

CHAPTER 38-22

CARBON DIOXIDE UNDERGROUND STORAGE 38-22-01. Policy. It is in the public interest to promote the geologic storage of carbon dioxide. Doing so will benefit the state and the global environment by reducing greenhouse gas emissions. Doing so will help ensure the viability of the state's coal and power industries, to the economic benefit of North Dakota and its citizens. Further, geologic storage of carbon dioxide, a potentially valuable commodity, may allow for its ready availability if needed for commercial, industrial, or other uses, including enhanced recovery of oil, gas, and other minerals. Geologic storage, however, to be practical and effective requires cooperative use of surface and subsurface property interests and the collaboration of property owners. Obtaining consent from all owners may not be feasible, requiring procedures that promote, in a manner fair to all interests, cooperative management, thereby ensuring the maximum use of natural resources.

38-22-02. Definitions. As used in this chapter, unless the context requires otherwise:

1. "Carbon dioxide" means carbon dioxide produced by anthropogenic sources which is of such purity and quality that it 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 a stored gas.
2. "Commission" means the industrial commission.
3. "Geologic storage" means the permanent or short-term underground storage of carbon dioxide in a storage reservoir.
4. "Permit" means a permit issued by the commission allowing a person to operate a storage facility.
5. "Pore space" means a cavity or void, whether natural or artificially created, in a subsurface sedimentary stratum.
6. "Reservoir" means a subsurface sedimentary stratum, formation, aquifer, cavity, or void, whether natural or artificially created, including oil and gas reservoirs, saline formations, and coal seams suitable for or capable of being made suitable for injecting and storing carbon dioxide.
7. "Storage facility" means the reservoir, underground equipment, and surface facilities and equipment used or proposed to be used in a geologic storage operation. It does not include pipelines used to transport carbon dioxide to the storage facility.
8. "Storage operator" means a person holding or applying for a permit.
9. "Storage reservoir" means a reservoir proposed, authorized, or used for storing carbon dioxide.

38-22-03. Commission authority. The commission has authority:

1. Over all persons and property necessary to administer and enforce this chapter and its objectives.
2. To regulate activities relating to a storage facility, including construction, operation, and closure.
3. To enter, at a reasonable time and manner, a storage facility to inspect equipment and facilities; to observe, monitor, and investigate operations; and to inspect records required to be maintained at the facility.

4. To require that storage operators provide assurance, including bonds, that money is available to fulfill the storage operator's duties.
5. To exercise continuing jurisdiction over storage operators and storage facilities, including the authority, after notice and hearing, to amend provisions in a permit and to revoke a permit.
6. To dissolve or change the boundaries of any commission-established oil or gas field or unit that is within or near a storage reservoir's boundaries.
7. To grant, for good cause, exceptions to this chapter's requirements and implementing rules.

38-22-04. Permit required - Permit transfer. Geologic storage is allowed if permitted by the commission. A permit may be transferred if the commission consents.

38-22-05. Permit applications, fees, costs, and priorities - Carbon dioxide storage administrative fund.

1. A person applying for a permit shall:
 - a. Comply with application requirements set by the commission.
 - b. Pay a fee in an amount set by the commission. The amount of the fee must be set by rule and must be based on the commission's anticipated cost of processing the application. The fee must be deposited in the carbon dioxide storage administrative fund.
 - c. Pay to the commission the costs the commission incurs in publishing notices for hearings and holding hearings on permit applications.
2. In processing permit applications the commission shall give priority to storage operators who intend to store carbon dioxide produced in North Dakota.

38-22-06. Permit hearing - Hearing notice.

1. The commission shall hold a public hearing before issuing a permit.
2. Notice of the hearing must be published for two consecutive weeks in the official newspaper of the county or counties where the storage reservoir is proposed to be located and in any other newspaper the commission requires. Publication deadlines must comply with commission requirements.
3. Notice of the hearing must be given to each mineral lessee, mineral owner, and pore space owner within the storage reservoir and within one-half mile of the storage reservoir's boundaries.
4. Notice of the hearing must be given to each surface owner of land overlying the storage reservoir and within one-half mile of the reservoir's boundaries.
5. Notice of the hearing must be given to any additional persons that the commission requires.
6. Service of hearing notices required by this section must conform to personal service provisions in rule 4 of the North Dakota Rules of Civil Procedure.
7. Hearing notices required by this section must comply with deadlines set by the commission.
8. Hearing notices required by this section must contain the information the commission requires.

38-22-07. Permit consultation. Before issuing a permit, the commission shall consult the state department of health.

