TITLE 267 – NEBRASKA OIL AND GAS CONSERVATION COMMISSION

CHAPTER 7 – GEOLOGIC STORAGE OF CARBON DIOXIDE

DEFINITIONS. The terms used throughout this chapter have the same meaning as in Title 267 Chapter 1 and Nebraska Revised Statutes 57-1601, as included here with additional terms.

01. **COMMISSION** means the Nebraska Oil and Gas Conservation Commission.

02. For propose of this chapter **"ABANDONED WELL"** means a well whose use has been permanently discontinued or which is in a state of disrepair such that it cannot be used for its intended purpose or for observation purposes.

03. **"ACTIVITY"** means any activity related to the geologic storage of carbon dioxide subject to regulation under this chapter and Neb Rev Stat 57-1601 et seq.

04. **"APPLICABLE UNDERGROUND INJECTION CONTROL PROGRAM"** for each class of storage facility injection well means the program, or most recent amendment thereof, for that class of well in Nebraska as provided by federal law;

05. **"AQUIFER"** means a geological formation, group of formations, or part of a formation that is capable of yielding a significant amount of water to a well, spring, or other point of discharge.

06. **"AREA OF REVIEW"** means the region surrounding the geologic storage project where underground sources of drinking water may be endangered by the injection activity.

07. **"BOND RATING"** means a rating assigned to any long-term senior secured indebtedness issued by or on behalf of the storage operator, including any indebtedness issued by any governmental authority with respect to which the storage operator is obligor.

08. **"CARBON DIOXIDE PLUME"** means the extent underground, in three dimensions, of an injected carbon dioxide stream.

09. **"CARBON DIOXIDE STREAM"** means carbon dioxide from anthropogenic sources, plus incidental associated substances derived from the source materials and the production or capture process, and any substances added to the stream to enable or improve the injection process if such substances will not compromise the safety of geologic storage and will not compromise those properties of a storage reservoir which allow the reservoir to effectively enclose and contain the stored carbon dioxide stream; This does not apply to any carbon dioxide stream that meets the definition of a hazardous waste.

10. **"CASING"** means a pipe or tubing of varying diameter and weight, which is installed into a well to maintain the structural integrity of that well.

11. **"CLOSURE PERIOD"** means that period from permanent cessation of carbon dioxide injection until the commission issues a certificate of project completion.

12. **"CONFINING ZONE"** means a geologic formation, group of formations, or part of a formation stratigraphically overlying the injection zone that acts as a barrier to fluid movement. For injection wells operating under an injection depth waiver, confining zone means a geologic formation, group of formations, or part of a formation stratigraphically overlying and underlying the injection zone.

13. **"CONTAMINANT"** means any physical, chemical, biological, or radiological substance or matter in water.

14. **"CORRECTIVE ACTION"** means the use of commission-approved methods to ensure that wells within the area of review do not serve as conduits for the movement of fluids into underground sources of drinking water.

15. **"DIRECTOR"** shall mean Director or authorized agent of the Oil and Gas Conservation Commission of the State of Nebraska.

16. **"EXEMPTED AQUIFER"** means an "aquifer" or its portion that meets the criteria in the definition of "underground sources of drinking water" but which has been exempted by the Director.

17. **"FACILITY AREA"** means the ground surface areal extent of the storage reservoir.

18. **"FAULT"** means a surface or zone of rock fracture along which there has been displacement.

19. **"FLOW LINES"** means pipelines transporting carbon dioxide from the carbon dioxide injection facilities to the wellhead.

20. **"FLUID"** means any material or substance which flows or moves, whether in a semisolid, liquid, sludge, gas, or any other form or state.

21. **"FORMATION"** means a body of rock characterized by a degree of lithologic homogeneity which is prevailingly, but not necessarily, tabular and is mappable on the earth's surface or traceable in the subsurface.

22. **"FORMATION FLUID"** means fluid present in a formation under natural conditions as opposed to introduced fluids.

23. **"FORMATION FRACTURE PRESSURE"** means the pressure, measured in pounds per square inch, which, if applied to a subsurface formation, will propagate fractures in that formation.

24. **"GEOLOGIC SEQUESTRATION OR STORAGE"** means the emplacement of a gaseous, liquid, or supercritical carbon dioxide stream in a geologic storage reservoir. This term does not apply to carbon dioxide capture or transport.

