notice published pursuant to § 74:55:01:13. The chair may extend the time for hearing beyond the 30 days if, in the chair's discretion, the complexity or the convenience of the parties requires an extension. Requests for extension shall be in~~

~~writing and filed with the secretary. Copies shall be mailed to the chair and to all parties. Responses to requests for extension shall also be in writing and shall be filed with the secretary. Copies shall be mailed to all parties~~ Repealed.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:19, July 1, 1996.

~~—**General Authority:** SDCL 34A-2-30.~~

~~—**Law Implemented:** SDCL 34A-2-28, 34A-2-35.~~

74:55:01:20. Notice of hearing. ~~When a date for hearing has been set, the secretary shall mail notice of the hearing to all parties. Notice shall include the items required by SDCL 1-26-17~~ Repealed.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:20, July 1, 1996.

~~—**General Authority:** SDCL 34A-2-30.~~

~~—**Law Implemented:** SDCL 34A-2-28, 34A-2-35.~~

74:55:01:21. Compliance schedule for permit conditions. A compliance schedule for permit conditions shall be set by the secretary not to exceed three years following the effective date of the permit. If the compliance schedule exceeds one year, then interim requirements and completion dates, not to exceed one year, shall be incorporated into the compliance schedule and permits. No later than 14 days following

each interim and final date the permittee shall notify the secretary of compliance or noncompliance.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:21, July 1, 1996.

General Authority: SDCL 34A-2-~~30~~ 93.

Law Implemented: SDCL 34A-2-39.

74:55:01:22. Information not considered confidential. The name and address of the permit applicant or permittee, information which deals with the existence, absence, or level of contaminants in drinking water, and the location of the proposed mining area are not confidential.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:22, July 1, 1996.

General Authority: SDCL 34A-2-~~30~~ 93.

Law Implemented: SDCL 34A-2-94.

74:55:01:23. Criteria for underground source of drinking water. An underground source of drinking water shall be protected from underground injection. No owner or operator may cause or allow any movement of injected fluid into an underground source of drinking water. An aquifer or part of an aquifer is an underground source of drinking water if it meets any one of the ~~following~~ criteria: in subdivision 74:55:01:01(57).

~~(1) Supplies any public water system; or~~

~~(2) Contains fewer than 10,000 milligrams per liter of total dissolved solids; and~~

~~is not an exempted aquifer.~~

Source: 8 SDR 71, effective December 24, 1981; 11 SDR 30, effective August 30, 1984; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:23, July 1, 1996.

General Authority: SDCL 34A-2-12, 34A-2-31 ~~93~~.

Law Implemented: SDCL 34A-2-10, 34A-2-11.

74:55:01:24. Designation of exempted aquifers. The board may exempt an ~~underground source of drinking water from protection under this chapter and designate it as an exempted aquifer if it does not currently serve as a source of drinking water and if it cannot now and will not in the future serve as an underground source of drinking water for any of the following reasons~~ aquifer or a portion of an aquifer and designate it as an exempted aquifer if it meets the following criteria:

~~(1) It produces minerals, hydrocarbons, or heat;~~

~~—— (2) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;~~

~~—— (3) It is so contaminated that it would be economically or technologically impractical to render the water fit for human consumption; and~~

~~—— (4) It is located over a Class III well mining area subject to subsidence or catastrophic collapse.~~

—— (1) It does not currently serve as a source of drinking water; and

—— (2) It cannot now and will not in the future serve as an underground source of drinking water for any of the following reasons:

—— (a) It produces minerals, hydrocarbons, or geothermal energy, or can be demonstrated by a permit applicant as part of a permit application for an in situ leach mine to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible;

—— (b) It is situated at a depth or location that makes recovery of water for drinking water purposes economically or technologically impractical;

—— (c) It is so contaminated that it would be economically or technologically impractical to render the water fit for human consumption; or

(d) It is located over an injection well mining area subject to subsidence or catastrophic collapse; or

(3) The total dissolved solids content of the ground water is more than 3,000 and less than 10,000 milligrams per liter and it is not reasonably expected to supply a public water system;

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:24, July 1, 1996.

General Authority: SDCL ~~34A-2-12, 34A-2-31-93.~~

Law Implemented: SDCL 34A-2-10, 34A-2-11.

74:55:01:25. Information considered for permit issuance. Prior to the issuance of a permit for the construction of a new well the secretary shall require the following:

- (1) A completed permit application;
- (2) Information required by 40 C.F.R. § 144.31 as it existed ~~May 15, 1986~~ on the day the permit hearing is conducted;

(3) A listing of all permits or construction approvals received or applied for in association with the in situ leach permit area under the following programs:

(a) An underground injection control (UIC) program under Part C of the Safe Drinking Water Act, 42 U.S.C. § 300h et seq. (2003).

(b) Other relevant permits, including other state and local permits or approvals.

(4) A certificate that the applicant has assured, through a performance bond or other appropriate means, the resources necessary to restore affected or mined aquifers and plug or abandon all wells; and

(5) The corrective action proposed to be taken for wells that are not properly sealed, completed, or abandoned within the area of review. Injection pressures shall be limited so that pressure in the injection zone does not exceed hydrostatic pressure at the site of any improperly completed or abandoned well in the area of review.

(6) Certification of applicant form.

Source: 8 SDR 71, effective December 24, 1981; 11 SDR 30, effective August 30, 1984; 12 SDR 204, effective June 23, 1986; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:25, July 1, 1996.

General Authority: SDCL 34A-2-~~30~~ 93.

Law Implemented: SDCL 34A-2-32.

74:55:01:26. Information required in permit application. The permit application shall include, but not be limited to, a technical report which includes the following:

(1) A physical description and analysis of the region and site, contour (topographic) maps that accurately locate and identify the permit area and show the location of any public highways, dwellings, utilities, and easements within the permit area and adjacent lands in relation to all proposed affected lands and proposed activities associated with the in situ leach operation, including all processing facilities, chemical storage areas, production areas, and roads. The map shall also clearly illustrate the location of monitoring wells;

(2) A description of the local geology of the site;

(3) A hydrogeologic description of the production zone;

(4) A description of the essential well drilling features for injection, recovery, and monitor wells and a plugging plan;

~~5) A plan for baseline and routine water quality monitoring using sampling methods recommended in Book 1, Chapter D2, of the series "Techniques of Water Resources Investigation of the United States Geological Survey", and analyses utilized in Standard Methods for the Examination of Water and Wastewater, American Public Health Association, et al; and Climatic data, including source and location of data;~~

~~(6) A description of the proposed leaching solution. A list and map of all adjudicated and permitted surface and ground water rights;~~

(7) A list and map of all known existing water wells, producing wells, injection wells, abandoned wells, and exploration holes, giving location, depth, producing

intervals, type of use, condition of casing, plugging procedures and date of completion for each well or drill hole within the permit area and on adjacent lands to the extent such information is available in public records and from a reasonable inspection of the property;

(8) Current land use and zoning within a one-mile radius of the mine permit boundary; and

(9) A list of occupied dwellings within a one-mile radius of the mine permit boundary.

(10) A site monitoring plan to include:

(a) Ground water quality for both production zones and nonproduction zones;

(b) Requirements for water quality sampling and analysis to include:

(i) A description of, or reference for, the procedures and methods used for sample collection, preservation, quality control, and detection levels;

(ii) The name, address, and telephone number of the laboratory performing the analyses, and the laboratory identification number; and

(iii) Signatures of the laboratory manager or technician performing the analyses;

- (11) A description of the proposed method of operation, including:
- (a) Injection rate, with the average and maximum daily rate and the volume of fluid to be injected;
 - (b) A description of the proposed mining injection solution and the chemical reactions that may occur during in situ leach operations mining as a result of injection of the mining solution;
 - (c) Proposed injection procedure;
- (12) Discussion and illustration of the estimated injection schedule, including:
- (a) A map showing the wellfields and proposed sequence for injection into the wellfields;
 - (b) An estimated time schedule for injection into each wellfield.
 - (c) Expected changes in pressure, native ground water displacement, and direction of movement of mining solution;
 - (d) The procedures to ensure that the installation of recovery, injection, and monitor wells will not result in hydraulic communication between the production zone and overlying or underlying stratigraphic horizons;
 - (e) The procedures used to verify that the injection and production wells are in communication with monitor wells completed in the receiving strata and employed for the purpose of detecting excursions;
 - (f) A subsidence analysis, using established geotechnical principles, that estimates, based upon the proposed in situ leach operation, the effect of subsidence upon overlying aquifers;

(g) A spill contingency plan to include reporting, response, assessment, and remedial actions;

(13) For uranium in situ leach mines, site-specific background radiological data including the results of measurements of radioactive materials occurring in important species, soil, air, and in surface and ground waters that could be affected by the proposed operations.