38-22-08. Permit requirements. Before issuing a permit, the commission shall find:

1. That the storage operator has complied with all requirements set by the commission.
2. That the storage facility is suitable and feasible for carbon dioxide injection and storage.
3. That the carbon dioxide to be stored is of a quality that allows it to be safely and efficiently stored in the storage reservoir.
4. That the storage operator has made a good-faith effort to get the consent of all persons who own the storage reservoir's pore space.
5. That the storage operator has obtained the consent of persons who own at least sixty percent of the storage reservoir's pore space.
6. Whether the storage facility contains commercially valuable minerals and, if it does, 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.
7. That the proposed storage facility will not adversely affect surface waters or formations containing fresh water.
8. That carbon dioxide will not escape from the storage reservoir.
9. That substances that compromise the objectives of this chapter or the integrity of a storage reservoir will not enter a storage reservoir.
10. That the storage facility will not endanger human health nor unduly endanger the environment.
11. That the storage facility is in the public interest.
12. That the horizontal and vertical boundaries of the storage reservoir are defined. These boundaries must include buffer areas to ensure that the storage facility is operated safely and as contemplated.
13. That the storage operator will establish monitoring facilities and protocols to assess the location and migration of carbon dioxide injected for storage and to ensure compliance with all permit, statutory, and administrative requirements.
14. That all nonconsenting pore space owners are or will be equitably compensated.

38-22-09. Permit provisions. The commission may include in a permit or order all things necessary to carry out this chapter's objectives and to protect and adjust the respective rights and obligations of persons affected by geologic storage.

38-22-10. Amalgamating property interests. If a storage operator does not obtain the consent of all persons who own the storage reservoir's pore space, the commission may require that the pore space owned by nonconsenting owners be included in a storage facility and subject to geologic storage.

38-22-11. Certificate. 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 county recorder in the county or counties where the storage facility is located.

38-22-12. Environmental protection - Reservoir integrity.

1. The commission shall take action to ensure that a storage facility does not cause pollution or create a nuisance. For the purposes of this provision and in applying other laws, carbon dioxide stored, and which remains in storage under a commission permit, is not a pollutant nor does it constitute a nuisance.
2. The commission's authority in subsection 1 does not limit the jurisdiction held by the state department of health. Nothing else in this chapter limits the jurisdiction held by the state department of health.
3. The commission shall take action to ensure that substances that compromise the objectives of this chapter or the integrity of a storage reservoir do not enter a storage reservoir.
4. The commission shall take action to ensure that carbon dioxide does not escape from a storage facility.

38-22-13. Preservation of rights. Nothing in this chapter nor the issuing of a permit:

1. Prejudices the rights of property owners within a storage facility to exercise rights that have not been committed to a storage facility.
2. Prevents a mineral owner or mineral lessee from drilling through or near a storage reservoir to explore for and develop minerals, provided the drilling, production, and related activities comply with commission requirements that preserve the storage facility's integrity and protect this chapter's objectives.

38-22-14. Fees - Carbon dioxide storage facility administrative fund – Continuing appropriation.

1. Storage operators shall pay the commission a fee on each ton of carbon dioxide injected for storage. The fee must be in the amount set by commission rule. The amount must be based on the commission's anticipated expenses that it will incur in regulating storage facilities during their construction, operational, and preclosure phases.
2. The fee must be deposited in the carbon dioxide storage facility administrative fund. The fund must be maintained as a special fund and all money in the fund is appropriated and may be used only for defraying the commission's expenses in processing permit applications; regulating storage facilities during their construction, operational, and preclosure phases; and making storage amount determinations under section 38-22-23. The commission, however, through a cooperative agreement with another state agency, may use the fund to compensate the cooperating agency for expenses the cooperating agency incurs in carrying out regulatory responsibilities that agency may have over a storage facility. Interest earned by the fund must be deposited the fund.

38-22-15. Fees - Carbon dioxide trust fund - Continuing appropriation.

1. Storage operators shall pay the commission a fee on each ton of carbon dioxide injected for storage. The fee must be in the amount set by commission rule. The amount must be based on the commission's anticipated expenses associated with the long-term monitoring and management of a closed storage facility.

2. The fee must be deposited in the carbon dioxide storage facility trust fund. The fund must be maintained as a special fund and all money in the fund is appropriated and may be used only for defraying expenses the commission incurs in long-term monitoring and management of a closed storage facility. The commission, however, through a cooperative agreement with another state agency, may use the fund to compensate the cooperating agency for expenses the cooperating agency incurs in carrying out regulatory responsibilities that agency may have over a storage facility. Interest earned by the fund must be deposited in the fund.

3. The industrial commission shall file with the director of the legislative council a report discussing whether the amount in the carbon dioxide storage facility trust fund and fees being paid into it are sufficient to satisfy the fund's objectives. The first report is due in December of 2014 and subsequent reports are due every four years thereafter.

38-22-16. Title to carbon dioxide. The storage operator has title to the carbon dioxide injected into and stored in a storage reservoir and holds title until the commission issues a certificate of project completion. While the storage operator holds title, the operator is liable for any damage the carbon dioxide may cause, including damage caused by carbon dioxide that escapes from the storage facility.

38-22-17. Certificate of project completion - Release - Transfer of title and custody.

1. After carbon dioxide injections into a reservoir end and upon application by the storage operator, the commission shall consider issuing a certificate of project completion.

2. The certificate may only be issued after public notice and hearing. The commission shall establish notice requirements for this hearing.

3. The certificate may only be issued after the commission has consulted with the state department of health.

4. The certificate may not be issued until at least ten years after carbon dioxide injections end.

5. The certificate may only be issued if the storage operator:

a. Is in full compliance with all laws governing the storage facility.

b. Shows that it has addressed all pending claims regarding the storage facility's operation.

c. Shows that the storage reservoir is reasonably expected to retain the carbon dioxide stored in it.

d. Shows that the carbon dioxide in the storage reservoir has become stable.

