

NORTH DAKOTA DEPARTMENT OF HEALTH
PUBLIC NOTICE TO RENEW AN UNDERGROUND INJECTION CONTROL
PERMIT

January 12, 2023

PURPOSE OF PUBLIC NOTICE

THE PURPOSE OF THIS NOTICE IS TO STATE THE DEPARTMENT'S INTENTION TO RENEW A CLASS I UNDERGROUND INJECTION CONTROL PERMIT UNDER THE AUTHORITY OF ARTICLE 33.1-25 OF THE NORTH DAKOTA ADMINISTRATIVE CODE.

PERMIT INFORMATION

APPLICANT NAME:	Dakota Gasification Company
MAILING ADDRESS:	1600 E. Interstate Ave. Bismarck, ND 58501-0561
FACILITY LOCATION:	Great Plains Synfuels Plant Eight Miles Northwest of Beulah, ND
TELEPHONE NUMBER:	701-873-6787
APPLICATION NUMBER:	ND-UIC-101

The Dakota Gasification Company (DGC) has submitted an application to this Department to continue the subsurface injection of non-hazardous fluids that cannot be reused in the plant.

Average injection rates are approximately 200 gallons per minute (gpm) for each well. The permitted wastewater streams include (1) brine wastes from the secondary water treatment system, (2) excess and concentrated blowdown from the low-pressure steam system, (3) reverse osmosis concentrate, (4) blowdown from the primary ("clean") cooling tower in the Anhydrous Ammonia Plant, (5) blowdown from the secondary ("dirty") cooling tower in the Anhydrous Ammonia Plant, (6) Multiple Effect Evaporator (MEE) distillate, (7) stormwater from the plant area and/or ash disposal facility, (8) neutralization pit waste, and (9) DA-4603 fractionator bottom waste. Major constituents in the injection stream are sodium, calcium, chloride, sulfate, magnesium, potassium, ammonia, light organics (e.g., fatty acids), and trace metals. Monitoring is required to confirm that the injection stream remains nonhazardous.

This is an area permit for two Class I injection wells. One well is located in the southwest quarter of Section 24, and the other is located in the northwest quarter

of Section 25, Township 145 N, Range 88 W. Both wells are located within the plant site. Injection is into the Minnelusa and Kibbey Formations at intervals between 5,800 feet and 6,737 feet below ground surface. This zone is approximately 4,500 feet deeper than the closest underground source of drinking water, the Fox Hills-Basal Hell Creek aquifer.

It is the intent of the Department to renew DGC's underground injection permit for a five-year period.

PUBLIC COMMENTS

The Permit Application Package and Draft Permit will be available for public review and comment for thirty (30) days following publication of the Public Notice. The public comment period begins January 12, 2023, and ends February 13, 2023. Interested persons may submit written comments to the Department on the Draft Permit during this period. Interested persons may request a public hearing by stating the nature of the specific issues to be raised.

The Department will consider all comments prior to taking any action on the permit. Comments, questions, and written communication should be directed to:

Karl Rockeman, Director
North Dakota Department of Environmental Quality
Division of Water Quality
4201 Normandy Street
Bismarck, ND 58503-1324

The Permit Application Package and the Draft Permit are available for review during the hours of 8:30 a.m. to 4:30 p.m., Monday through Friday, at the North Dakota Department of Environmental Quality, Division of Water Quality, 4201 Normandy Street, Bismarck, North Dakota. Copies of this Public Notice and the Draft Permit are also on the Department's website at: <http://deq.nd.gov>. Anyone requiring special access or accommodations to review the documents may contact the Department at 701-328-5210.

NDDEQ Non-Discrimination Statement

The Department will consider every request for reasonable accommodation to provide an accessible meeting facility or other accommodation for people with disabilities, language interpretation for people with limited English proficiency (LEP), and translations of written material necessary to access programs and information. To request accommodations, contact Ann Fritz, Non-discrimination Coordinator at 701-328-5162 or afritz@nd.gov. TTY users may use Relay North Dakota at 711 or 1800-366-6888.

PUBLIC NOTICE NUMBER: ND-2023-001

Permit No.: ND-UIC-101

Effective Date: February 14, 2023

Expiration Date: February 14, 2028

AUTHORIZATION TO INJECT UNDER THE
NORTH DAKOTA UNDERGROUND INJECTION CONTROL PROGRAM

In compliance with Chapter 33.1-25-01 of the North Dakota Department of Environmental Quality (Department) rules, as promulgated under Chapter 61-28 (North Dakota Water Pollution Control Act) of the North Dakota Century Code, Dakota Gasification Company Great Plains Synfuels Plant is authorized to inject waste fluids in accordance with limitations, monitoring requirements, and other conditions set forth in this permit.