25. **"GEOLOGIC STORAGE PROJECT"** means an injection well or wells used to emplace a carbon dioxide stream beneath the lowermost formation containing underground sources of drinking water; or, wells used for geologic storage that have been granted a waiver of the injection depth requirements; or, wells used for geologic storage that have received an expansion to the areal extent of an existing enhanced oil or gas recovery exempted aquifer. It includes the subsurface three-dimensional extent of the carbon dioxide plume, as well as the associated pressure front.

26. **"GEOLOGIC STORAGE"** means the permanent or short-term underground storage of carbon dioxide streams in a storage reservoir;

27. **"GROUND WATER"** means water occurring beneath the surface of the ground that fills available openings in rock or soil materials such that they may be considered saturated.

28. **"INJECTION WELL"** means a nonexperimental well used to inject carbon dioxide into or withdraw carbon dioxide from a reservoir.

29. **"INJECTION ZONE"** means a geologic formation, group of formations, or part of a formation that is of sufficient areal extent, thickness, porosity, and permeability to receive carbon dioxide through a well or wells associated with a geologic storage project.

30. **"MECHANICAL INTEGRITY"** means the absence of significant leakage within an injection well's tubing, casing, or packer (internal mechanical integrity), or outside of the casing (external mechanical integrity).

31. **"MINERALS"** means coal, oil, and natural gas.

32. **"MODEL"** means a representation or simulation of a phenomenon or process that is difficult to observe directly or that occurs over long timeframes. Models that support geologic storage can predict the flow of carbon dioxide within the subsurface, accounting for the properties and fluid content of the subsurface formations and the effects of injection parameters.

33. **"OPERATIONAL PERIOD"** means the period during which injection occurs.

34. **"PACKER"** means a device lowered into a well, which can be expanded or compressed to produce a fluid-tight seal.

35. **"PERMIT"** means a permit issued by the commission under the Nebraska G S Act allowing a person to operate a storage facility;

36. **"PERSON"** means an individual, association, partnership, corporation, municipality, state, federal, or tribal agency, or an agency or employee thereof.

37. **"PLUG OR PLUGGING"** means the act or process of sealing the flow of fluid into or out of a formation through a borehole or "well" penetrating that formation.

38. **"POSTCLOSURE PERIOD"** means that period after the commission has issued a certificate of project completion.

39. **"POSTINJECTION SITE CARE"** means appropriate monitoring and other actions, including corrective action, needed following cessation of injection to ensure that underground sources of drinking water are not endangered. Postinjection site care may occur in the closure or postclosure periods.

40. **"PRESSURE"** means the total load or force per unit area acting on a surface.

41. **"PRESSURE FRONT"** means the zone of elevated pressure and displaced fluids created by the injection of carbon dioxide into the subsurface. The pressure front of a carbon dioxide plume refers to a zone where there is a pressure differential sufficient to cause the movement of injected fluids or formation fluids from the injection zone.

42. **"PROJECT COMPLETION"** means the point in time, as determined by the commission at which the certificate of project completion is issued and the storage operator is released from all regulatory requirements associated with the storage facility.

43. **"RESERVOIR"** means a subsurface stratum, formation, cavity, or void, whether natural or artificially created, suitable for or capable of receiving through a well and geologically storing a carbon dioxide stream;

44. **"RESERVOIR ESTATE"** means ownership of any portion of a storage reservoir;

45. **"SCHEDULE OF COMPLIANCE"** means a schedule of remedial measures included in a ''permit,'' including an enforceable sequence of interim requirements (for example, actions, operations, or milestone events) leading to compliance with the ''appropriate Act and regulations.''

46. **"SITE"** means the land or water area where any ''facility or activity'' is physically located or conducted, including adjacent land used in connection with the facility or activity.

47. **"SITE CLOSURE"** means the point/time, as determined by the Director following the requirements, under the applicable underground injection program at which the owner or operator of a geologic storage site is released from post-injection site care

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

49. **"STORAGE FACILITY"** means the storage reservoir, underground equipment, and surface facilities and equipment used or proposed to be used in a geologic storage operation. The term includes the injection well and equipment used to connect the surface facility and equipment to the storage reservoir and underground equipment. The term does not include pipelines used to transport carbon dioxide to the storage facility.

50. **"STORAGE OPERATOR"** means a person holding or applying for a permit under the GS Act.

51. **"STORAGE RESERVOIR"** means the reservoir proposed, authorized, or used for storing one or more carbon dioxide streams pursuant to a permit. The term does not include reservoirs used for purposes other than storage of carbon dioxide streams.

52. **"SUBSURFACE OBSERVATION WELL"** means a well used to observe subsurface phenomena, including the presence of carbon dioxide, pressure fluctuations, fluid levels and flow, temperature, and in situ water chemistry.