Stored carbon dioxide is stable if it is essentially stationary or, if it is migrating or may migrate, that any migration will be unlikely to cross the storage reservoir boundary.

e. Shows that all wells, equipment, and facilities to be used in the postclosure period are in good condition and retain mechanical integrity.

f. Shows that it has plugged wells, removed equipment and facilities, and completed reclamation work as required by the commission.

6. Once a certificate is issued:

- a. Title to the storage facility and to the stored carbon dioxide transfers, without payment of any compensation, to the state.
- b. Title acquired by the state includes all rights and interests in, and all responsibilities associated with, the stored carbon dioxide.
- c. The storage operator and all persons who generated any injected carbon dioxide are released from all regulatory requirements associated with the storage facility.
- d. Any bonds posted by the storage operator must be released.
- e. Monitoring and managing the storage facility is the state's responsibility to be overseen by the commission until such time as the federal government assumes responsibility for the long-term monitoring and management of storage facilities.

38-22-18. Penalties.

1. A person who violates a provision of this chapter or a commission rule or order under this chapter is subject to a civil penalty imposed by the commission or a court not to exceed twelve thousand five hundred dollars for each offense, and each day's violation is a separate offense. Paying the penalty does not make legal an illegal act nor relieve a person on whom the penalty is imposed from correcting the violation or from liability for damages caused by the violation.
2. In determining the amount of the penalty, the commission shall consider:
 - a. The nature of the violation, including its circumstances and gravity, and the hazard or potential hazard to the public's or a private person's health, safety, and economic welfare.
 - b. The economic or environmental harm caused by the violation.
 - c. The economic value or other advantage gained by the person committing the violation.
 - d. The history of previous violations.
 - e. The amount necessary to deter future violations.
 - f. Efforts to correct the violation.
 - g. Other matters justice requires.

38-22-19. Enhanced recovery projects.

1. This chapter does not apply to applications filed with the commission proposing to use carbon dioxide for an enhanced oil or gas recovery project, rather such applications will be processed under chapter 38-08.
2. The commission may allow an enhanced oil or gas recovery project to be converted to a storage facility. In considering whether to approve a conversion, and upon conversion, the provisions of this chapter and its implementing rules apply, but if during the conversion process unique circumstances arise, the commission, to better ensure that the chapter's objectives are fulfilled, may waive such provisions and may impose additional ones.

38-22-20. Cooperative agreements and contracts.

1. The commission may enter into agreements with other governments, government entities, and state agencies for the purpose of carrying out this chapter's objectives.
2. The commission may enter into contracts with private persons to assist it in carrying out this chapter's objectives. Unless the circumstances require otherwise, the commission shall, in entering such contracts, follow the process set out in section 38-08-04.4. If an emergency exists the commission may enter contracts without public notice and without competitive bidding.

38-22-21. Trusts, monopolies, restraint of trade. Cooperative operation of a storage facility permitted by the commission does not violate North Dakota statutes relating to trusts, monopolies, or restraint of trade.

38-22-22. Participation of public interests. The entity or official controlling state interests or the interests of political subdivisions is authorized to consent to and participate in a geologic storage project.

38-22-23. Determining storage amounts - Carbon credits - Fee.

1. The commission, under procedures and criteria it may adopt, shall determine the amount of injected carbon dioxide stored in a reservoir that has been or is being used for an enhanced oil or gas recovery project. The commission may also make such a determination for carbon dioxide stored under this chapter.
2. The purpose for determining storage amounts is to facilitate using the stored carbon dioxide for such matters as carbon credits, allowances, trading, emissions allocations, and offsets, and for other similar purposes.
3. The commission may charge a reasonable fee to the person requesting a storage determination. The fee must be set by rule.
4. Fees the commission receives for storage determinations must be deposited into the carbon dioxide storage facility administrative fund.

GEOLOGIC STORAGE OF CARBON DIOXIDE

CHAPTER 43-05-01

Section

43-05-01-01 Definitions	XI-1
43-05-01-02 Scope of Chapter	XI-2
43-05-01-03 Books and Records to be Kept to Substantiate Reports	XI-3
43-05-01-04 Access to Records	XI-3
43-05-01-05 Storage Facility Permit	XI-3
43-05-01-06 Storage Facility Permit Transfer.....	XI-7
43-05-01-07 Amending Storage Facility Permit	XI-7
43-05-01-08 Amalgamation of Subsurface Rights to Operate Geological Storage Unit	XI-8
43-05-01-09 Well Permit Application Requirements	XI-9
43-05-01-10 Well Permit	XI-11
43-05-01-11 Well Operational Standards	XI-11
43-05-01-12 Amendment to Carbon Dioxide Storage Facility Well Permits	XI-14
43-05-01-13 Storage Facility Operational Safety Plans	XI-14
43-05-01-14 Leak Detection and Reporting	XI-14
43-05-01-15 Storage Facility Corrosion Monitoring and Prevention Requirements	XI-15
43-05-01-16 Storage Facility Identification Requirements	XI-15
43-05-01-17 Storage Facility Fees	XI-15
43-05-01-18 Quarterly and Annual Reporting Requirements	XI-16
43-05-01-19 Facility Closure	XI-16
43-05-01-20 Determining Storage Amounts	XI-17