(14) A description of measures employed to prevent an excursion, and in the event of an excursion, the plans to report or to verify the excursion, and plans for remedial action in accordance with §§ 74:55:01:52 to 74:55:01:53.02, inclusive;

(15) An assessment of impacts that may reasonably be expected as a result of the mining operation to water resources and water rights inside the permit area and on adjacent lands, and the steps that will be taken to mitigate these impacts;

(16) A well maintenance plan to ensure:

(a) Wells are sufficiently covered to protect against entrance of undesirable material into the well;

(b) The wells are marked and can be clearly seen;

(c) The area surrounding each well is kept clear of brush or debris; and

(d) Monitoring equipment is appropriately serviced and maintained so monitoring requirements can be met;

(17) To the extent that existing information or data is available, a determination of whether existing water wells, former producing wells, former injection wells, former monitor wells, abandoned wells, and exploration holes in the proposed production area have been appropriately plugged, and if not, a plan for re-plugging these wells.

(18) The proposed methods to restore ground water quality, based on the geochemistry of the production zone and the chemistry of the injection solutions, to include:

(a) A proposed restoration table for all ground water quality restoration values;

(b) An estimated time schedule for achieving ground water restoration, to be carried to completion within five years in accordance with applicable restoration tables;

(19) A plan for the disposal of drill cuttings;

(20) Estimated costs for:

(a) Ground water reclamation as computed in accordance with established engineering principles, including:

(b) Facilities, materials, and chemicals used for ground water restoration;

(c) Ground water restoration in the production zone;

(d) Water treatment;

(e) Capping, plugging, and sealing of all wells;

(f) Personnel working on reclamation-related activities; and

(g) Collecting and analyzing samples from surface and ground water monitoring sites.

The secretary may require pre-submission meetings to discuss the procedures for baseline data and site characterization.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:26, July 1, 1996.

General Authority: SDCL 34A-2-30 93.

Law Implemented: SDCL 34A-2-28.

References: ~~Guidelines for Collection and Field Analysis of Groundwater Samples for Selected Unstable Constituents~~, the 1976 edition, Book 1, Chapter D2, United States Geological Survey. Out of print. Copies may be obtained from Office of Drinking Water, Secretary of Environment and Natural Resources, Foss Building; free of charge.

U.S. Geological Survey, **National Field Manual for the Collection of Water-Quality**

Data: U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chaps. A1-A-9, Chapter A1 (January 2005), Chapter A2 Version 2.0 (March 2003), Chapter A3 Version 2.0 (April 2004), Chapter A4 (September 2006), Chapter A5 (April 2004), Chapter A6.0 Version 1.2 (August 2006), Chapter A6.1 Version 2.0 (March 2006), Chapter A6.2 Version 2.1 (June 2006), Chapter A6.3 Version 1.2 (August 2005), Chapter A6.4 Version 1.3 (January 2006), Chapter A6.5 Version 1.2 (September 2005), Chapter A6.6 Version 3.0 (July 2006), Chapter A6.7 Version 2.1 (September 2005), Chapter A7 3rd Edition (November 2003), Chapter A8 Version 1.1 (June 2005), and Chapter A9 (October 1997). Copies of the document are available online at: <http://pubs.water.usgs.gov/twri9A>.

~~**Standard Methods for the Examination of Water and Wastewater**, 14th Edition, 1975; Library of Congress card number: 55-1979 rev.; SBN 087553-078-8; 1193 pages; prepared and published jointly by the American Public Health Association, the American Water Works Association, and the Water Pollution Control Federation. The~~

~~publication office is American Public Health Association, 1015 Eighteenth Street N.W., Washington, D.C. 20036. Copies may be obtained from the publication office for \$35.~~

Standard Methods for the Examination of Water and Wastewater, 20th Edition,
1998, ISBN: 0-87553-235-7, 1220 pages, is prepared and published jointly by the
American Public Health Association, the American Water Works Association, and the
Water Environment Federation. Copies may be obtained from the American Public
Health Association, Publications Sales, P.O. Box 753, Waldorf, Maryland, 20604-0753.
The cost is \$200.

74:55:01:26.01 Technical revisions to an injection permit. The board, through
permit conditions, may authorize the secretary to approve proposed technical revisions to
injection operations without the requirement of a permit amendment. The technical
revisions may include the following minor permit modifications:

- (1) Correction of typographical errors;
- (2) Modification of monitoring plan reporting requirements;
- (3) Modification of quantities or types of fluids injected that are within the capacity
of the facility as permitted and 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;
- (4) The addition of wells to the wellfield within the permit area if the requirements
of § 74:55:01:11 are met;
- (5) Modification of injection rates and pressures;
- (6) Modification of a well repair, abandonment, plugging, or conversion plan; and

(7) Delay the plugging requirement of subdivision 74:55:01:59(4) for an unused well.

Technical revisions must be submitted to the department in writing. The department shall approve, disapprove, conditionally approve, or request additional information within 30 days after receipt.

The applicant or an interested person may appeal the decision of the secretary to the board by petitioning for a contested case hearing pursuant to § 74:50:02.

All technical revisions authorized by the department shall be recorded on a list which is kept updated and which is readily available for public inspection. A copy of the list shall be provided to anyone upon request.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:26, July 1, 1996.

General Authority: SDCL 34A-2-93.

Law Implemented: SDCL 34A-2-28.

74:55:01:26.02 Permit amendment required. A permit amendment is required for major modifications. Major modifications include the following:

- (1) The addition of proposed affected land not within the approved permit area;
- (2) The expansion of the boundaries of the permit areas;

(3) A change in the permit which may adversely affect groundwater

An owner or operator desiring to amend a Class III UIC permit shall file an amendment application with the department. The owner or operator shall include in the amendment application the information required in §§ 74:55:01:05, 74:55:01:06, 74:55:01:07, and 74:55:01:026. The applicant need not submit any information which would duplicate that which has previously been filed with the department, but shall reference the section, paragraph, and page of the permit or other applicable correspondence for that information.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:26, July 1, 1996.

General Authority: SDCL 34A-2-93.

Law Implemented: SDCL 34A-2-28.

74:55:01:27. Well inventory information. Within one year after beginning injection operations, all owners or operators of new wells shall submit well inventory information on forms provided by the secretary.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:27, July 1, 1996.

General Authority: SDCL 34A-2-40 93.

Law Implemented: SDCL 34A-2-44.

74:55:01:28. Determination of influence of injection on groundwater. The volume and areal extent of groundwater anticipated to be influenced by the injection

activities shall be determined by the owner or operator. The area of review shall include the area within a one-quarter mile radius of the injection well, or as determined by the secretary.

Source: 8 SDR 71, effective December 24, 1981; 11 SDR 30, effective August 30, 1984; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:28, July 1, 1996.

General Authority: SDCL 34A-2-~~30~~ 93.

Law Implemented: SDCL 34A-2-29.

