FACT SHEET

For issuance of Underground Injection Control Permit Number NE0210825 to inject non-hazardous wastewater into the subsurface. This permit issuance does not involve discharges to the land surface or surface waters of the State of Nebraska.

Issuing Office:	Nebraska Department of Environmental Quality (NDEQ) Suite 400, The Atrium 1200 N Street, P.O. Box 98922 Lincoln, Nebraska 68509-8922
Applicant:	Crow Butte Resources, Inc. (CBR) P.O. Box 169 Crawford, Nebraska 69339-0169

1. CBR operates a commercial in-situ uranium mine (SIC number 1094). The 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. The Crow Butte Uranium Facility is located near Crawford in Dawes County, Nebraska. CBR currently utilizes compete retention, lined evaporation ponds and an Underground Injection Control Class 1 non-hazardous injection well (NE0210457) for discharges of process wastewater. The proposed permit for an additional Class I non-hazardous injection well is intended to supplement the current disposal methods during restoration of the mining areas. 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.

3. The following is a table containing the composition of the injection stream, as reported by the applicant. The typical concentration ranges were determined from monthly composite samples from the currently operating Class 1 non-hazardous injection well:

Parameter	**Average Concentration** (derived from current Class 1 injection well samples, July 2004 – May 2010)	Proposed Permit Limit
Injection Pressure	4.49 psi	650 psi
Alkalinity	1268 mg/l	4,100 mg/l
Arsenic	<0.1 mg/l	5 mg/l
Barium	<0.1 mg/l	100 mg/l
Cadmium	<0.1 mg/l	1 mg/l
Chloride	2299 mg/l	40,000 mg/l
Chromium	<0.5 mg/l	5 mg/l
Lead	<0.5 mg/l	5 mg/l
Mercury	<0.0001 mg/l	0.2 mg/l
pH	8.34 Standard Units	5.0 – 9.5 Standard Units
Radium	948 pCi/l	5,000 pCi/l
Selenium	<0.1 mg/l	1 mg/l
Silver	<0.5 mg/l	5 mg/l
Sodium	2243 mg/l	40,000 mg/l
Sulfate	1085 mg/l	10,000 mg/l
Uranium	5.4 mg/l	25 mg/l
Vanadium	5.3 mg/l	100 mg/l

The proposed permit includes injection limitations and specific monitoring requirements for the parameters listed above, and other parameters associated with the injection procedure and in-situ mining process, including the restoration process.

4. On the basis of preliminary staff review, the NDEQ has made a tentative determination to issue the permit.

5. The proposed permitted activities will not adversely affect the formation or injection fluids, nor will it compromise the non-hazardous status of the well.

6. The following is a brief explanation of the statutory and regulatory provisions on which permit requirements and operational limitations are based. Included are appropriate supporting references used during the permit formulation process.

    a. Permit Application for Class 1 injection well, received by NDEQ on April 29, 2009.
    b. Letters from Jennifer Abrahamson, NDEQ, to Stan Belieu (Nebraska Oil & Gas Conservation Commission), Marv Carlson (University of Nebraska-Lincoln, Conservation & Survey Division), and Pat Costello (EPA Region 7) providing copies of the application and requests for technical review, dated May 4, 2009.
    c. Email from Marv Carlson to Jennifer Abrahamson regarding comments on the Class 1 injection well application, dated May 15, 2009.
    d. Email from Tamara Muhic, CBR's consultant, to Jennifer Abrahamson regarding status of technical review, dated June 15, 2009.
    e. NDEQ submits first Request for Additional Information (RAI) to CBR, August 6, 2009.