GEOLOGIC STORAGE OF CARBON DIOXIDE

CHAPTER 43-05-01

- 43-05-01-01. DEFINITIONS. Terms used in this chapter have the same meaning as in chapter 43-02-03 and North Dakota Century Code chapter 38-08. Further, in this chapter:
1. "Carbon dioxide" means carbon dioxide produced by anthropogenic sources which is of such purity and quality that it 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 a stored gas.
 2. "Closure period" means that period from permanent cessation of carbon dioxide injection until the commission issues a certificate of project completion.
 3. "Commission" means industrial commission.
 4. "Flow lines" means pipelines transporting carbon dioxide from the carbon dioxide facility injection facilities to the wellhead.
 5. "Formation fracture pressure" means the pressure, measured in pounds per square inch, which, if applied to a subsurface formation, will cause that formation to fracture.
 6. "Freshwater" means an underground source of drinking water unless otherwise defined by the commission.
 7. "Geologic storage" means the permanent or short-term underground storage of carbon dioxide in a storage reservoir.

8. "Injection well" means a well used to inject carbon dioxide into or withdraw carbon dioxide from a reservoir.
9. "Minerals" means coal, oil, and natural gas.
10. "Operational period" means the period during which injection occurs.
11. "Permit" means a permit issued by the commission allowing a person to operate a storage facility.
12. "Postclosure period" means that period after the commission has issued a certificate of completion.
13. "Reservoir" means a subsurface sedimentary stratum, formation, aquifer, cavity, or void, whether natural or artificially created, including oil and gas reservoirs, saline formations, and coal seams suitable for or capable of being made suitable for injecting and storing carbon dioxide.
14. "Storage facility" means the reservoir, underground equipment, and surface facilities and equipment used or proposed to be used in a geologic storage operation. It does not include pipelines used to transport carbon dioxide to the storage facility.
15. "Storage operator" means a person holding or applying for a permit.
16. "Storage reservoir" means a reservoir proposed, authorized, or used for storing carbon dioxide.
17. "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.
18. "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 not an exempted aquifer as determined by the commission under section

History: Effective April 1, 2010.

General Authority Law Implemented

NDCC 28-32-02 NDCC 38-22

43-05-01-02. SCOPE OF CHAPTER. This chapter governs the geologic storage of carbon dioxide.

History: Effective April 1, 2010.

General Authority Law Implemented

NDCC 28-32-02 NDCC 38-22

43-05-01-03. BOOKS AND RECORDS TO BE KEPT TO SUBSTANTIATE REPORTS. All owners, operators, drilling contractors, drillers, service companies, or other persons engaged in drilling, completing, operating, or servicing storage facilities shall make and keep appropriate books and records for a period of not less than six years, covering their operations in North Dakota from which they may be able to make and substantiate the reports required by this chapter.

History: Effective April 1, 2010.

General Authority Law Implemented

NDCC 28-32-02 NDCC 38-22

(XI-3) 04/2010

43-05-01-04. ACCESS TO RECORDS. The industrial commission and the commission's authorized agents shall have access to all storage facility records wherever located. All owners, operators, drilling contractors, drillers, service companies, or other persons engaged in drilling, completing, operating, or servicing storage facilities shall permit the industrial commission, or its authorized agents, to come upon any lease, property, well, or drilling rig operated or controlled by them, complying with state safety rules and to inspect the records and operation of wells and to conduct sampling and testing. Any information so obtained shall be public information. If requested, copies of storage facility records must be filed with the commission.

History: Effective April 1, 2010.

General Authority Law Implemented

NDCC 28-32-02 NDCC 38-22

43-05-01-05. STORAGE FACILITY PERMIT.

1. An application for a permit must include the following:

a. A site map showing the boundaries of the storage reservoir and the location of all proposed wells, proposed cathodic protection boreholes, and surface facilities within the carbon dioxide storage facility;

b. A technical evaluation of the proposed storage facility, including the following:

(1) The name, description, and average depth of the storage reservoirs;

(2) A geologic and hydrogeologic evaluation of the facility area, including an evaluation of all existing information on all geologic strata overlying the storage reservoir, including the immediate caprock containment characteristics and all subsurface zones to be used for monitoring. 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 or stratigraphic features. The evaluation must describe the storage reservoir's mechanisms of geologic confinement, including rock properties, regional pressure gradients, structural features, and adsorption characteristics with regard to the ability of that confinement to prevent migration of carbon dioxide beyond the proposed storage reservoir. The evaluation must also identify any productive existing or potential mineral zones occurring within the facility area and any freshwater in the facility area and within one mile [1.61 kilometers] of its outside boundary. The evaluation must include exhibits and plan view maps showing the following:

(a) All wells, including water, oil, and natural gas exploration and development wells, and other manmade subsurface structures and activities, including coal mines, within the facility area and within one mile [1.61 kilometers] of its outside boundary;