74:55:01:29. Well mechanical integrity test. Prior to putting a new well into service or re-issuance of a permit for a well, the well shall be tested by the owner or operator to determine the mechanical integrity of the well. A well is considered to be of acceptable mechanical integrity if no leak exists in the casing, tubing, or packer and no fluid movement takes place into an underground source of drinking water through annulus channels adjacent to the injection well bore. A schedule and methods for mechanical integrity testing shall be included in the permit, and constitute conditions of the permit. The schedule and methods shall meet the following requirements:

~~At least two of the following tests shall be used to determine mechanical integrity:~~

~~—— (1) A pressure or hydrostatic test for testing the entire length of the casing;~~

~~—— (2) Resistivity logs or other suitable logs for use in polyvinyl chloride, iron, steel, or fiberglass casing to detect annulus and casing leaks; and~~

~~—— (3) Circulation of cementing material up the annulus until the return of uncured cementing agent is visible at the surface.~~

(1) One of the following methods must be used to evaluate the absence of significant leaks in the casing, tubing or packer:

(a) Following an initial pressure test, monitoring of the tubing-casing annulus pressure with sufficient frequency to be representative, as determined by the secretary, while maintaining an annulus pressure different from atmospheric pressure measured at the surface;

(b) Pressure test with liquid or gas; or

(c) An alternative test to demonstrate mechanical integrity other than those listed in this subsection if it is specified in the permit or is approved by the secretary through a technical revision;

(2) One of the following methods must be used to determine the absence of significant fluid movement into any unauthorized zone, underground source of drinking water, or water-bearing strata through vertical channels adjacent to the injection bore:

(a) The results of a temperature, neutron, or noise log (e.g., cement bond log);

(b) If the nature of the casing precludes the use of the logging techniques prescribed above, sealing records demonstrating the presence of adequate sealing material to prevent such migration shall be provided; or

(c) If the secretary elects to rely on sealing records to demonstrate the absence of significant fluid movement, the monitoring program shall be designed to verify the absence of significant fluid movement;

(3) Maintenance of the mechanical integrity of each injection well that has not been plugged or converted shall be demonstrated at least once every five years or on a schedule determined by the secretary;

(4) Before resuming injection into any injection well that has been damaged by surface or subsurface activity or that has undergone an activity that may jeopardize the mechanical integrity of the well, such as the use of downhole cutting and underreaming tools, the operator must demonstrate the mechanical integrity of that well;

(5) If the secretary determines that an injection well lacks mechanical integrity, it shall give written notice of this determination to the operator of the well. Unless the secretary requires immediate cessation, the operator shall cease injection into the well

within 48 hours of receipt of the secretary's determination. The secretary may allow plugging of the well or require the operator to perform such additional construction, operation, monitoring, reporting, and corrective action as is necessary to prevent the movement of fluid into unauthorized zones or onto the surface caused by the lack of mechanical integrity. Repair or plugging of the well must be completed within 120 days of the testing that indicates the well lacks mechanical integrity. If the well is repaired rather than plugged, retesting of the well must be completed within 120 days after the repair is completed. The operator may resume injection upon written notification from the secretary that the operator has demonstrated mechanical integrity; and

(6) Results of mechanical integrity testing shall be reported in accordance with the requirements in § 74:55:01:49.

Injection and production wells shall maintain mechanical integrity until the wells are properly plugged in accordance with the approved plugging and abandonment plan.

Source: 8 SDR 71, effective December 24, 1981; 11 SDR 30, effective August 30, 1984; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:29, July 1, 1996.

General Authority: SDCL 34A-2-40 93.

Law Implemented: SDCL 34A-2-44.

74:55:01:30. Acceptable methods for mechanical integrity tests -- Report to secretary. The owner or operator and the secretary shall apply methods and standards generally accepted in the industry to conduct and evaluate mechanical integrity tests. The owner or operator shall report to the secretary the results of mechanical integrity tests, including a description of the tests and the methods used. The secretary shall review monitoring and other test data submitted since the previous evaluation in making a decision on mechanical integrity.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:30, July 1, 1996.

General Authority: SDCL 34A-2-40 93.

Law Implemented: SDCL 34A-2-44.

~~74:55:01:31. Casing and cementing requirements~~ Well construction requirements. ~~A new well shall be cased and cemented to prevent the migration of fluids between the casing and the cement and between the cement and the drill hole. 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 deepest injection zone;~~
- ~~—— (2) Injection pressure, external pressure, internal pressure, axial loading, and related information;~~

- (3) ~~Hole size;~~
- (4) ~~Size and grade of all casing strings including well thickness, diameter, nominal weight, length, joint specification, and construction material;~~
- (5) ~~Corrosiveness of injected fluids and formation fluids;~~
- (6) ~~Lithology of injection zone and confining zones; and~~
- (7) ~~Type and grade of cement.~~

The method for well construction shall be stated in the permit application. Construction requirements listed in this section apply to all wells installed for activities related to in situ leach mines. The secretary may grant a deviation from the requirements through a technical revision, if the operator supplies documentation of reliability, mechanical integrity, design, and construction to protect ground waters of the state. Injection and production wells shall be generally constructed as follows:

(1) Annular seals shall be installed to protect the casing against corrosion, ensure structural integrity of the casing, stabilize the well bore, protect against contamination or pollution of the well from the surface, and prevent migration of ground water from one aquifer or water-bearing strata to another in accordance with the following requirements:

(a) The drill hole shall be of sufficient diameter for adequate sealing and, at any given depth, at least three inches greater in nominal diameter than the outside diameter of the outer casing at that depth. The secretary may approve an alternative casing design if it provides an equivalent degree of ground water protection;

(b) Before placing the annular seal, the well bore shall be under static conditions and all loose drill cuttings, rock chips, or other obstructions shall be removed from the annular space by circulating the borehole with water or drilling mud slurry;

(c) The annular sealing material shall be pressure-grouted as required in § 74:02:04:28;

(d) Sealing material shall consist of neat cement grout or bentonite grout mixtures meeting the following requirements:

(i) Cement grout shall be composed of high sulfate resistant Portland cement and no more than six gallons of clean water for each 94-pound sack of cement to yield a slurry weight of approximately 13 pounds per gallon. Cement grout shall conform to the requirements of § 74:02:04:53;

(ii) Bentonite grout shall conform to the requirements of § 74:02:04:53.01. The bentonite grout shall be a sodium bentonite material that has been commercially manufactured and specially formulated for use as a well casing seal;

(iii) The sealing material shall be thoroughly mixed before placement so there are no balls, clods, or other features that could reduce the effectiveness of the seal;

(iv) Special quick-setting cement, cement accelerators, retarders, fluid-loss additives, dispersants, extenders, loss-of-circulation materials, and other additives, including hydrated lime to make the mix more fluid or bentonite to make the mix more fluid and reduce shrinkage, may be used, if approved by the secretary; and

(v) Used drilling mud or drill cuttings from the borehole may not be used as sealing material;

(2) Well casing shall conform to the requirements of §§ 74:02:04:42 to 74:02:04:45, inclusive, and § 74:02:04:48. The casing shall be of sufficient strength and diameter to prevent casing collapse during installation, convey liquid at a specified injection/recovery rate and pressure, and allow for sampling. Casing shall be placed with sufficient care to avoid damage to casing sections and joints. All joints in the casing above the perforations or screens shall be watertight. Casing shall be equipped with centralizers placed at a maximum spacing of one per forty feet to ensure even thickness of annular seal and gravel pack; and

(3) Well development shall be done by methods that will not cause damage to the well or cause adverse subsurface conditions that may destroy barriers to the vertical movement of water between water bearing strata.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:31, July 1, 1996.

General Authority: SDCL 34A-2-28-93.

Law Implemented: SDCL 34A-2-32.

74:55:01:31.01. Well construction requirements – Injection wells. The following construction requirements apply to injection wells and are in addition to the requirements listed in § 74:55:01:31:

All injection wells shall be constructed to prevent the migration of fluids to unauthorized zones. The casing and annular sealing material 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 annular sealing requirements, the following factors shall be considered:

- _____ (1) Depth to the deepest injection zone;
- _____ (2) Injection pressure, external pressure, internal pressure, axial loading, and related information;
- _____ (3) Hole size;
- _____ (4) Size and grade of all casing strings including well thickness, diameter, nominal weight, length, joint specification, and construction material;
- _____ (5) Corrosiveness of injected fluids and formation fluids;

(6) Lithology of injection zone and confining zones; and

(7) Type and grade of cement used to seal the annular space between the outer casing and the borehole.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:31, July 1, 1996.

General Authority: SDCL 34A-2-28-93.

Law Implemented: SDCL 34A-2-32.