f. Internal email from Jennifer Abrahamson, NDEQ, regarding update on Class 1 application status, dated August 7, 2009.
g. Email from Jennifer Abrahamson, NDEQ, to Lee Snowhite, Cameco Resources, Inc., providing an electronic copy of the RAI, dated August 11, 2009.
h. CBR submits revised permit application with RAI responses to NDEQ, received on February 3, 2010.
i. Letters from Jennifer Abrahamson, NDEQ, to Stan Belieu (Nebraska Oil & Gas Conservation Commission), and Ted Fritz (EPA Region 7) providing copies of the revised permit application with RAI responses for technical review, dated February 4, 2010.
j. Letter to Dr. R. Matt Joeckel, University of Nebraska-Lincoln Conservation & Survey Division, from Jennifer Abrahamson, NDEQ, providing a copy of the revised permit application with RAI responses for technical review, dated February 11, 2010.
k. Email from Dr. R. Matt Joeckel, University of Nebraska –Lincoln Conservation & Survey Division, to Jennifer Abrahamson, NDEQ, providing technical comments on CBR's revised Class 1 application.
l. Letter from Jennifer Abrahamson, NDEQ, to CBR submitting second RAI and a draft permit, dated March 22, 2010.
m. Emails between Jon Wilbeck (Nebraska State Board of Engineers & Architects), Jennifer Abrahamson (NDEQ), and Larry Teahon (CBR), dated May 6, 2010, regarding guidance on how to handle a change in engineers midway through a project.
n. Letter from William Paul Goranson, Cameco Resources, Inc., to NDEQ regarding authorized representatives of CBR, dated May 26, 2010.
o. CBR submits response to second RAI, including revised application text and selected figures, tables & appendices to NDEQ, received June 1, 2010.
p. Memo dated June 21, 2010 from Jennifer Abrahamson summarizing telephone discussion with Mike Brost, Cameco geologist, regarding the "interfingering" relationship between the Lower Dakota and the Morrison formations.
q. CBR submits a revision to text to NDEQ, received on June 28, 2010.
r. Email from Jennifer Abrahamson, NDEQ, to Larry Teahon, CBR, providing a copy of a draft permit for review, dated July 6, 2010.

7. 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:

a. <u>Reason for the Permit</u>
The draft permit has been prepared in accordance with specific regulations contained within Nebraska Title 122 – <u>Rules and Regulations for Underground Injection and Mineral Production Wells</u>. The applicant has fulfilled the minimum requirements necessary to process this permit. The permit application was received on April 29, 2009.

b. <u>Water Quality Considerations</u>
The proposed injection activity will, by definition, emplace process wastewater into subsurface aquifers, which are not 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.

c. Draft Permit Effluent Limitations and Considerations
The draft permit establishes Operational Parameters and Limitations for process wastewater discharged to the injection well system. The injection well will receive wastewater from the extraction/elution process, the reverse osmosis process, well development wastewater, and re-processed evaporation pond water. Treatment processes include uranium removal by Ion Exchange, pH adjustment, filtering, neutralization through addition of reductant, and reverse osmosis. The draft permit utilizes effluent parameters and limitations to characterize the waste discharged to the injection well. All limitations are based on the knowledge of the treatment process, and the injection history of the currently permitted well (permit number NE0210457).

d. Draft Permit 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 knowledge of the proposed design of the well and the past history of the operation and maintenance of the currently permitted injection system (permit number NE0210457).

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

9. Written Comments
A copy of this fact sheet and all documentation pertaining to the permit issuance will be available for review and copying at the Department's office, Suite 400, The Atrium, 1200 N Street, Lincoln, Nebraska 68509-8922 and the Nebraska Department of Environmental Quality, 430 East Second Street, Chadron, Nebraska 69337-2433 between 8:00 am and 5:00 pm weekdays.

The public may comment upon or object to the proposed permit modification, in writing, prior to September 23, 2010. All substantive comments and/or objections shall be considered prior to making the final decision regarding this permit modification. A public hearing regarding this proposed permit decision has been scheduled to be held in Crawford, Nebraska beginning at 7:00 pm, September 23, 2010 in the auditorium at the Crawford Public High School and continuing as necessary. The public hearing will be conducted in accordance with Chapter 5, Title 115 – Rules of Practice and Procedure. Additionally, an informal information session will be held prior to the public hearing on September 23, 2010, from 5:30 pm to 6:00 pm at the Crawford High School, to provide the public the opportunity to ask questions regarding the proposed additional Class 1 well.

All comments and requests for information should be sent to Jennifer Abrahamson, Department of Environmental Quality, P.O. Box 98922, Lincoln, Nebraska 68509-8922, (402) 471-4290.