This permit shall become effective on February 14, 2023, and shall expire at midnight on February 14, 2028, unless amended or terminated by the Department.

Karl Rockeman
Director
Division of Water Quality

Date

I. NAME OF PERMITTEE

Dakota Gasification Company
1600 East Interstate Ave.
Bismarck, ND 58501-0561

Great Plains Synfuels Plant
420 County Road 26
Beulah, ND 58523

II. NATURE OF BUSINESS

The Great Plains Synfuels Plant is designed to produce an average 170 million cubic feet per day of synthetic natural gas, and associated byproducts of ammonium sulfate, urea, anhydrous ammonia, phenol, cresylic acid, krypton, xenon, and carbon dioxide.

III. DESCRIPTION AND LOCATION OF INJECTION ACTIVITY

This permit is an area permit for a Class I underground injection facility operated by the Dakota Gasification Company to dispose of excess inorganic wastewater that cannot be reused in the plant. This permit authorizes injection into two wells. Well No. 1 is located in the center of the southwest quarter of Section 24, Range 88 West, Township 145 North. Injection is into the Minnelusa and Kibbey Formations in subsurface intervals from 5,836-5,954 feet and 6,624-6,669 feet, respectively. Well No. 2 is located in the center of the east half of the northwest quarter of Section 25, Range 88 West, Township 145 North. Injection is into the Minnelusa and Kibbey Formations in the approximate subsurface intervals from 5,800-6,043 feet and 6,587-6,737 feet, respectively. The permitted injection interval is from the middle of the first uppermost confining layer (5670 feet) to the bottom of the perforations (6800 feet). This zone is approximately 4,500 feet below the closest underground source of drinking water (USDW), the Fox Hills-Basal Hell Creek aquifer.

Average injection rates are approximately 200 gallons per minute (gpm) for each well. The permitted wastewater streams include, (1) brine wastes from the secondary water treatment system, (2) excess and concentrated blowdown from the low-pressure steam system, (3) reverse osmosis concentrate, (4) blowdown from the primary ("clean") cooling tower in the Anhydrous Ammonia Plant, (5) blowdown from the secondary ("dirty") cooling tower in the Anhydrous Ammonia Plant, (6) Multiple Effect Evaporator (MEE) distillate, (7) stormwater from the plant area and/or ash disposal facility, (8) neutralization pit waste, and (9) DA-4603 fractionator bottom waste (see Table 1).

Table 1 – Summary of Permitted Waste Streams

Permitted Waste Stream	Primary Constituents
(1) brine wastes from the secondary water treatment system	calcium, sodium, chloride, sulfate, magnesium and potassium
(2) excess and concentrated blowdown from the low-pressure steam system	calcium, sodium, chloride, sulfate, magnesium and potassium
(3) reverse osmosis concentrate	calcium, sodium, chloride, sulfate, magnesium and potassium
(4) blowdown from the primary (“clean”) cooling tower in the Anhydrous Ammonia Plant	calcium, sodium, chloride, sulfate, magnesium and potassium
(5) blowdown from the secondary (“dirty”) cooling tower in the Anhydrous Ammonia Plant	calcium, sodium, chloride, sulfate, magnesium and potassium
(6) Multiple Effect Evaporator (MEE) distillate	ammonia, light organics (e.g., fatty acids)
(7) stormwater from the plant area and/or ash disposal facility	Sulfate, chloride, calcium, sodium
(8) neutralization pit waste	calcium, sodium, chloride, sulfate, magnesium and potassium
(9) DA-4603 fractionator bottom waste	Phenol, sodium

All waste streams are comingled in the facility’s waste holding pond; prior to injection, the wastewater is pretreated to prevent the loss of the permeability in the injection formation. The pretreatment system consists of two levels of filtration plus pH adjustment to prevent precipitation in the formation water.

The two disposal wells are of similar construction. Well No. 1 is double cased from the surface to a depth of 2,017 feet consisting of a 16-inch outside diameter surface casing. Well No. 2 is double cased from the surface to a depth of 2,115 feet with a 13 3/8-inch outside diameter surface casing. Both wells have a 9 5/8-inch OD casing that extends from grade to a depth of approximately 6,900 feet. Wastewater is injected through 7-inch OD tubing with a packer set immediately above the targeted injection zone at each well. The annulus between the tubing and casing is filled to the surface with potassium chloride water and a seal pot is attached to the annulus to detect any well malfunctions. Injection pressure, flow rate and tubing-long string annulus pressure are continuously monitored for each individual well.