74:55:01:32. Conducting well logs. Appropriate logs and tests shall be conducted during the drilling and construction of ~~any~~ new injection wells. A descriptive report ~~interpreting the results of the logs and tests shall be~~ prepared by a knowledgeable log analyst interpreting the results of such logs and tests shall be ~~and~~ submitted to the secretary. Determination of the logs and tests appropriate to each well shall be based on intended function, depth, construction, and other well characteristics, availability of similar data in the area of the drilling site, and the need for additional information that may arise from time to time as the construction of the well progresses. ~~Logs and tests shall include deviation checks on all holes to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling.~~

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:32, July 1, 1996.

General Authority: SDCL 34A-2-40- 93.

Law Implemented: SDCL 34A-2-44.

74:55:01:33. Supervision of well construction and testing. All phases of well construction and testing shall be done under the supervision and inspected by a person who is knowledgeable and experienced in practical drilling engineering and who is familiar with the special requirements of injection well construction of a driller licensed pursuant to SDCL 46-6-9.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:33, July 1, 1996.

General Authority: SDCL 34A-2-40 93.

Law Implemented: SDCL 34A-2-44.

74:55:01:34. Determining information on water-bearing injection zone. The following information concerning the water-bearing injection zone shall be determined:

- (1) Fluid pressure;
- (2) Temperature;
- (3) Fracture pressure;
- (4) Other physical and chemical characteristics of the injection zone rock and formation fluids including: geochemistry of the production zone and the aquifer up-gradient and down-gradient of the production zone, to include oxidation-reduction conditions and common ions , and the direction and velocity of ground water movement through the producing zone; and

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

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:34, July 1, 1996.

General Authority: SDCL 34A-2-29. 93.

Law Implemented: SDCL 34A-2-29.

74:55:01:35. Establishment of baseline water quality in new mining areas. ~~One or more water samples shall be collected from each designated monitor well in production and non-production zones and each production well in the production area. Before mining a new area or section in a production zone, the operator shall submit a baseline ground water quality sampling plan to include an adequate number of wells and samples to characterize baseline water quality in production and nonproduction zones in and adjacent to the new mining area. The plan will provide geochemical, lithologic, and mineralogical descriptions of the receiving strata and any aquifers that may be affected by the injection of mining solution. The plan is to address aquifer characteristics for the water saturated portions of the receiving strata and aquifers that may be affected by the mining process. Characteristics may include aquifer thickness, velocity and direction of ground water movement, storage coefficients or specific yields, transmissivity or hydraulic conductivity, and the directions of preferred flow under hydraulic stress in the saturated zones of the receiving strata. The plan shall include potentiometric maps of the ground water surface in the receiving strata and overlying and underlying aquifers. The extent of hydraulic connection between the receiving strata and overlying and underlying aquifers and the hydraulic characteristics of any influencing boundaries in or near the proposed production areas shall be determined and described.~~

Water samples shall not be taken until the specific conductivity, temperature, and pH have stabilized. These parameters are considered to be stabilized when there is less than 0.2 pH unit change and 10% change in conductivity and temperature for at least three consecutive well volumes. These samples shall be analyzed for the parameters designated by the secretary. All baseline wells shall be sampled at least once every month for a minimum of six months before any mining activities. If a well shows results indicating a statistically significant variance for a control parameter, whether due to laboratory error or natural fluctuation, the secretary may require additional samples be taken. The sample results for each well shall be submitted to the secretary.

~~in two consecutive readings taken at fifteen minute intervals. These samples shall be analyzed and the results for each well submitted and summarized on standard forms supplied by the secretary as follows:~~

~~(1) Mine area baseline: the averages and ranges of the parameter values determined for the designated production zone monitor wells;~~

~~—— (2) Production area baseline: the averages and ranges of the parameter values determined from at least five designated production zone wells in the production area; and~~

~~—— (3) Non production zone baseline: the averages and ranges by zone of the parameter values determined for designated non-production zone monitor wells.~~

The secretary shall consider the baseline water quality values for a production area to determine the upper limits of a control parameter which, when exceeded, indicates that an injected fluid may be present. All samples shall be collected, preserved, analyzed, and controlled according to accepted methods. ~~All baseline wells shall be sampled at least once every two weeks for a minimum of six months prior to any mining activities.~~

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:35, July 1, 1996.

General Authority: SDCL 34A-2-40. 93.

Law Implemented: SDCL 34A-2-44.

74:55:01:36. Confinement of ~~mining solution~~ recovery fluid. ~~Mining solutions shall be confined to the production zone within the area of designated production zone monitor wells. Mining solutions shall not be present in any monitor well above or below the production zone. Mining solutions are assumed to be present in a designated well if a verifying analysis confirms that a control parameter in a designated monitor well is present in a concentration equal to or greater than the upper limit value~~ Recovery fluid shall be restricted to those production zones that have been classified by the board as an exempted aquifer within the area of production zone monitor wells. If recovery fluids migrate outside the production zone or into aquifers above or below the production zone, the operator shall report, monitor, and remediate the excursion in accordance with §§ 74:55:01:50 to 74:55:01:53.02, inclusive. Recovery fluids are assumed to be present in an unauthorized zone if a verifying analysis confirms that a control parameter in a monitor well is detected at a concentration equal to or greater than the upper limit value.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:36, July 1, 1996.

General Authority: SDCL 34A-2-34, 93.

Law Implemented: SDCL 34A-2-36.

74:55:01:37. Monitor well requirements for underground sources of drinking water. ~~If injection is into a formation which contains water with less than 10,000 milligrams per liter of total dissolved solids, monitor wells shall be completed into the injection zone and into any underground sources of drinking water above and below the injection zone which could be affected by the mining operation. The monitor wells shall be located in such a fashion as to detect any excursion of injected fluids~~ Repealed.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:37, July 1, 1996.

~~General Authority:~~ SDCL 34A-2-40.

~~Law Implemented:~~ SDCL 34A-2-44.

74:55:01:38. Monitor well requirements in formation not considered underground source of drinking water. ~~If injection is into a formation in which the water is greater than 10,000 milligrams per liter of total dissolved solids, monitor wells may be required in the formation by the secretary~~ Repealed.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:38, July 1, 1996.

—~~**General Authority:** SDCL 34A-2-40.~~

—~~**Law Implemented:** SDCL 34A-2-44.~~

74:55:01:39. Monitoring subsidence. Subsidence shall be controlled to the extent that the values and uses of the surface land resources and aquifers will not be degraded.
~~Where~~ If the injection wells penetrate an aquifer in an area subject to subsidence or catastrophic collapse, an adequate number of monitor wells shall be completed into that aquifer to detect any movement of injected fluids.

The monitor wells shall be located outside the physical influence of the subsidence or collapse.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:39, July 1, 1996.

General Authority: SDCL 34A-2-40. 93.

Law Implemented: SDCL 34A-2-44.

74:55:01:40. Minimum requirements for monitor wells. In determining the number, location, and frequency of sampling of the monitor wells the following shall be considered:

- (1) Whether or not any person is relying on the underground source of drinking water affected or potentially affected by the injection operation;
- (2) The proximity of the injection operation to points of withdrawal of drinking water;
- (3) The local geology and hydrology;
- (4) The operating pressures and whether a negative pressure gradient is being maintained;
- (5) The toxicity and volume of the injected fluid, the formation water, and the process by-products; and
- (6) The density of the injection wells.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:40, July 1, 1996.

General Authority: SDCL 34A-2-40, 93.

Law Implemented: SDCL 34A-2-44.

74:55:01:41. Production ~~zone~~ area monitor well location and spacing requirements. The designated production ~~zone~~ area monitor wells shall be spaced no more than 400 feet from the production area and with spacing no greater than 400 feet between the monitor wells. ~~Changes may be authorized by the secretary to assure adequate containment of mining solutions.~~ Alternative monitor well locations and spacing may be considered if the operator can demonstrate that the proposed location or spacing will adequately provide monitoring coverage to detect excursions in a timely

manner. ~~These wells are subject to sampling, corrective action, and reporting requirements in §§ 74:55:01:46 to 74:55:01:53, inclusive.~~ Closer spacing of these wells may be required by the secretary in the down gradient ~~direction of~~ groundwater flow direction from the production zone.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:41, July 1, 1996.

General Authority: SDCL 34A-2-40. 93.

Law Implemented: SDCL 34A-2-44.