53. **"TRANSMISSIVE FAULT OR FRACTURE"** means a fault or fracture that has sufficient permeability and vertical extent to allow fluids to move between formations.

54. **"TRAPPING"** means the physical and geochemical processes by which injected carbon dioxide is sequestered in the subsurface. Physical trapping occurs when buoyant carbon dioxide rises in the formation until it reaches impermeable strata

that inhibits further upward and lateral migration or is immobilized in pore spaces due to capillary forces. Geochemical trapping occurs when chemical reactions between the injected carbon dioxide and natural occurring minerals in the formation lead to the precipitation of solid carbonate natural occurring mineral compounds or dissolution in formation fluids.

55. **"UNDERGROUND SOURCE OF DRINKING WATER"** means an aquifer or any portion of an aquifer that supplies drinking water for human consumption, or in which the ground water contains fewer than ten thousand milligrams per liter total dissolved solids and is capable of supplying drinking water for human consumption and is not an exempted aquifer as determined by the Director.

56. **"WELL"** means a bored, drilled or driven shaft, or a dug hole, whose depth is greater than the largest surface dimension; or an improved sinkhole; or a subsurface fluid distribution system.

ALL OTHER WORDS used herein shall be given their usual customary and accepted meaning; and all words of a technical nature, or particular to the oil and gas industry, shall be given that meaning which is generally accepted in said oil and gas industry.

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CHAPTER 7 – GEOLOGIC STORAGE OF CARBON DIOXIDE

001 STORAGE FACILITY PERMIT

An application for a permit must include the following:

001.01 A site map showing the boundaries of the storage reservoir and the location of all proposed wells, proposed boreholes, and surface facilities within the carbon dioxide storage facility area;

001.02 A technical geologic and hydrogeologic evaluation of the proposed storage facility, including:

001.02A The immediate confining layer containment characteristics and all subsurface zones to be used for monitoring.

001.02B The evaluation must include any available geophysical data and assessments of any regional tectonic activity, local seismicity and regional or local fault zones, and a comprehensive description of local and regional structural and stratigraphic features.

001.02C The evaluation must describe the storage reservoir's mechanisms of geologic confinement, including rock properties, regional pressure gradients, structural features, and sorption characteristics with regard to the ability of that confinement to prevent migration of carbon dioxide beyond the proposed storage reservoir.

001.02D The evaluation must also identify any productive existing or potential mineral zones occurring within the facility area and any underground sources of drinking water in the facility area and within 1/2 mile of its outside boundary. The evaluation must include exhibits and plan view maps showing the following:

001.02D1 All wells, including water, oil, and natural gas exploration and development wells, and other manmade subsurface structures and activities, within the facility area and within ½ mile of its outside boundary;

001.02D2 All manmade surface structures that are intended for temporary or permanent human occupancy within the facility area and within ½ mile of its outside boundary;

001.02D3 Any regional or local faulting;

001.02D4 An isopach map of the storage reservoirs;

001.02D5 An isopach map of the primary and any secondary containment barrier for the storage reservoir;

001.02D6 A structure map of the top and base of the storage reservoirs;

001.02D7 Identification of all structural spill points or stratigraphic discontinuities controlling the isolation of stored carbon dioxide and

	associated fluids within the storage reservoir;
001.02D8	Evaluation of the pressure front and the potential impact on underground sources of drinking water, if any;
001.02D9	Structural and stratigraphic cross sections and any renderings that describe the geologic conditions at the storage reservoir;
001.02D10	The location, orientation, and properties of known or suspected faults and fractures that may transect the confining zone in the area of review, and a determination that they would not interfere with containment;
001.02D11	Data on the depth, areal extent, thickness, mineralogy, porosity, permeability, and capillary pressure of the injection and confining zone, including facies changes based on field data, which may include geologic cores, outcrop data, seismic surveys, well logs, and names and lithologic descriptions;
001.02D12	Geomechanical information on fractures, stress, ductility, rock strength, and in situ fluid pressures within the confining zone. The confining zone must be free of transmissive faults or fractures and of sufficient areal extent and integrity to contain the injected carbon dioxide stream;
001.02D13	Information on the seismic history, including the presence and depth of seismic sources and a determination that the seismicity would not interfere with containment;
001.02D14	Geologic and topographic maps and cross sections illustrating regional geology, hydrogeology, and the geologic structure of the facility area;
001.02D15	Identify and characterize additional strata overlying the storage reservoir that will prevent vertical fluid movement, are free of transmissive faults or fractures, allow for pressure dissipation, and provide additional opportunities for monitoring, mitigation, and remediation.