Each well has a maximum operating capacity of 625 gpm. Therefore, the plant can operate at full capacity with any one well out of service for an indefinite period of time. Should both wells need corrective maintenance, then the effluent will be diverted to the storage pond. The pond has a 10.25 million gallon capacity which will provide a 19-day storage capacity at a flow rate of 375 gpm.

The permittee is authorized to conduct injection activity in Well No. 1 and Well

No. 2, within the plant boundary which includes Section 25 and the south half of Section 24, Range 88 West, Township 145 North in accordance with the provisions of Chapter 33.1-25-01 of the North Dakota Administrative Code and with the limitations, requirements and other conditions set forth in this permit.

IV. OPERATING PARAMETERS

- A. The maximum rate of injection for each well shall not exceed 625 gallons per minute.
- B. The operating injection pressure at each well head shall not exceed 1350 psig, the maximum pressure calculated to assure that fracturing of the injection zone and confining zone does not occur.
- C. The tubing - long string casing annulus of each well shall be filled with a fluid containing corrosion inhibitors. A positive pressure with a differential (positive or negative) from injection pressure of at least 100 psig shall be maintained on the annulus to detect well malfunctions.
- D. The injected wastewater stream shall consist of those streams specified in Section III of this permit. However, with prior written approval from the Department, injection of wastewater streams other than those specified may be allowed if they meet the following conditions:
 - 1. The wastewater stream is similar to those streams outlined in Section III.
 - 2. The wastewater is nonhazardous.
 - 3. The wastewater stream will not interfere with the operation of the facility or its ability to meet permit conditions.

V. MONITORING

- A. Pressure gages shall be installed and maintained in proper operating conditions at all times on the injection tubing and on the tubing - long string casing annulus at each well head.
- B. Continuous recording devices shall be installed and maintained in proper operating conditions at all times to record injection tubing pressures, injection flow rates, injection volumes and tubing - long string casing annulus pressure for each well.
- C. The mechanical integrity of each well shall be verified by the continuous monitoring of the tubing - long string casing annulus pressure, as required in Part V-B of this permit, and by performing a temperature or noise survey every five years. The Department may allow the use of a radioactive tracer survey or other test to demonstrate mechanical integrity on a case-by-case basis.
- D. Injected fluids shall be analyzed monthly for the following parameters:
 - 1. TDS
 - 2. Total Organic Carbon
 - 3. pH
- E. A complete chemical analysis, including Toxic Characteristic Leaching Procedure (TCLP), shall be completed for the injected fluids at least annually. This complete analysis shall include parameters specified in Attachment A.
- F. The monitoring wells identified in the permit application shall be sampled on a monthly basis and the samples analyzed for the following parameters:
 - 1. Water Elevation
 - 2. pH
 - 3. Specific Conductance
- G. All monitoring activities shall be performed in accordance with the North Dakota Underground Injection Control Quality Assurance Project Plan for Chemical Tests, September 1986 and subsequent amendments.

VI. AMBIENT MONITORING PROGRAM

- A. Minimum requirements are monitoring the pressure buildup in the injection zone annually, including a shutdown of the well for a time sufficient to conduct a valid observation of the pressure fall-off curve. The zone of influence to date and the cumulative zone of influence over the life of each injection well shall be calculated based on the latest available data, and submitted with the results of the pressure fall-off test.
- B. The Department may also require any additional monitoring necessary based on a site-specific assessment of the potential for fluid movement from the well or injection zone and on the potential value of monitoring wells to detect such movement.

VII. WELL WORKOVERS

The permittee shall give notice to the Department as soon as possible of any planned workover for any disposal well. The notification shall be in writing and shall include plans for the workover. A complete report of the workover shall be prepared, including the reason for the workover and details of the work performed.

VIII. REPORTING

- A. The permittee shall file quarterly reports within 15 days after the last day of March, June, September, and December of each year on:
 - 1. Monthly average, maximum and minimum values for injection pressure, flow rate, and volume and annular pressure for each well.
 - 2. Results of analyses of the injected fluids.
 - 3. Results of the monitoring well analyses.

The results of periodic tests of mechanical integrity, annual ambient monitoring, and well workover reports shall be submitted as part of the first quarterly report following their completion.

- B. The permittee shall report orally within 24 hours from the time these circumstances are made aware of:
 - 1. Any monitoring or other information which indicates that any contaminant may cause an endangerment to a USDW.

2. Any noncompliance with a permit condition or malfunction of the injection system such as loss of mechanical integrity which may cause fluid migration into or between USDWs.