74:55:01:42. Nonproduction zone monitoring. At a minimum, nonproduction zone monitor wells shall be completed in any aquifer potentially affected by injection into the production zone ~~if this aquifer is an underground source of drinking water.~~ These monitor wells shall be located ~~not more than 50 feet on either side of a line through the center of the production area~~ within the production area and up to 200 feet outside of the production area, with the majority of these wells located in the down gradient direction of groundwater flow in the aquifer in which the wells are completed.

For the first overlying aquifer above the production zone, a minimum of one well for every one acre of production area shall be completed.

For each additional overlying aquifer, a minimum of one well for every three acres of production area shall be completed.

For each underlying aquifer potentially affected by injection, ~~the number and location of the monitor wells shall be left to the discretion of the secretary~~ the operator shall propose a monitor well spacing plan subject to approval by the secretary.

~~Changes or adjustments in any non production zone monitor well location may be authorized by the secretary to assure adequate containment. Any monitor well completed in the first overlying aquifer shall be sampled and reported and is subject to remedial action under the requirements of §§ 74:55:01:46 to 74:55:01:53, inclusive. Monitor wells completed in any additional overlying aquifers are subject to monitoring, remedial action, and reporting as specified in the permit.~~ Alternative nonproduction zone monitor well locations and spacing may be considered if the operator demonstrates that the proposed location or spacing will adequately provide monitoring coverage.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:42, July 1, 1996.

General Authority: SDCL 34A-2-40 93.

Law Implemented: SDCL 34A-2-44.

74:55:01:43. Secretary to sample monitor wells. The secretary ~~shall~~ may at his discretion take samples from the monitor wells on a schedule determined by the secretary.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:43, July 1, 1996.

General Authority: SDCL 34A-2-40 93.

Law Implemented: SDCL 34A-2-44.

74:55:01:44. ~~Injection pressure requirements~~ Prohibitions – Injection volumes and pressure. ~~Injection pressure at the wellhead shall not exceed a maximum which assures that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone, initiate fractures in the confining zone or zones, or cause the migration of any mining solution or formation fluid into an underground source of drinking water.~~

The permit shall include maximum injection volume and pressure limits that may not be exceeded to ensure that fractures are not initiated or propagated in the confining zone or zones, injected fluids do not migrate into any unauthorized zone or underground source of drinking water, and formation fluids are not displaced into any unauthorized zone or underground source of drinking water. At a minimum, operating requirements shall specify, except during well stimulation, that injection pressure at the wellhead be calculated to ensure that the pressure in the production zone during injection does not initiate new fractures or propagate existing fractures. In no case may injection pressure initiate fractures in the confining zone or zones, if confinement is present, or cause the migration of injection or formation fluids into an unauthorized zone or underground source of drinking water. Injection between the outermost casing protecting unauthorized zones and the well bore is prohibited.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:44, July 1, 1996.

General Authority: SDCL 34A-2-40 93.

Law Implemented: SDCL 34A-2-40.

74:55:01:45. Restoration demonstration required. ~~The secretary shall do a preliminary review of the permit application and technical report after submission by the applicant. After the review the secretary shall determine if mining appears feasible or infeasible. Mining is infeasible if the proposed area lacks proper confining zones or contains geologic faults which would act as conduits for groundwater movement, if information is lacking on the permit application or technical report, or for other reasons determined by the secretary. If mining appears feasible, the applicant shall conduct a restoration demonstration on an area authorized by the secretary which includes a small part of the proposed production zone.~~

~~— The restoration demonstration shall simulate actual production and restoration conditions for the purpose of making a restoration schedule which shall be included in the final permit. If the secretary determines that restoration is not feasible, the secretary shall recommend that the permit not be issued.~~

~~— A second production area authorization may be required if geologic conditions vary considerably within the production zone. Full scale operation may begin following satisfactory demonstration of restoration in the authorized production area and issuance of the permit Repealed.~~

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:45, July 1, 1996.

—~~**General Authority:** SDCL 34A-2-40.~~

—~~**Law Implemented:** SDCL 34A-2-44.~~

74:55:01:45.01. Ground water restoration table. Based upon the information submitted in accordance with subdivision 74:55:01:26(18) and the determination in accordance with § 74:55:01:45, the department shall develop a ground water restoration table with assigned ground water quality restoration values that are the compliance requirements for restoration of the production and nonproduction zones.

The restoration values shall be based on pre-mining baseline conditions. If the ground water restoration demonstration in accordance with subdivision 74:55:01:26(18) indicates that the operation will be unable to achieve the standard of returning affected ground water to baseline conditions with the application of best practicable technology, the secretary may set the restoration values as follows:

(1) To not exceed the applicable maximum allowable concentrations in South Dakota ground water quality standards listed in § 74:54:01:04;

(2) To not exceed the health advisory levels or secondary drinking water regulations set by the U.S. Environmental Protection Agency for other parameters not listed in Table 1 and Table 2 of § 74:54:01:04; and

(3) To not exceed values based on an appropriate statistical method for any parameters not listed in South Dakota ground water quality standards or in U.S. Environmental Protection Agency health advisory lists or secondary drinking water regulations.

Modification of the restoration table shall be done in accordance with § 74:55:01:58.01.

Source:

General Authority: SDCL 34A-2-93.

Law Implemented: SDCL 34A-2-44.

74:55:01:46. Minimum Production area operational monitoring requirements.

Monitoring requirements shall include, but not be limited to, the following The monitoring plan included in the permit shall describe the procedures for operational monitoring of the quantity and quality of mining solution and ground water in the production area and shall, at a minimum, include provisions for:

(1) The analysis of the physical and chemical characteristics of the injected fluid with sufficient frequency, and at least monthly, to yield representative data on its characteristics;

(2) Installation and use of continuous recording devices to monitor the injection pressure, flow rate, volume, and annular pressure; Monitoring injection pressure and

either flow rate or volume twice a month, or metering and recording daily injected and produced fluid volumes;

~~(3) Weekly monitoring of fluid level and the control parameters as specified in the permit to measure water quality in the injection zone monitor wells~~ Monitoring the fluid level in the injection zone twice a month;

~~(4) Monitoring once every two weeks of wells completed above or below the injection zone~~ Monitoring ground water quality, including the control parameters, and fluid levels in monitoring wells completed above and below the production zone a minimum of every month;

(5) Manifold monitoring may be used in cases of facilities consisting of more than one injection well with a common manifold. Separate monitoring systems for each well are not required provided the operator demonstrates to the secretary that manifold monitoring is comparable to individual well monitoring; and

~~(6) Specified wells within one-quarter mile of the injection site may be required to have samples taken from them once every three months to detect any migration from the injection area. A minimum of quarterly monitoring of secretary specified wells within one-quarter mile of the production site to detect migration of recovery fluids from the production zone.~~

The name, address, and telephone number of the laboratory performing the analyses, and the laboratory identification number are to be provided.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:46, July 1, 1996.

General Authority: SDCL 34A-2-40 93.

Law Implemented: SDCL 34A-2-44.

74:55:01:47. Reporting requirements for injection zone. Monitoring data for the injection zone shall be reported monthly to the secretary ~~on a form provided by the secretary~~. These reports shall be postmarked no later than the tenth day of the following month. A copy of the data shall be kept available at the mine site.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:47, July 1, 1996.

General Authority: SDCL 34A-2-40 93.

Law Implemented: SDCL 34A-2-44.

74:55:01:48. Duration of monitoring program. The program of monitoring detailed in this chapter shall be continued in each permit area until aquifer restoration and stabilization in that area has been achieved in compliance with § 74:55:01:548.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:48, July 1, 1996.

General Authority: SDCL 34A-2-40 93.

Law Implemented: SDCL 34A-2-44.