001.03 A review of the data of public record, conducted by a geologist or engineer, for all wells within the facility area, which penetrate the storage reservoir or primary or secondary seals overlying the reservoir, and all wells within the facility area and within 1/2 mile, or any other distance as deemed necessary by the commission, of the facility area boundary. The review must include the following:

001.03A A determination that all abandoned wells have been plugged and all operating wells have been constructed in a manner that prevents the carbon dioxide or associated fluids from escaping from the storage reservoir;

001.03B A description of each well's type, construction, date drilled, location, depth, record of plugging, and completion;

001.03C Maps and stratigraphic and structural cross sections indicating the vertical and lateral limits of all underground sources of drinking water, water wells, and springs within the area of review; their positions relative to the injection zone; and the measured or inferred direction of water movement;

001.03D A map of the area of review showing the number or name and location of all injection wells, producing wells, abandoned wells, plugged wells or dry holes, deep stratigraphic boreholes, state approved or United States Environmental Protection Agency approved subsurface cleanup sites, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells, other pertinent surface features, including structures intended for human occupancy, state, county, or Indian country boundary lines, and roads;

001.03E A list of contacts, submitted to the commission, when the area of review extends across state jurisdiction boundary lines;

001.03F Baseline geochemical data on subsurface formations, including all underground sources of drinking water in the area of review; and

001.03G Any additional information the commission may require.

001.04 The proposed calculated daily average and maximum daily injection rates, daily volume, and the total anticipated volume of the carbon dioxide stream using a method acceptable to and filed with the commission;

001.05 The proposed average and maximum bottom hole injection pressure to be utilized at the reservoir. The maximum allowed injection pressure, measured in pounds per square inch gauge, shall be approved by the commission and specified in the permit. In approving a maximum injection pressure limit, the commission shall consider the results of well tests and other studies that assess the risks of tensile failure and shear failure. The commission shall

approve limits that, with a reasonable degree of certainty, will avoid initiating a new fracture or propagating an existing fracture in the confining zone or cause the movement of injection or formation fluids into an underground source of drinking water;

001.06 The proposed preoperational formation testing program to obtain an analysis of the chemical and physical characteristics of the injection zone and confining zone.

001.07 The proposed stimulation program, a description of stimulation fluids to be used, and a determination that stimulation will not interfere with containment.

001.08 A description of the site-specific processes that will result in carbon dioxide trapping, including immobilization by capillary trapping, dissolution, and mineralization at the site;

001.09 The predicted rate of carbon dioxide trapping in the immobile capillary phase, dissolved phase, or mineral phase;

001.10 Submitting a Class VI permit obtained from the applicable underground injection control program shall satisfy all of the requirements of subsections (1) through (9) of this section.

001.11 Demonstrations with respect to the storage reservoir that:

001.11A The storage operator has made a good-faith effort to obtain the consent of all persons who own reservoir estates within the storage reservoir;

001.11B The storage operator has obtained the consent of persons who own reservoir estates comprising at least sixty percent of the physical volume contained within the defined storage reservoir; and

001.11C All nonconsenting reservoir estate owners are or will be equitably compensated.

001.12 Operation of a geologic storage project shall require issuance of a Class VI permit by the applicable underground injection control program.

Source: Laws 2021, LB650 $ 6

Effective Date: August 28, 2021

001.13 Permit fee

001.13A Any person filing a permit application or an application to amend an existing permit shall pay a processing fee. The fee will be based on actual processing costs, including computer data processing costs, incurred by the commission.

001.13A1 A record of all application processing costs incurred must be maintained by the commission.

001.13A2 Promptly after receiving an application, the commission shall prepare and submit to the applicant an estimate of the

processing fee and a payment billing schedule.

001.13A3 After the commission's work on the application has concluded, a final statement will be sent to the applicant. The full processing fee must be paid before the commission issues its final decision on an application.

001.13A4 The applicant must pay the processing fee regardless of whether a permit is issued or denied, or the application withdrawn.

001.13B The commission has one year from the date an application is deemed complete to issue a final decision regarding the application.

Source: Laws 2021, LB650 $ 7
Effective Date: August 28, 2021

002 STORAGE FACILITY PERMIT TRANSFER.

002.01 The storage operator and proposed transferee shall notify the commission in writing of any proposed permit transfer. The notice must contain the following:

002.02 The name and address of the person to whom the permit is to be transferred.

002.02A The name of the permit subject to transfer and location of the storage facility and a description of the land within the facility area.

002.02B The date that the storage operator desires the proposed transfer to occur.