(b) All manmade surface structures that are intended for temporary or permanent human occupancy within the facility area and within one mile [1.61 kilometers] of its outside boundary;

(c) Any regional or local faulting;

(d) An isopach map of the storage reservoirs;

(e) An isopach map of the primary and any secondary containment barrier for the storage reservoir;

(f) A structure map of the top and base of the storage reservoirs;

- (g) Identification of all structural spill points or stratigraphic discontinuities controlling the isolation of stored carbon dioxide and associated fluids;
- (h) Evaluation of the potential displacement of in situ water and the potential impact on ground water resources, if any; and
- (i) Structural and stratigraphic cross sections that describe the geologic conditions at the storage reservoir or reservoirs;
- (3) A review of the data of public record 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 one mile [1.61 kilometers], or any other distance as deemed necessary by the commission, of the facility area's boundary. This review must determine if all abandoned wells have been plugged in a manner that prevents the carbon dioxide or associated fluids from escaping from the storage reservoir. The review required under this paragraph shall be conducted by a geologist or engineer;
- (4) The proposed calculated maximum volume and areal extent for the storage reservoir using a method acceptable to and filed with the commission; and
- (5) The proposed 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;
- c. The extent of the pore space that will be occupied by carbon dioxide as determined by utilizing all appropriate geologic and reservoir engineering information and reservoir analysis, which may include various computational models if appropriate for reservoir characterization, and the projected response and storage capacity of the geologic storage unit;
- d. A detailed description of the storage facility's public safety and emergency response plan. The plan must detail the safety procedures concerning the facility and residential, commercial, and public land use within one mile [1.61 kilometers], or any other distance set by the commission, of the outside boundary of the area. The public safety and emergency response procedures must include contingency plans for carbon dioxide leakage from any well, flow lines, or other facility and identify specific contractors and equipment vendors capable of providing necessary services and equipment to respond to such leaks or loss of containment from the storage reservoir. These emergency response procedures must be reviewed and updated annually;
- e. A detailed worker safety plan that addresses carbon dioxide safety training and safe working procedures at the storage facility;
- f. A corrosion monitoring and prevention plan for all wells and surface facilities;
- g. A leak detection and monitoring plan for all wells and surface facilities. The plan must:
 - (1) Identify the potential for release to the atmosphere;
 - (2) Identify potential degradation of ground water resources with particular emphasis on underground sources of drinking water; and
 - (3) Identify potential migration of carbon dioxide into any mineral zone in the facility area;

h. A leak detection and monitoring plan utilizing subsurface observation wells to monitor any movement of the carbon dioxide outside of the storage reservoir.

This may include the collection of baseline information of carbon dioxide background concentrations in ground water, surface soils, and chemical composition of in situ waters within the facility area and the storage reservoir and within one mile [1.61 kilometers] of the facility area's outside boundary. Provisions in the plan will be dictated by the site characteristics as documented by materials submitted in support of the permit application but must:

(1) Identify the potential for release to the atmosphere;

(2) Identify potential degradation of ground water resources with particular emphasis on underground sources of drinking water; and

(3) Identify potential migration of carbon dioxide into any mineral zone in the facility area;

i. The proposed well casing and cementing program detailing compliance with section 43-05-01-09;

j. A performance bond in an amount and under terms set by the commission to provide it with funds sufficient to satisfy any regulatory obligation that the storage operator fails to fulfill. If the commission uses a part of the bond, the storage operator shall immediately replenish the bond or secure a new bond to ensure that the full bond amount set by the commission is maintained;

k. Any other information that the commission requires; and

l. A closure plan.

2. 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.

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

b. 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.

c. 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.

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

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

History: Effective April 1, 2010.

General Authority Law Implemented

NDCC 28-32-02 NDCC 38-22

43-05-01-06. STORAGE FACILITY PERMIT TRANSFER.

1. Notification. The storage operator and proposed transferee shall notify the commission in writing of any proposed permit transfer. The notice must contain the following:
 - a. The name and address of the person to whom the permit is to be transferred.
 - b. The name of the permit subject to transfer and location of the storage facility and a description of the land upon which the storage facility is situated.
 - c. The date that the storage operator desires the proposed transfer to occur.
 - d. Performance bonds required by section 43-05-01-05.
2. Commission review. The commission shall review the proposed transfer to ensure that the purposes of North Dakota Century Code chapter 38-22 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.
3. Commission approval required. A permit transfer can occur only upon the commission's written order.

History: Effective April 1, 2010.

General Authority Law Implemented

NDCC 28-32-02 NDCC 38-22

43-05-01-07. AMENDING STORAGE FACILITY PERMIT.

1. The following changes to a permit require compliance with all the provisions of section 43-05-01-05:
 - a. Any change in the areal extent of the storage facility;
 - b. Using a reservoir not specified in the permit;
 - c. Any increase in the carbon dioxide storage volume; and
 - d. Any change in the chemical composition of the injected carbon dioxide.
2. Significant changes to operational methods and procedures contained in the permit or upon which the permit was based will require compliance with subsection 2 of section 43-05-01-05.

History: Effective April 1, 2010.