74:55:01:49. Reporting requirements of well owner or operator. The operator's

~~r~~Reporting requirements of the well owner or operator are as follows:

~~(1) Results of mechanical integrity tests or other required tests shall be reported after the completion of the test. New work done on a well shall be reported quarterly;~~

~~(2) Where manifold monitoring is used, monitoring may be reported for the whole project rather than for individual wells. The staff of the Secretary of Environment and Natural Resources shall perform verifying analyses on the injected fluid;~~

~~(3) Any planned physical alterations or additions to the facility affecting the injection activity, all instances of noncompliance at the time monitoring reports are submitted (except for the verbal reporting requirements for suspected excursions which are defined by § 74:55:01:52), and any new facts or relevant information discovered since the application was filed; and~~

~~(4) Applicants shall keep permit application records and supplemental information for three years.~~

(1) A qualitative analysis and ranges in concentrations of all constituents of injected fluids at least once within the first year of authorization and thereafter whenever the mining solution is modified to the extent that the initial data are incorrect or

incomplete. The operator may request that any proprietary information be considered confidential in accordance with SDCL 45-6B-19;

(2) All chemical analyses submitted to the secretary in accordance with the permit shall include the requirements of subdivision 74:55:01:26(10) (b);

(3) Quarterly monitoring reports shall include, at a minimum:

(a) The results of any periodic tests required by the permit or a remedial action plan that is performed during the reported quarter;

(b) The results of all mechanical integrity testing conducted during the reported quarter, including the following information identified by injection well:

(i) Date of mechanical integrity testing;

(ii) Confirmation of the method by which mechanical integrity was established, in accordance with § 74:55:01:29; and

(iii) Verification of whether mechanical integrity was established for a well, to include the identification of any well that failed mechanical integrity testing and a description of the method of plugging or repair;

(c) The status of corrective action on defective wells, required in accordance with § 74:55:01:59.03; and

(d) The results of well repair and plugging required in accordance with § 74:55:01:59, including a statement that the wells were plugged in accordance with the permit, or documentation that prior approval was obtained from the secretary if plugging procedures differed from the procedures approved in the permit. This documentation shall be included in the report and contain a description of the procedures used specifying the differences between the approved method and the alternate method. To ensure the well is plugged and there has been no bridging of the sealing material, the operator shall provide the secretary with documentation that the volume of material placed in the well at least equals the volume of the empty hole;

(4) During excursions, results from excursion-related monitoring shall be reported in accordance with the requirements of § 74:55:01:53; and

(5) In addition an annual report, that includes at a minimum:

(a) The name and address of the operator and the permit number;

(b) A map showing the location of all production and monitoring wells installed in the past year and showing all new areas where mining is expected to begin during the next year;

(c) A map showing where ground water restoration has been achieved, is actively taking place, is expected to begin during the next year, a description of ground water restoration methods used, and an expected timeline to achieve ground water restoration;

(d) The total and previous year's amount of affected land;

(e) The total quantity of mining solution injected and the total quantity of recovery fluid extracted during the reporting period for each well-field area including a description of how these quantities were determined;

(f) Monitoring program results that have not been previously reported;

(g) An updated potentiometric surface map for all aquifers that are or may be affected by the mining operation, if requested by the secretary;

(h) Supporting data sufficient to demonstrate ground water restoration;

(i) A summary of all excursions for the report year including remediation progress; and

(j) A brief discussion of the coming year's operational plans including any anticipated technical revisions or amendments that might require secretary or board approval;

Source: 8 SDR 71, effective December 24, 1981; 11 SDR 30, effective August 30, 1984; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:49, effective July 1, 1996.

General Authority: SDCL 34A-2-40 93.

Law Implemented: SDCL 34A-2-44.

74:55:01:50. Verifying analysis. ~~If a routine sample analysis shows that the value indicates the presence of a control parameter exceeding its is equal to or above the upper limit level value in a monitoring well,~~ the operator shall complete a verifying analysis of samples taken from ~~the each apparently~~ affected well and the monitoring wells adjacent to the affected well. The operator shall take the verifying analysis within two working days after being notified by the laboratory of monitoring results. If the results from the first and second sampling event both indicate an excursion has occurred, then an excursion is considered verified for the purpose initiating remedial action in accordance with § 74:55:01:53.

If the results from the first and second sampling events provide conflicting information about whether or not an excursion has occurred, then a third sampling event must be conducted within 24 hours of the receipt of the results from the second sampling

event. However, if the results of the confirmatory sampling are not complete within seven days of the initial sampling event that indicated an excursion might be present; the excursion will be considered verified.

All sample analyses results for excursion events shall be submitted to the secretary within two business days after the operator receives them from the laboratory.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:50, July 1, 1996.

General Authority: SDCL 34A-2-40 93.

Law Implemented: SDCL 34A-2-44.

74:55:01:51. Excursion sampling frequency. During the time when any control parameter ~~mining solutions~~ is ~~are~~ present in a ~~designated~~ monitor well, a water samples shall be taken at least two times a week from the well. The samples must be ~~and~~ analyzed for all control parameters within one week ~~by the second day~~ after the sample is taken.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:51, July 1, 1996.

General Authority: SDCL 34A-2-40 93.

Law Implemented: SDCL 34A-2-44.

74:55:01:52. Reporting excursions. The operator shall verbally report any suspected excursion to the secretary within ~~the first 24-hours of detection working day~~ and initiate actions required by §§ 74:55:01:49 and 74:55:01:50. The operator shall provide monitoring data or other information that indicates any contaminant may cause adverse impacts to an unauthorized zone or underground source of drinking water. The operator shall report any noncompliance with a permit or malfunction of the injection system that may cause fluid migration into or between unauthorized zones.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:52, effective July 1, 1996.

General Authority: SDCL 34A-2-40 93.

Law Implemented: SDCL 34A-2-44.

74:55:01:53. Remedial action for excursion. ~~If the verifying analysis indicates that mining solutions are present in a designated monitor well, the operator shall complete a remedial action and a groundwater analysis report on forms provided by the secretary for the following: pH, calcium, magnesium, sodium, potassium, carbonate, bicarbonate, sulfate, chloride, silica, uranium, ammonia, total dissolved solids (180 degrees C.), specific conductance, and any other specified component. All reports shall be mailed to the secretary, postmarked within two days of the end of each report period. The first report period shall begin the day the presence of mining solution in a designated monitor well is verified.~~

~~— The permittee shall continue to make remedial action reports until cleanup is accomplished. A report period shall be every two weeks. The operator may use any method the operator judges necessary and prudent to define the extent of the excursion and to cleanup mining solutions in an expeditious manner. Well cleanup is considered accomplished when the water quality in the affected monitor wells has been restored to values consistent with current local baseline water quality and the restoration is confirmed by three consecutive daily samples for the control parameters. The secretary may determine that cleanup is not necessary if the permittee can demonstrate that the change in water quality is not due to the presence of mining solutions.~~

If the verifying analysis indicates that an excursion has occurred, the operator shall submit to the secretary for review and approval a remedial action plan and a ground water analysis report to include the following:

(1) A description of the excursion and its cause;

(2) The period of excursion, including exact dates and times;

(3) If the excursion has not been corrected, the anticipated time it is expected to continue;

(4) Steps taken or planned to reduce, eliminate, and prevent recurrence of the excursion; and

(5) Sample analyses for pH, calcium, magnesium, sodium, potassium, carbonate, bicarbonate, sulfate, chloride, silica, uranium, ammonia, nitrate, total dissolved solids (180 degrees C.), specific conductance, and any other parameter specified by the secretary. One or more parameters may be excluded, if the secretary determines that the concentration or value of a specific parameter is not likely to occur as a result of the in situ leach mine.

The operator shall report every two weeks. All reports shall be mailed to the secretary, postmarked within two days of the end of each report period. The first report period shall begin the day the presence of a control parameter exceeding its upper limit value in a monitor well is verified. The operator shall continue to make remedial action reports until cleanup is accomplished.

Following review by the secretary, the operator may use methods judged necessary and prudent to define the extent of the excursion and to cleanup recovery fluids in an expeditious manner.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:53, July 1, 1996.

General Authority: SDCL 34A-2-40 93.

Law Implemented: SDCL 34A-2-48.

74:55:01:53.01. Excursions - Controlled. An excursion is controlled if it can be demonstrated through water quality and ground water gradient or if applicable, pressure measurements, that recovery fluid in unauthorized areas is declining.

If the excursion is controlled, but the control parameters have not been restored to values consistent with local baseline water quality within 60 days following confirmation of the excursion, the operator shall submit, within 90 days following confirmation of the excursion, a plan and schedule, for approval by the secretary, for bringing the well or wells off excursion. The plan and schedule can be submitted as part of the excursion report required every two weeks in § 74:55:01:53.