002.02C A demonstration of financial assurance.

002.03 Commission review. The commission shall review the proposed transfer to ensure that the purposes are not compromised but are promoted. For good cause, the commission may deny a transfer request, delay acting on it, and place conditions on its approval.

002.04 Commission approval required. A permit transfer can occur only upon the commission's written order.

Source: Laws 2021, LB650, $ 6.
Effective Date: August 28, 2021

003 ISSUANCE OF PERMITS

003.01 Before issuing a permit, the commission shall consult with the Department of Environment and Energy and the Underground Injection Control program permitting authority.

003.02 If the storage reservoir contains commercially valuable minerals, a permit may be issued only if the commission is satisfied that the interests of the mineral owners or mineral lessees will not be

adversely affected or have been addressed in an arrangement entered into by the mineral owners or mineral lessees and the storage operator.

003.03 The commission may include in a permit or order all things necessary to carry out the objectives of the GS Act and to protect and adjust the respective rights and obligations of persons affected by geologic storage.

003.04 If a storage operator does not obtain the consent of all persons who own a reservoir estate within the storage reservoir, the commission may require that any reservoir estates owned by nonconsenting owners be included in a storage facility and subject to geologic storage.

003.05 When the commission issues a permit, it shall also issue a certificate stating that the permit has been issued, describing the area covered, and containing other information the commission deems appropriate. The commission shall file a copy of the certificate with the register of deeds in the county or counties where the storage facility is located.

Source Laws 2021, LB650, §§ 9-13.
Effective Date: August 28, 2021

004 MINOR MODIFICATIONS OF PERMITS

Upon agreement between the storage operator and the commission, the commission may modify a permit to make the corrections or allowances without the storage operator filing an application to amend a permit. Any permit modification not processed as a minor modification under this section must be filed as an application to amend an existing permit in compliance with Chapter 6. Minor modifications may include:

004.01 Correct typographical errors.

004.02 Require more frequent monitoring or reporting by the storage operator.

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

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

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

004.06 Change well construction requirements approved by the commission, provided that any such alteration shall comply with the requirements of this chapter and no such changes are physically incorporated into construction of the well prior to approval of the modification by the commission.

004.07 Amend a facility plan where the modifications clarify or correct the plan, as determined by the commission.

005 EMERGENCY AND REMEDIAL RESPONSE PLAN

The storage operator shall implement the commission-approved emergency and remedial response plan and the worker safety plan. This plan must include emergency response and security procedures. An emergency and remedial response plan approved as part of a Class VI permit issued under the applicable underground injection control program shall be sufficient to satisfy the emergency and remedial response plan requirements of this section. The plan, including revision of the list of contractors and equipment vendors, must be updated as necessary or as the commission requires. Copies of the plans must be available at the storage facility and at the storage operator's nearest operational office.

005.01 The emergency and remedial response plan requires a description of the actions the storage operator shall take to address movement of the injection or formation fluids that may endanger an underground source of drinking water during construction, operation, and post injection site care periods. The requirement to maintain and implement a commission-approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. The plan must also detail:

005.01A The safety procedures concerning the facility and residential, commercial, and public land use within 1/2 mile, or any other distance set by the commission of the outside boundary of the facility area; and

005.01B Contingency plans for addressing carbon dioxide leaks from any well, flow lines, or other facility, and loss of containment from the storage reservoir, and identify specific contractors and equipment vendors capable of providing necessary services and equipment to respond to such leaks or loss of containment.

005.02 The storage operator shall review annually the emergency and remedial response plan developed under subsection 1. Based on this review, the storage operator shall submit to the commission an amended plan or demonstrate to the commission that no amendment to the plan is needed. Any amendments to the plan are subject to the commission's approval, must be incorporated into the storage facility permit, and are subject to the permit modification requirements. Amended plans or demonstrations that amendments are not needed shall be submitted to the commission as follows:

005.02A Within one year of an area of review reevaluation;

005.02B Following any significant changes to the facility, such as addition of injection or monitoring wells, on a schedule determined by the commission; or

005.02C When required by the commission.

005.03 Obtaining a Class VI permit from the applicable underground injection control program and complying with the provisions of that permit shall satisfy all of the emergency and remedial response plan requirements of this section.

Source: Laws 2021, L8650, $ 10.

Effective Date: August 28, 2021

006 REPORTING REQUIREMENTS.

006.01 The storage operator shall file with the commission all reports, submittals, notifications, and any other information that the commission requires including reports submitted to the applicable underground injection control program.