General Authority Law Implemented

NDCC 28-32-02 NDCC 38-22

43-05-01-08. AMALGAMATION OF SUBSURFACE RIGHTS TO OPERATE GEOLOGICAL STORAGE UNIT.

1. On or before the date a permit application is filed with the commission, the applicant shall give the following notice that it has filed the application:
 - a. Each operator of mineral extraction activities within the facility and within one-half mile [.80 kilometer] outside of the facility area;
 - b. Each mineral lessee of record within the facility area and within one-half mile [.80 kilometer] of its outside boundary;
 - c. Each owner of record of the surface within the facility area and one-half mile [.80 kilometer] of its outside boundary;
 - d. Each owner of record of minerals within the project area and within one-half mile [.80 kilometer] of its outside boundary;
 - e. Each owner and each lessee of record of the pore space within the storage reservoir and within one-half mile [.80 kilometer] of the reservoir's boundary; and

- f. Any other persons as required by the commission.
2. The notice must contain:
 - a. A legal description of the land overlying the storage reservoir.
 - b. The date, time, and place that the commission will hold a hearing on the permit application.
 - c. A statement that a copy of the permit application may be obtained from the commission.
 - d. A notice of the right to file comments.
3. The commission shall give at least fifteen days' notice, except in an emergency, of the time and place of hearing thereon by one publication of such notice in a newspaper of general circulation in Bismarck, North Dakota, and in a newspaper of general circulation in the county where the land affected or some part thereof is situated, unless in some particular proceeding a longer period of time or a different method of publication is required by law, in which event such period of time and method of publication shall prevail. The notice shall issue in the name of the commission and shall conform to the other requirements provided by law. The public notice must state that an application has been filed with the commission for permission to store carbon dioxide and describe the location of the proposed facility area and the date, time, and place of the hearing before the commission at which time the merits of the application will be considered.
4. Objections received by the commission shall be in writing and specify the nature of the objection.

History: Effective April 1, 2010.

General Authority Law Implemented

NDCC 28-32-02 NDCC 38-22

43-05-01-09. WELL PERMIT APPLICATION REQUIREMENTS.

1. Following receipt of a storage facility permit, the storage operator shall submit applications to drill, deepen, convert, operate, or, upon demonstration of mechanical integrity, reenter a previously plugged and abandoned well for storage purposes.
2. Application for permits to drill, deepen, convert, operate, or reenter a well must be submitted on a form prescribed by the commission and must include at a minimum:
 - a. A plat prepared by a licensed land surveyor showing the location of the proposed injection or subsurface observation well. The plat must be drawn to the scale of one inch [25.4 millimeters] equals one thousand feet [304.8 meters], unless otherwise directed by the commission and must show distances from the proposed well to the nearest storage reservoir boundary. The plat must show the latitude and longitude of the well in decimal degrees to five significant digits. The plat must also show the location and status of all other wells that have been drilled within one-fourth mile [402.34 meters], or any other distance deemed necessary by the commission, of the proposed injection or subsurface observation well;
 - b. The drilling, completion, or conversion procedures for the proposed injection or subsurface observation well;
 - c. A well bore schematic showing the name, description, and depth of the storage reservoirs and the depth of the deepest underground source of drinking water; a description of the casing in the injection or subsurface observation well, or the proposed

casing program, including a full description of cement already in place or as proposed; and the proposed method of testing casing before use of the injection well;

d. A geophysical log, if available, through the storage reservoir to be penetrated by the proposed injection well or if an injection or subsurface observation well is to be drilled, a complete log through the reservoir from a nearby well is permissible. Such log must be annotated to identify the estimated location of the base of the deepest underground source of drinking water, showing the stratigraphic position and thickness of all confining strata above the reservoirs and the stratigraphic position and thickness of the reservoir.

3. No later than the conclusion of well drilling and completion activities, a permit application shall be submitted to operate an injection well and must include at a minimum:

a. A schematic diagram of the surface injection system and its appurtenances;

b. A final well bore diagram showing the name, description, and depths of the storage reservoir and the base of the deepest underground source of drinking water and a diagram of the well depicting the casing, cementing, perforation, tubing, and plug and packer records associated with the construction of the well;

c. The well's complete dual induction or equivalent log through the storage reservoir. Such a log shall be run prior to setting casing through the storage reservoir. Logs must be annotated to identify the estimated location of the base of the deepest underground source of drinking water, showing the stratigraphic position and thickness of all confining strata above the storage reservoir and the reservoir's stratigraphic position and thickness unless that information has been previously submitted. When approved in advance by the commission, this information can be demonstrated with a dual induction or equivalent log run in a nearby well or by such other method acceptable to the commission;

d. An affidavit specifying the chemical constituents of the injection stream other than carbon dioxide and their relative proportions;

e. Proof that the long string of casing of the well is cemented adequately so that the carbon dioxide is confined to the storage reservoirs. Such proof must be provided in the form of a cement bond log or the results of a fluid movement study or such other method specified by the commission; and

f. The results of a mechanical-integrity test, if applicable to well type, of the casing in accordance with the pressure test requirements of this section if a test was run within one calendar year preceding the request for a conversion permit for a previously drilled well.

History: Effective April 1, 2010.