Clean up is considered accomplished if the water quality in the affected monitor wells has been restored to values consistent with local baseline water quality and the restoration is confirmed by three consecutive weekly samples. The secretary may determine that clean up is not necessary if the operator demonstrates that the change in water quality is not due to the presence of recovery fluids.

Source:

General Authority: SDCL 34A-2-93.

Law Implemented: SDCL 34A-2-48.

74:55:01:53.02. Excursions – Not controlled. If an excursion is not controlled within 30 days following confirmation of the excursion, a sample must be collected from

each of the affected monitoring wells and analyzed for the following parameters: ammonia, antimony, arsenic, barium, beryllium, bicarbonate, boron, cadmium, calcium, carbonate, chloride, chromium, conductivity, copper, fluoride, gross alpha, gross beta, iron, lead, magnesium, manganese, mercury, molybdenum, nitrate, nitrate + nitrite, pH, potassium, selenium, sodium, sulfate, radium-226 and 228, thallium, total dissolved solids, uranium, vanadium, and zinc, and any other parameter specified by the secretary, unless the secretary determines that the concentration or value of one or more parameters is not likely to occur as a result of the in situ leach mine.

If an excursion is not controlled within 60 days following confirmation of the excursion, the secretary may require the operator to conduct additional sampling of monitoring wells, installation of additional monitor wells, termination of injection in the portion of the wellfield in which the excursion originated, or a combination of approaches to assure control within a timely manner.

Source:

General Authority: SDCL 34A-2-93.

Law Implemented: SDCL 34A-2-48.

74:55:01:54. Criteria for determination of adequacy of remedial protective action plan. In determining the adequacy of the remedial action plan required in §74:55:01:53 ~~excursion cleanup~~ proposed by the operator ~~applicant~~ and in determining the additional steps needed to prevent an excursion ~~fluid movement~~ into unauthorized zones or

underground sources of drinking water, the following criteria and factors shall be considered by the secretary:

- (1) Toxicity and volume of the injected fluid;
- (2) Toxicity of formation fluids or by-products of injection;
- (3) Whether or not any person is potentially affected by the injection;
- (4) Geohydrology;
- (5) History of the injection operation;
- (6) Completion and plugging records;
- (7) Abandonment procedures in effect at the time the well was abandoned; and
- (8) Hydraulic connections with underground sources of drinking water.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:54, July 1, 1996.

General Authority: SDCL 34A-2-40 93.

Law Implemented: SDCL 34A-2-48.

74:55:01:55. ~~Aquifer~~ Ground water restoration requirements. When the mining of an authorized production area is completed, the ~~permittee~~ operator shall notify the secretary and immediately proceed to reestablish groundwater quality in the affected production area to levels consistent with the values listed in the restoration table contained in the permit. ~~Production and non-production zones shall be restored to the highest value for each control parameter shown on the baseline water quality form. Restoration values may be modified by the secretary.~~

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:55, July 1, 1996.

General Authority: SDCL 34A-2-40 93.

Law Implemented: SDCL 34A-2-48.

Cross-References: Establishment of baseline water quality, § 74:55:01:35; Restoration demonstration required, § 74:55:01:~~44~~ 45

74:55:01:56. Restoration progress reports. Beginning six months after the indicated date for initiation of restoration of a production area, the operator shall provide semiannual progress reports to the secretary until restoration is accomplished for the particular area.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:56, July 1, 1996.

General Authority: SDCL 34A-2-40 93.

Law Implemented: SDCL 34A-2-44.

74:55:01:57. Restoration sampling procedure. After first notifying the secretary ~~the permittee shall sample and complete an analysis of all baseline wells, and any other selected wells, for all control parameters listed in the permit restoration table. that mining in a production area is complete and that ground water restoration has begun, the operator shall sample and complete an analysis of designated baseline wells agreed upon~~

by the secretary and the operator in the mine production area for all restoration values listed in the permit restoration table on a monthly basis. If this analysis indicates that approved restoration values have been achieved, the permittee shall file with the secretary a written report of the results. After filing the report, restoration sampling shall be conducted at ~~one-month~~ bimonthly intervals.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:57, July 1, 1996.

General Authority: SDCL 34A-2-40 93.

Law Implemented: SDCL 34A-2-44.

74:55:01:58. Final restoration-Restoration values achieved. ~~The permittee shall notify the secretary when the results of three consecutive sample sets show approved aquifer restoration. After acknowledgement in writing by the secretary confirming aquifer restoration, the permittee may cease monitoring and aquifer restoration activities in the affected area. The operator shall notify the secretary if the results of six consecutive bimonthly sample sets show that ground water quality in the production zone has met the restoration values on the restoration table and that the restoration values indicate stable trends. After acknowledgement in writing by the secretary confirming ground water restoration, the operator may request, through a technical revision, that the secretary modify the site water quality monitoring plan, which may include a reduction in sampling frequency, parameters to be measured, and the number of wells to be sampled in the restored production zone.~~

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:58, July 1, 1996.

General Authority: SDCL 34A-2-40 93.

Law Implemented: SDCL 34A-2-44.

74:55:01:58:01. Restoration values not achieved. If the restoration values established in the restoration table of the permit are not met after application of best practicable technology, the operator may submit an amendment to the permit to establish alternative restoration values.

To provide justification for alternative values, the amendment shall include all available water quality data for the restoration unit in question, a narrative discussing the restoration techniques used including a demonstration that best practicable technology was applied, and the rationale for altering the restoration parameters.

In determining whether the restoration table should be altered for a particular restoration zone, the secretary shall consider the following:

- (1) Uses for which the ground water was suitable at baseline quality levels;
- (2) Actual existing use of the ground water in the area before and during mining;
- (3) Potential for future use of the ground water at baseline quality and at proposed restoration parameters;

(4) The effort made by the operator to restore the ground water to the restoration parameters;

(5) The availability of existing technology to restore the ground water to the restoration parameters; and

(6) The potential harmful effects of levels of particular parameters.

The alternative restoration values shall conform to the requirements of § 74:55:01:45.01.

Source:

General Authority: SDCL 34A-2-93.

Law Implemented: SDCL 34A-2-44.

74:55:01:59. Requirements for plugging of abandoned wells, drill holes and the repair and conversion of wells required. ~~The operator shall notify the secretary 180 days before abandonment of permitted wells. The wells shall be plugged with cement as required by § 12:04:08:04 in a manner that will not allow the movement of fluids either into or between underground sources of drinking water. Placement of the cement plugs shall be accomplished by one of the following:~~

~~—(1) The balance method;~~

~~—— (2) The dump bailer method; or~~

~~—— (3) The two plug method.~~

~~—— 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 secretary, prior to the placement of the cement plugs. A well field which underlies or is in an aquifer which has been exempted under § 74:55:01:24, shall also be plugged so that no movement of contaminants from the mined zone into an underground source of drinking water will occur. The secretary shall prescribe aquifer cleanup and monitoring where the secretary considers it necessary and feasible to insure that no migration of contaminants from the mixed zone into an underground source of drinking water will occur.~~

The requirements for plugging drill holes and repair, conversion, and plugging of wells are as follows:

—— (1) A plan for drill hole plugging and well repair, plugging, and conversion shall be included in the permit application and constitutes a condition of the permit;

—— (2) All drill holes shall be plugged in accordance with §§ 74:02:04:67, 74:02:04:69, or 74:02:04:70, as applicable, in a manner that will not allow the movement of fluids either into or between water-bearing strata, including underground sources of drinking water;

(3) The operator shall notify the secretary 45 days before plugging a well within a production area or converting a well to other than injection well uses;

(4) All abandoned wells shall be plugged or converted, in accordance with the plugging/conversion plan in the permit, to ensure that ground water is protected and preserved for future use and to eliminate any potential physical hazard. A well is considered abandoned if it has not been used for a period of two years, unless the operator submits to the secretary and receives approval for a technical revision demonstrating the operator's intention to use the well again and the actions and specifying procedures that will be taken to ensure that mechanical integrity of the well is maintained and the well will not endanger any unauthorized zone, underground source of drinking water, or water-bearing strata;

(5) All wells completed in confined aquifers or encountering more than one aquifer shall be plugged in accordance with § 74:02:04:67;

(6) All wells completed in unconfined aquifers or with only one aquifer encountered shall be plugged in accordance with § 74:02:04:69;

(7) To ensure that the locations of the abandoned wells are adequately identified:

(a) The boundaries of each wellfield and the location of the monitor wells around each wellfield shall be recorded as a deed notice with the appropriate county; and

(b) The top of the plugging mixture in each abandoned well shall clearly show on a steel plate placed atop the sealing mixture the permit number, well identification number, and information required by the secretary. All marking devices shall be installed at a minimum depth of two feet below the land surface.