006.02 The storage operator shall give notice to the commission as soon as possible of any planned physical alterations or additions to the permitted storage facility or any other planned changes in the permitted storage facility or activity which may result in noncompliance with permit requirements.

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

006.04 The storage operator shall file with the commission semi-annually, or more frequently if the commission requires, a report on the volume of carbon dioxide injected into or withdrawn since the last report, the average injection rate, average composition of the carbon dioxide stream, wellhead and down-hole temperature and pressure data or calculations, or other pertinent operational parameters as required by the commission.

006.05 The quarterly report is due thirty days after the end of the quarter. The report must:

006.05A Describe any changes to the physical, chemical, and other relevant characteristics of the carbon dioxide stream from the proposed operating data.

006.05B State the monthly average, maximum, and minimum values for injection pressure, flow rate and volume, and annular pressure.

006.05C Describe any event that exceeds operating parameters for annulus pressure or injection pressure specified in the permit.

006.05D Describe any event which triggers a shutoff device required and the response taken.

006.05E State the monthly volume and mass of the carbon dioxide stream injected over the reporting period and the volume injected cumulatively over the life of the project to date.

006.05F State the monthly annulus fluid volume added.

006.05G State the results of monitoring.

006.06 The storage operator shall file with the commission an annual report that summarizes the quarterly reports and that provides updated projections of the response and storage capacity of the storage reservoir. The projections must be based on actual reservoir operational experience, including any new geologic data and information. All anomalies in predicted behavior as indicated in permit conditions or in the assumptions upon which the permit was issued must be explained and, if necessary, the permit conditions amended. The annual report is due forty-five days after the end of the year.

006.07 The storage operator shall report, within thirty days, the results of any:

006.07A Tests of mechanical integrity.

006.07B Well workover.

006.07C Other test of the injection well conducted by the storage operator if required by the commission.

006.08 The storage operator shall report, within twenty-four hours:

006.08A Evidence that the injected carbon dioxide stream or associated pressure front may cause an endangerment to an underground source of drinking water;

006.08B Noncompliance which may endanger health and safety of persons or cause pollution of the environment, including:

006.08B1 Monitoring or other information which indicates that any contaminant may cause an endangerment to underground sources of drinking water; or

006.08B2 Noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between underground sources of drinking water shall be provided verbally within twenty-four hours from the time the storage operator becomes aware of the circumstances. A written submission shall also be provided within five days of the time the storage operator becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact

dates and times; and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

006.08C Triggering of a shutoff system (e.g., down-hole or at the surface);

006.08D Failure to maintain mechanical integrity; or

006.08E Release of injected carbon dioxide to the atmosphere or biosphere as detected any required surface air and soil gas monitoring, or other monitoring technologies required by the commission.

006.09 The storage operator shall retain the following records until project completion:

006.09A All data collected for the applications of the storage facility permit, injection well permit, and operation of injection well;

006.09B Data on the nature and composition of all injected fluids collected.

006.09C All records from the closure period, including well plugging reports, postinjection site care data, and the final assessment.

006.09D Upon project completion, the storage operator shall deliver any records required in this section to the commission.

006.10 The storage operator shall retain the following records for a period of at least ten years from the date of the sample, measurement, or report:

006.10A Monitoring data collected and

006.10B Calibration and maintenance records and all original recordings for continuous monitoring instrumentation, and copies of all reports required by the storage facility permit.

006.10C This period may be extended by request of the commission at any time.

006.11 The storage operator shall report all instances of noncompliance not otherwise reported under this section, at the time monitoring reports are submitted.

006.12 Whenever the storage operator becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the commission, such facts or information shall be promptly submitted to the commission. Failure to do so may result in revocation of the permit, depending on the nature of the information withheld.

006.13 Obtaining a Class VI permit obtained from the applicable underground injection control program and complying with the

provisions of that permit shall satisfy all of the requirements of this section.

Source: Laws 2021, LB650, $ 11
Effective Date: August 28, 2021

007 STORAGE FACILITY FEES.

007.01 The storage operator shall pay the commission a fee of one cent on each ton of carbon dioxide injected for storage. The fee must be deposited in the carbon dioxide storage facility administrative fund.

007.02 The storage operator shall pay the commission a fee of seven cents on each ton of carbon dioxide injected for storage. The fee must be deposited in the carbon dioxide storage facility trust fund.