General Authority Law Implemented

NDCC 28-32-02 NDCC 38-22

43-05-01-10. WELL PERMIT.

1. Upon review and approval of the application to drill, deepen, convert, reenter, or operate an injection well, submitted in accordance with section 43-05-01-09, the commission shall issue permits to drill and operate.

2. A permit shall expire twelve months from the date of issue if the permitted well has not been drilled, deepened, reentered, operated, or converted.

History: Effective April 1, 2010.

General Authority Law Implemented

NDCC 28-32-02 NDCC 38-22

43-05-01-11. WELL OPERATIONAL STANDARDS.

1. Surface casing in all newly drilled carbon dioxide injection and subsurface observation wells drilled below the underground source of drinking water must be set fifty feet [15.24 meters] below the base of the Fox Hills formation and cemented pursuant to section 43-02-03-21.
2. The long string casing in all injection and subsurface observation wells must be cemented pursuant to section 43-02-03-21.
3. Any liner set in the well bore must be cemented with a sufficient volume of cement to fill the annular space.
4. All cements used in the cementing of casings in injection and subsurface observation wells must be of sufficient quality to maintain well integrity in the carbon dioxide injection environment.
5. All casings must meet the standards specified in either of the following documents, which are hereby adopted by reference:
 - a. The most recent American petroleum institute bulletin on performance properties of casing, tubing, and drill pipe;
 - b. Specification for casing and tubing (United States customary units), American petroleum institute specification 5CT, as published by the American petroleum institute in October 1998;
 - c. North Dakota Administrative Code Section 43-02-03-21; or
 - d. Other casing as approved by the commission.
6. All casings used in new wells must be new casing or reconditioned casing of a quality equivalent to new casing and that has been pressure-tested in accordance with the requirements of subsection 5. For new casings, the pressure test conducted at the manufacturing mill or fabrication plant may be used to fulfill the requirements of subsection 5.
7. The location and amount of cement behind casings must be verified by a cement bond log, cement evaluation log, or any other evaluation method approved by the commission.
8. All injection wells must be completed with and injection must be through tubing and packer.
9. All tubing strings must meet the standards contained in subsection 5. All tubing must be new tubing or reconditioned tubing of a quality equivalent to new tubing and that has been pressure-tested. For new tubing, the pressure test conducted at the manufacturing mill or fabrication plant may be used to fulfill this requirement.
10. All wellhead components, including the casinghead and tubing head, valves, and fittings, must be made of steel having operating pressure ratings sufficient to exceed the maximum injection pressures computed at the wellhead and to withstand the corrosive nature of carbon dioxide. Each flow line connected to the wellhead must be equipped with a manually operated positive shutoff valve located on or near the wellhead.
11. All packers, packer elements, or similar equipment critical to the containment of carbon dioxide must be of a quality to withstand exposure to carbon dioxide.
12. All injection wells must have at all times an accurate, operating pressure gauge or pressure recording device. Gauges must be calibrated as required by the commission and evidence of such calibration must be available to the commission upon request.
13. All newly drilled wells must establish internal and external mechanical integrity as specified by the commission and demonstrate continued mechanical integrity through

periodic testing as determined by the commission. All other wells to be used as injection wells must demonstrate mechanical integrity as specified by the commission prior to use for injection and be tested on an ongoing basis as determined by the commission using these methods:

a. Pressure tests. Injection wells, equipped with tubing and packer as required, must be pressure-tested as required by the commission. A testing plan must be submitted to the commission for prior approval. At a minimum, the pressure must be applied to the tubing casing annulus at the surface for a period of thirty minutes and must have no decrease in pressure greater than ten percent of the required minimum test pressure. The packer must be set at a depth at which the packer will be opposite a cemented interval of the long string casing and must be set no more than fifty feet [15.24 meters] above the uppermost perforation or open hole for the storage reservoirs; and

b. The commission may require additional testing, such as a bottom hole temperature and pressure measurements, tracer survey, temperature survey, gamma ray log, neutron log, noise log, casing inspection log, or a combination of two or more of these surveys and logs, to demonstrate mechanical integrity.

14. The commission has the authority to witness all mechanical integrity tests conducted by the storage operator.

15. If an injection well fails to demonstrate mechanical integrity by an approved method, the storage operator shall immediately shut in the well, report the failure to the commission, and commence isolation and repair of the leak. The operator shall, within ninety days or as otherwise directed by the commission, perform one of the following:

a. Repair and retest the well to demonstrate mechanical integrity;

b. Properly plug the well; or

c. Comply with an alternative plan approved by the commission.

16. All injection wells must be equipped with shutoff systems designed to alert the operator and shut in wells when necessary.

17. Additional requirements may be required by the commission to address specific circumstances and types of projects.

History: Effective April 1, 2010.

General Authority Law Implemented

NDCC 28-32-02 NDCC 38-22

43-05-01-12. AMENDMENT TO CARBON DIOXIDE STORAGE FACILITY WELL PERMITS.

1. An amendment to a well permit for a change in injection formation, or modifying the maximum allowable injection rate and pressure, must comply with the provisions of section 43-05-01-05.

2. Modifying well construction must comply with section 43-05-01-09.

History: Effective April 1, 2010.