(8) Plugging and conversion activities shall be reported in accordance with the requirements in subdivision 74:55:01:49(3) (d).

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:59, July 1, 1996.

General Authority: SDCL 34A-2-40 93.

Law Implemented: SDCL 34A-2-44.

74:55:01:59.01. Well plugging records. For any well abandoned and plugged at an in situ leach mine, well drillers shall prepare and file well plugging records as required by § 74:02:04:71. The plugging records shall be submitted to the secretary within 60 days after plugging the well or at the time of the next quarterly report (whichever is less). For other wells, well plugging records shall be submitted to the secretary within one year after the abandonment of any well.

Source:

General Authority: SDCL 34A-2-93.

Law Implemented: SDCL 34A-2-44

74:55:01:59.02. Maintenance and retention of records. The operator shall retain records of all monitoring information at the mine site, including the following:

(1) Laboratory analyses, including a description of or reference for the procedures and methods used for sample collection, preservation, and quality control and the name, address, telephone number, and laboratory identification number of the laboratory performing the analyses;

(2) Records of all data used to complete permit and license applications and any supplemental information;

(3) Calibration and maintenance records and all original records of continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the permit application;

(4) The nature and composition of all injected fluids until three years after the completion of any plugging and abandonment procedures; and

(5) Information requested by the secretary for inclusion in the annual report.

Records shall be retained for a period of at least three years from the date of the sample, measurement, or report. This period may be extended by request of the secretary at any

time. The secretary may require the operator to deliver the records to the secretary at the conclusion of the retention period.

Source:

General Authority: SDCL 34A-2-93.

Law Implemented: SDCL 34A-2-44.

74:55:01:59.03. Corrective actions for improperly sealed wells. Corrective actions shall be done on wells that are improperly sealed, completed, or abandoned. The operator shall submit a corrective action plan, for secretary review and approval, for wells that are improperly sealed, completed, or abandoned, consisting of the proposed actions to be taken to prevent movement of fluid into unauthorized zones. The plan shall provide information on each well to be remediated including whether it is a production, monitoring, or abandoned well, the well name or number, and a description of the condition of the well.

In determining the adequacy of corrective actions proposed by the operator to prevent fluid movement between or into water-bearing strata, including underground sources of drinking water, the secretary shall consider the following criteria and factors:

(1) Nature and volume of injected fluid;

(2) Nature of native fluids or by-products of injection;

(3) Geology;

(4) Hydrology;

(5) History of the injection operation;

(6) Completion and plugging records;

(7) Abandonment procedures in effect at the time the well was abandoned; and

(8) Hydraulic connections between water-bearing strata, including underground sources of drinking water.

Source:

General Authority: SDCL 34A-2-93.

Law Implemented: SDCL 34A-2-48.

74:55:01:60. Closure of mine site following restoration. After completion of final restoration of the mine permit area aquifers, the ~~permittee~~ operator shall ~~close the facilities in accordance with approved plugging plans as specified in the permit plug wells in accordance with § 74:54:01:59 that will not be used for postclosure monitoring,~~

and reclaim the facilities in accordance with approved plans specified in the permit and reclamation plan. When closure is accomplished well plugging and surface reclamation is complete, the permittee operator shall notify the secretary. A final closure inspection and review of water quality data shall be conducted by the secretary. If closure is certified, the secretary shall issue written acknowledgement and permit cancellation procedures shall be initiated. In addition, the permittee shall retain records on the nature and composition of injected fluids until at least five years after plugging and abandonment, at which time the secretary may require the permittee to turn over the records. Based on the inspection and review, the secretary shall make a recommendation to the board at a closure hearing. If the board determines the operator has achieved restoration of the aquifers and reclamation of surface facilities, the postclosure care and maintenance period shall begin.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:60, July 1, 1996.

General Authority: SDCL 34A-2-40 93.

Law Implemented: SDCL 34A-2-44.

74:55:01:60.01. Postclosure plan – Estimated costs for postclosure care. As part of the postclosure plan required by SDCL 45-6B-91, before the start of the postclosure period, the operator shall submit to the secretary the estimated costs for postclosure care and maintenance as computed in accordance with established engineering principles, including:

(1) The cost of long-term ground water restoration to ensure continued compliance consistent with the values listed in the restoration table contained in the permit for both production and nonproduction zones;

(2) The cost of operation of monitoring systems; and

(3) The cost of inspection and maintenance activities to ensure compliance with all applicable reclamation, design, and operating criteria.

Source:

General Authority: SDCL 34A-2-93.

Law Implemented: SDCL 34A-2-40.

74:55:01:60.02. General postclosure inspection and maintenance activities.

During the postclosure period, the operator shall conduct site maintenance and other activities in accordance with the approved postclosure plan, including at a minimum quarterly inspections of well heads over the entire mine site. If leaking well heads are observed during the inspections they must be repaired or re-plugged as necessary.

Source:

General Authority: SDCL 34A-2-93.

Law Implemented: SDCL 34A-2-44.

74:55:01:60.03. Postclosure operation of monitoring systems. During the postclosure period, the operator shall continue surface and ground water quality monitoring in accordance with the approved postclosure plan or water quality monitoring plan. The results of all water quality monitoring and laboratory analyses must be included in the annual postclosure report.

Source:

General Authority: SDCL 34A-2-93.

Law Implemented: SDCL 34A-2-44.

74:55:01:60.04. Ground water contamination during the postclosure period.

Ground water contamination detected during the postclosure period shall be confirmed by additional sampling conducted by the operator as required by the secretary and shall be evaluated to determine whether remedial action is required. The remedial action required by the operator depends upon the extent of the impact, based upon the following:

(1) Whether the impact is a result of the mining operation;

(2) The impacts to the health and well being of the people, animals, wildlife, aquatic life, and plant life affected;

(3) The social and economic value of the impacted aquifer;

(4) The technical practicability and economic reasonableness of reducing or eliminating the source of pollution;

(5) The effect upon the environment; and

(6) The potential impacts to other waters of the state.

Based upon the evaluation, the secretary shall determine whether remedial action is required. If the secretary determines remedial action is required, the operator shall submit a remedial action plan. Depending upon the severity of the impact, the remedial actions may range from additional monitoring to a resumption of ground water restoration activity. The postclosure financial assurance shall be recalculated to account for the cost of remedial actions.

Source:

General Authority: SDCL 34A-2-93.

Law Implemented: SDCL 34A-2-48.

74:55:01:60.05. End of the postclosure period. The postclosure period shall end when the restored aquifer's water quality consistently meets the restoration values on the permit restoration table and care and maintenance for the site is equal to ordinary care and maintenance for lands not affected. After completion of the postclosure period, the operator shall submit to the secretary a statement certifying that postclosure activities

have been completed in accordance with the postclosure plan. The secretary shall conduct an on-site inspection of the Class III injection area, and provide public notice of its findings, at least thirty days prior to approving the certification of completion of postclosure care.

Source:

General Authority: SDCL 34A-2-93.

Law Implemented: SDCL 34A-2-48.

74:55:01:61. Demonstration of necessary financial resources. ~~The well owner or operator shall maintain the necessary financial resources in the form of performance bonds or equivalent financial assurance approved by the secretary to close, plug, and abandon the underground injection operation and to restore any affected aquifer in an approved manner. In lieu of individual performance bonds, operators may furnish a bond or an equivalent form of financial guarantee approved by the board~~ Repealed.

Source: 8 SDR 71, effective December 24, 1981; 13 SDR 129, 13 SDR 141, effective July 1, 1987; transferred from § 74:03:11:61, July 1, 1996.

~~**General Authority:** SDCL 34A-2-40.~~

~~**Law Implemented:** SDCL 34A-2-40.~~