007.03 After notice and hearing, the commission may issue an order to adjust the fee amounts.

Source: Laws 2021, LB650, $ l6, $ 17
Effective Date: August 28, 2021
Cross References
Nebraska Capital Expansion Act, see section 72-1269.
Nebraska State Funds Investment Act, see section 72-1260

008 GEOLOGICAL STORAGE FACILITY BOND REQUIREMENTS

Prior to commencing injection operations, the operator of any storage facility shall submit to the commission, and obtain its approval, a surety bond or cash bond in the amount specified by the commission. An alternative form of security may be approved by the commission. The operator of the storage facility shall be the principal on the bond provided to cover the storage facility. Each surety bond shall be executed by a responsible surety company or cash bond provided by operator authorized to transact business in Nebraska. The commission shall periodically review the bond amount and through public notice and hearing may issue an order to adjust that amount.

009 POSTINJECTION SITE CARE AND FACILITY CLOSURE

The storage operator shall submit and maintain the post injection site care and facility closure plan as a part of the storage facility permit application to be approved by the commission. Obtaining a Class VI permit from the applicable underground injection control program and complying with the provisions of that permit shall satisfy all of the requirements of this section for submitting and maintaining a post injection site care and facility closure plan. The requirement to maintain and implement a commission-approved plan is directly enforceable regardless of whether the requirement is a condition of the permit.

009.01 The postinjection site care and facility closure plan must include the following information:

009.01A The pressure differential between pre injection and predicted post injection pressures in the injection zone.

009.01B The predicted position of the carbon dioxide plume and associated pressure front at cessation of injection as demonstrated in the area of review evaluation;

009.01C A description of post injection monitoring location, methods, and proposed frequency;

009.01D A schedule for submitting post injection site care monitoring results to the commission; and

009.01E The duration of the post injection site care monitoring timeframe that ensures non endangerment of underground sources of drinking water.

009.02 The storage operator shall specify in the post injection site care and facility closure plan which wells will be plugged and which will remain unplugged to be used as subsurface observation wells. Subsurface observation and ground water monitoring wells as approved in the plan must remain in place for continued monitoring during the closure period.

009.03 Upon cessation of injection, the storage operator shall either submit an amended post injection site care and facility closure plan or demonstrate to the commission through monitoring data and modeling results that no amendment to the plan is needed. Any amendments to the post injection site care and facility closure plan are subject to the commission's approval and must be incorporated into the storage facility permit.

009.04 At any time during the life of the geologic storage project, the storage operator may modify and resubmit the post injection site care and facility closure plan for the commission's approval.

009.05 Upon cessation of injection, all wells not associated with monitoring must be properly plugged and abandoned in a manner which will not allow movement of injection or formation fluids that endanger underground sources of drinking water. All storage facility equipment, appurtenances, and structures not associated with monitoring must be removed or repurposed. Following well plugging and removal of all surface equipment, the surface must be reclaimed to the commission's specifications that will, in general, return the land as closely as practicable to original condition.

009.06 The well casing must be cut off at a depth of four feet below the surface and a steel plate welded on top identifying the well name and that it was used for carbon dioxide storage.

009.07 The commission shall determine in conjunction with the storage operator whether any post closure monitoring will be conducted and, if so, develop a monitoring plan for the post closure period, including a review and final approval of wells to be plugged.

009.08 The storage operator shall continue to conduct monitoring during the closure period as specified in the commission-approved post injection site care and facility closure plan. The storage operator may apply

for project completion with an alternative post injection site care monitoring timeframe. Once it is demonstrated that underground sources of drinking water are no longer endangered, the final assessment is complete, and the storage operator may apply to the commission for a certificate of project completion. If the storage operator is unable to demonstrate that underground sources of drinking water are no longer being endangered, the storage operator shall continue monitoring the storage facility until full compliance is met and such demonstration can be made.

009.09 Before project completion, the storage operator shall provide a final assessment of the stored carbon dioxide's location, characteristics, and its future movement and location within the storage reservoir. The storage operator shall submit the final assessment to the commission within ninety days of completing all postinjection site care and facility closure requirements.

009.09A The final assessment must include:

009.09A1 The results of computational modeling performed pursuant to delineation of the area of review.

