Fact Sheet

For issuance of Underground Injection Control Permit Number NE0210825 to Cameco Resources for Crow Butte Resources, to operate a Class I Non-Hazardous Waste Injection Well. This permit issuance does not involve discharges to the land surface or surface waters of the State of Nebraska.

Issuing Office: Nebraska Department of Environment and Energy (NDEE)

P.O. Box 98922

Lincoln, Nebraska 68509

Applicant: Cameco Resources

86 Crow Butte Road

PO Box 169

Crawford, NE 69339-0169

1. Crow Butte Resources operates a commercial in-situ uranium mine facility (SIC #1094), whose specific operations involve extracting uranium using the in-situ mining process at the Crow Butte Uranium Facility owned by Cameco Resources, Crow Butte Resources, Inc.
2. Crow Butte Resources Class I Non-Hazardous Waste Injection Well is located in the NE¼ of the NE¼ of Section 13, Township 31 North, Range 52 West, Dawes County, Nebraska.
3. As described in the application, Crow Butte Resources is a commercial in-situ uranium mine facility. Crow Butte Resources utilizes complete retention, lined evaporation ponds, and two Underground Injection Control Class I non-hazardous injection wells (NE0210825, NE0211670) for discharges of process wastewater. There is no discharge to surface waters of the State of Nebraska. Land application of treated wastewater may be conducted under a separate permit within the authority of the National Pollution Discharge Elimination System (NPDES) program.
4. The following is a table containing the composition of the injection stream as reported by the applicant on May 28, 2020.

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameters** | **Units** | **Proposed Discharge Limits** | **Monthly Monitoring Report (5/28/2020)** |
| **Injection Pressure** | psig | 650 | -3.8 |
| **Flowrate** | gpm | Report | 253.1 |
| **Annulus Pressure** | psig | 150 Above Injection Pressure | 219.5 |
| **Total Gals. In Month** | gal | Report | 10,995,963 |
| **Alkalinity as CaCo3** | mg/l | 4,100 | 1,800 |
| **Arsenic** | mg/l | 5 | 0.042 |
| **Barium** | mg/l | 100 | 0.047 |
| **Cadmium** | mg/l | 1 | <0.002 |
| **Calcium** | mg/l | Report | 131 |
| **Chloride** | mg/l | 40,000 | 532 |
| **Chromium** | mg/l | 5 | <0.001 |
| **Lead** | mg/l | 5 | <0.005 |
| **Mercury** | mg/l | 0.2 | <0.001 |
| **pH** | S.U. | 5.0 – 9.5(a) | 8.13 |
| **Radium** | pCl/l | 5,000 | 523 |
| **Selenium** | mg/l | 1 | 0.011 |
| **Silver** | mg/l | 5 | <0.003 |
| **Sodium** | mg/l | 40,000 | 1,683 |
| **Sulfate** | mg/l | 20,000 | 1,487 |
| **Uranium** | mg/l | 25 | 2.45 |
| **Vanadium** | mg/l | 100 | 0.76 |
| Abbreviations: mg/l – milligrams per liter S.U. – standard units pCl/l – picocuries per liter  N.D. – Non-detect | | | |

1. On the basis of preliminary staff review, the NDEE has made a tentative determination to reissue permit number NE0210825.
2. The proposed permitted activities will not adversely affect the formation or injection fluids, nor will it compromise the non-hazardous status of the well.
3. The following is a brief explanation of the statutory and regulatory provisions on which the proposed permit issuance is based.
   1. Permit Application for a Class I Non-Hazardous Waste Injection Well and $25,000.00 filing fee, received by NDEE on May 29, 2020.
   2. Email from Amanda Osborn, NDEE, to Crow Butte Resources submitting a draft permit, dated August 13, 2020.
   3. Email from Amanda Osborn, NDEE, to Crow Butte Resources submitting a draft permit, dated September 22, 2020.
   4. Email from Amanda Osborn, NDEE, to EPA Region 7 submitting a draft permit, dated September 23, 2020.
   5. Nebraska Environmental Protection Act and related laws.
   6. NDEE Title 122 - Rules and Regulations for Underground Injection and Mineral Production Wells.
   7. 40 CFR Parts 144-147, Underground Injection Control Program, State UIC Program Requirements, UIC program: Criteria and Standards, State Underground Injection Control Programs.
4. The following is an explanation of the calculations and derivations of the specific Operational Parameters and Limitations set forth in the draft permit, and the reasons why they are applicable to the injection proposal:
   1. Reason for the Permit: The draft permit has been prepared in accordance with specific regulations contained within Nebraska Title 122 – Rules and Regulations for Underground Injection and Mineral Production Wells.
   2. Water Quality Considerations: The proposed injection activity will not, by definition, emplace treated water into subsurface aquifers, which are considered to be Underground Sources of Drinking Water (USDW) under State and Federal regulations. Drinking Water Quality effluent limitations, therefore, do not apply to the proposed discharge.
   3. Draft Permit Effluent Limitations and Considerations: The draft permit establishes Operational Parameters and Limitations for treated water discharged to the injection well system. The facility will not employ an active treatment process prior to injection. The draft permit utilizes effluent parameters and limitations to characterize the water discharged to the injection well.
      1. Injection Pressure, Injection Volume, Injection Rate, and Minimum Allowable Operating Annulus Pressure

The draft permit requires continuous recording devices or gauges to be utilized to measure injection pressure, volume and rates, as well as the Minimum Allowable Operating Annulus Pressure of the injection well system. These operational limitations are based on the knowledge of the construction of the well and the injection aquifer.

* + 1. pH and Temperature

The draft permit establishes a pH range for the effluent limitation of 5.0-9.5. This limitation is based on the knowledge of the treatment process. Temperature will be used in conjunction with the annulus pressure to ensure proper fluid levels in the annulus between the injection tubing and the long string casing.

* + 1. Calcium, Sodium, Nitrate, Bicarbonate, Sulfate, and Chloride

There are no limitations for calcium in the draft permit. The draft permit establishes limitations for sodium, nitrate, bicarbonate, sulfate, and chloride. The limitations are to establish the character of the wastewater discharged to the injection well.

* + 1. Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, and Silver

The draft permit establishes limitations for arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. These limitations are based on Title 128, Rules and Regulations Governing Hazardous Waste Management in Nebraska, Chapter 3.

1. Variances

The applicant has not requested any variance or alternatives to any required standards or operational parameters.

1. Written Comments

Copies of public information pertaining to this issue (Permit Issuance) are available for review and copying via mail, by request from the Department.

The public may comment upon or object to the proposed draft permit, in writing, prior to November 6, 2020. All substantive comments and/or objections shall be considered prior to making the final decision regarding this surety release. Any interested person may request a public hearing, if no hearing has already been scheduled. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised at the hearing.

All comments may be sent to Marty Link, Nebraska Department of Environment and Energy, P.O. Box 98922, Lincoln, Nebraska 68509. Further requests for information should be sent to Amanda Osborn, Department of Environment and Energy, P.O. Box 98922, Lincoln, Nebraska 68509, (402) 471-4290.