General Authority Law Implemented

NDCC 28-32-02 NDCC 38-22

43-05-01-13. STORAGE FACILITY OPERATIONAL SAFETY PLANS. Each storage operator shall implement the commission-approved storage facility public safety and emergency response plan and the worker safety plan proposed in section 43-05-01-05. This plan must include emergency response and security procedures. 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.

History: Effective April 1, 2010.

General Authority Law Implemented

NDCC 28-32-02 NDCC 38-22

43-05-01-14. LEAK DETECTION AND REPORTING.

1. Leak detectors or other approved leak detection methodologies must be placed at the wellhead of all injection and subsurface observation wells. Leak detectors must be integrated, where applicable, with automated warning systems and must be inspected and tested on a semiannual basis and, if defective, shall be repaired or replaced within ten days. Each repaired or replaced detector must be retested if required by the commission. An extension of time for repair or replacement of a leak detector may be granted upon a showing of good cause by the storage operator. A record of each inspection must include the inspection results, must be maintained by the operator for at least six years, and must be made available to the commission upon request.

2. The storage operator must immediately report to the commission any leak detected at any well or surface facility.

3. The storage operator must immediately report to the commission any pressure changes or other monitoring data from subsurface observation wells that indicate the presence of leaks in the storage reservoir.

4. The storage operator must immediately report to the commission any other indication that the storage facility is not containing carbon dioxide, whether the lack of containment concerns the storage reservoir, surface equipment, or any other aspect of the storage facility.

History: Effective April 1, 2010.

General Authority Law Implemented

NDCC 28-32-02 NDCC 38-22

43-05-01-15. STORAGE FACILITY CORROSION MONITORING AND PREVENTION REQUIREMENTS. Each operator must conduct a corrosion monitoring and prevention program approved by the commission.

History: Effective April 1, 2010.

General Authority Law Implemented

NDCC 28-32-02 NDCC 38-22

43-05-01-16. STORAGE FACILITY IDENTIFICATION REQUIREMENTS.

Identification signs must be placed at each storage facility in a centralized location and at each well site. The signs must show the name of the operator, the facility name, and the emergency response number to contact the operator.

History: Effective April 1, 2010.

General Authority Law Implemented
NDCC 28-32-02 NDCC 38-22

43-05-01-17. STORAGE FACILITY FEES.

1. Each storage operator shall pay the commission a fee of one cent on each ton of carbon dioxide injected for storage.
2. Each storage operator shall pay the commission a fee of seven cents on each ton of carbon dioxide injected for storage.

History: Effective April 1, 2010.

General Authority Law Implemented
NDCC 28-32-02 NDCC 38-22

43-05-01-18. QUARTERLY AND ANNUAL REPORTING REQUIREMENTS.

1. The storage operator shall file with the commission quarterly, 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 downhole temperature and pressure data, or other pertinent operational parameters as required by the commission.
2. The quarterly report is due thirty days after the end of the quarter.
3. 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 all 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 in accordance with section 43-05-01-07. The annual report is due forty-five days after the end of the year.

History: Effective April 1, 2010.

General Authority Law Implemented
NDCC 28-32-02 NDCC 38-22

43-05-01-19. FACILITY CLOSURE.

1. Prior to the conclusion of the operational period, and at a time set by the commission, the storage operator must provide 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 closure period.
2. The storage operator shall submit a monitoring plan for the closure period for approval by the commission, including a proposal specifying which wells will be plugged and which will remain unplugged to be used as subsurface observation wells.
3. 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.

4. The well casing must be cut off at a depth of five feet [1.52 meters] below the surface and a steel plate welded on top identifying the well name and that it was used for carbon dioxide injection.
5. The commission shall develop in conjunction with the storage operator a continuing monitoring plan for the postclosure period, including a review and final approval of wells to be plugged.
6. Upon project closure, all wells designated by the commission must be properly plugged and abandoned; all storage facility equipment, appurtenances, and structures removed; and the project area reclaimed to the commission's specifications that will, in general, return the land as closely as practicable to original condition.
7. All subsurface observation and ground water monitoring wells as approved in the closure plan must remain in place for continued monitoring during the closure period.
8. Before the closure period ends and at a time set by the commission, 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.
9. Wells other than those deemed as subsurface observation wells per subsection 2 shall be plugged by the storage operator in accordance with section 43-02-03-34.

History: Effective April 1, 2010.

General Authority Law Implemented

NDCC 28-32-02 NDCC 38-22

43-05-01-20. DETERMINING STORAGE AMOUNTS.

1. The commission, after notice and hearing, shall issue an order determining the amount of injected carbon dioxide stored in a reservoir that has been or is being used for an enhanced oil or gas recovery project or in a storage reservoir that has been or is being used for storage under a permit issued pursuant to North Dakota Century Code chapter 38-22.
2. Any person applying for a storage amount determination shall pay a processing fee.
Processing fee. 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:
 - a. A record of all application processing costs incurred must be maintained by the commission.
 - b. 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.
 - c. 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.
 - d. The applicant must pay the processing fee even if the application is denied or withdrawn.

History: Effective April 1, 2010.

General Authority Law Implemented

NDCC 28-32-02 NDCC 38-22