009.09A2 The predicted timeframe for pressure decline within the injection zone, and any other zones, such that formation fluids may not be forced into any underground sources of drinking water or the timeframe for pressure decline to preinjection pressures;

009.09A3 The predicted rate of carbon dioxide plume migration within the injection zone and the predicted timeframe for the cessation of injection induced migration;

009.09A4 A description of the site-specific processes that will result in carbon dioxide trapping, including immobilization by capillary trapping, dissolution, and mineralization at the site;

009.09A5 The predicted rate of carbon dioxide trapping in the immobile capillary phase, dissolved phase, or mineral phase;

009.09A6 The results of laboratory analyses, research studies, or field or site specific studies to verify the information required in paragraphs 4 and 5;

009.09A7 A characterization of the confining zone, including a demonstration that it is free of transmissive faults, fractures, and microfractures, and an evaluation of thickness, permeability, and integrity to

impede fluid (e.g., carbon dioxide, formation fluids) movement;

009.09A8 Any other projects in proximity to the predictive modeling of the final extent of the carbon dioxide plume and area of elevated pressures. The presence of potential conduits for fluid movement, including planned injection wells and project monitoring wells associated with the proposed geologic storage project;

009.09A9 A description of the well construction and an assessment of the quality of plugs of all abandoned wells within the area of review;

009.09A10 The distance between the injection zone and the nearest underground source of drinking water above and below the injection zone;

009.09A11 An assessment of the operations conducted during the operational period, including the volumes injected, volumes extracted, all chemical analyses conducted, and a summary of all monitoring efforts. The report must also document the stored carbon dioxide's location and characteristics and predict how it might move during the post closure period;

009.09A12 An assessment of the funds in the carbon dioxide storage facility trust fund to ensure that sufficient funds are available to carry out the required activities on the date on which they may occur, taking into account project-specific risk assessments, projected timing of activities (e.g., post injection site care), and interest accumulation in the trust fund; and

009.09A13 Any additional site-specific factors required by the commission.

009.09B Information submitted to support the demonstration in subdivision a must meet the following criteria:

009.09B1 All analyses and tests for the final assessment must be accurate, reproducible, and performed in accordance with the established quality assurance standards. An approved quality assurance and quality control plan must

address all aspects of the final assessment;

009.09B2 Estimation techniques must be appropriate and test protocols certified by the United States Environmental Protection Agency must be used where available;

009.09B3 Predictive models must be appropriate and tailored to the site conditions, composition of the carbon dioxide stream, and injection and site conditions over the life of the geologic storage project;

009.09B4 Predictive models must be calibrated using existing information when sufficient data are available;

009.09B5 The sources and bases used for modeling assumptions must be disclosed to the commission whenever values are estimated on the basis of known, historical information instead of site-specific measurements;

009.09B6 An analysis must be performed to identify and assess parameters of the post injection monitoring timeframe demonstration that contribute significantly to uncertainty. The storage operator shall conduct sensitivity analyses to determine the effect that significant uncertainty may contribute to the modeling demonstration; and

009.09B7 Any additional criteria required by the commission.

009.09C The storage operator shall provide a copy of an accurate plat certified by a registered surveyor which has been submitted to the county recorder's office designated by the commission. The plat must indicate the location of the injection well relative to permanently surveyed benchmarks. The storage operator must also submit a copy of the plat to the United States Environmental Protection Agency regional administrator office and Nebraska Department of Environment and Energy.

009.09D The storage operator shall record a notation on the deed to the property on which the injection well was located, or any other document that is normally examined during title search, that will in perpetuity provide any potential purchaser of the property the following information:

009.09D1 The fact that land has been used to sequester carbon dioxide;

009.09D2 The name of the state agency, local authority, or tribe with which the survey plat was filed, as well as the address of the applicable United States Environmental Protection Agency regional office to which it was submitted; and

009.09D3 The volume of fluid injected, the injection zone or zones into which it was injected, and the period over which injection occurred.

010 DETERMINING STORAGE AMOUNTS

010.01 Upon application by a geologic storage project operator, the commission, after notice and hearing, shall issue an order determining the amount of injected carbon dioxide stored in a storage reservoir under a permit issued pursuant to Neb Rev Stat Section 57-1601 et seq.

010.02 The applicant shall pay a processing fee for a storage amount determination. The applicant shall pay a processing fee based on the commission's actual processing costs, including computer data processing costs, as determined by the commission. The following procedures and criteria will be utilized in establishing the fee:

010.02A A record of all application processing costs incurred must be maintained by the commission.

010.02B Promptly after receiving an application, the commission shall prepare and submit to the applicant an estimate of the processing fee.

010.02C After the commission's work on the application has concluded, a final statement will be sent to the applicant. The full processing fee must be paid before the commission issues its decision on the application.

010.02D The applicant must pay the processing fee even if the application is denied or withdrawn.

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011 STRATIGRAPHY TEST HOLES

(This language references, TITLE 267 NEBRASKA OIL AND GAS CONSERVATION COMMISSION)

All stratigraphic test holes must be drilled as per the rules contained in Chapter 3, Sections 003, 004, 006, 007 and Section 012, General Drilling Rules.