A written report shall follow within five (5) days. The written report shall contain a description of the noncompliance and its causes, the period of noncompliance including exact date and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue. Steps should be taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

- C. The permittee shall report all other instances of noncompliance at the time monitoring reports are submitted. The report shall contain the information listed above.
- D. In the event that the permittee is placed on a compliance schedule, report of compliance or noncompliance with the requirements of the schedule shall be submitted no later than 14 days following each schedule date.
- E. If the permittee becomes aware that he failed to submit any relevant facts in a permit application or submitted incorrect information he shall promptly submit such facts and information.
- F. The permittee shall notify the Director at least 60 days before conversion or abandonment of any disposal well.

IX. RECORDKEEPING

- A. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit for a period of at least three years from the date of the sample measurement, report or application. Records of monitoring information shall include:
 1. The date, exact place and time of sampling or measurements.
 2. The name of individual(s) who performed the sampling or measurements.
 3. The date(s) analyses were performed.
 4. The name of the laboratory and individual(s) who performed the analyses.
 5. The analytical techniques or methods used.

6. The results of such analyses.
- B. The permittee shall retain all records concerning the nature and composition of injected fluids for five years after completion of plugging and abandonment procedures.

X. PLUGGING AND ABANDONMENT

- A. The permittee shall notify the Department in writing 60 days prior to commencing plugging operations. The plugging and abandonment procedure shall consist of filling the tubing - long string casing with cement from TD to surface as described in the permit renewal application, dated August 21, 2012.
- B. If the permittee wishes to modify the plugging procedure he shall furnish the Department the following information:
 1. The location of the plugs.
 2. The type of grades and quantity of cement to be used.
 3. The method of placement of the plugs.
 4. The method for insuring static equilibrium in the well prior to the placement of the plugs.

XI. GENERAL CONDITIONS

- A. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of Chapter 33-25-01 of the NDAC and is grounds for enforcement action; for permit termination, revocation and reissuance or modification; or for denial of a permit renewal application.
- B. The permittee must apply for and obtain a new permit in order to continue injection after the expiration date of this permit.
- C. The permittee must halt or reduce injection if necessary to maintain compliance with the conditions of this permit.
- D. The permittee shall minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.

- E. The permittee shall at all times properly operate and maintain the wells and all related appurtenances. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls including appropriate quality assurance procedures.
- F. This permit may be modified, revoked, and reissued or terminated for cause. The filing of a request by the permittee for a permit modification, revocation, and reissuance or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.
- G. This permit does not convey any property rights of any sort or any exclusive privilege.
- H. The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Department upon request copies of records required to be kept by this permit.
- I. The permittee shall allow the Department or an authorized representative upon the presentation of credentials to:
1. Enter upon the permittee's premises where the wells or the records that must be kept under the conditions of this permit are located.
 2. Have access to and copy, at reasonable times, the records that must be kept under the condition of this permit.
 3. At reasonable times, inspect the wells and the monitoring and control equipment.
 4. Sample or monitor, at reasonable times, for the purpose of assuring permit compliance.
- J. All reports or information submitted to the Department under the terms of this permit shall be signed and certified as follows:
1. By a principal executive officer of at least the level of vice-president, or a duly authorized representative.
 2. A person is a duly authorized representative only if:
 - a. The authorization is made in writing by a person described above.

- b. The authorization specifies either an individual or a position having responsibility for the overall operation of the wells.
 - c. The written authorization is submitted to the Department.
- 3. If an authorization is no longer accurate because a different individual has responsibility for the overall operation of the wells, a new authorization must be submitted to the Department prior to or together with any document signed by an authorized representative.
- 4. The person signing the document shall make the following certification:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."
- K. The permittee shall give advance notice to the Department of any planned changes in the operation of the wells which may result in noncompliance with permit requirements.
- L. The \$347,215 surety bond for well plugging and abandonment shall be renewed annually or evidence provided to the Department signifying that the bond is still in effect.

ATTACHMENT A

Parameters for Complete Chemical Analysis

Alkalinity	Manganese (Dis.)
Ammonia	Molybdenum (Dis.)
Arsenic (Dis.)	Nickel (Dis.)
Barium (Dis.)	Nitrogen (Nitrate)
Bicarbonate	Nitrogen (Nitrate)
Cadmium (Dis.)	Phenol
Calcium (Total)	Phosphorus (Dis.)
Carbonate	Potassium (Total)
Chloride	Selenium (Dis.)
Chromium Total (Dis.)	Silver
Sodium (Total)	Specific Conductance (mhos)
Fluoride	Sulfate
Hardness	TDS
Iron	TOC
Lead (Dis.)	(NTU) Turbidity
Magnesium (Total)	Zinc (Dis.)
Toxic Characteristic Leaching Procedure (TCLP)	