

**CAMECO RESOURCES  
CROW BUTTE OPERATION**



**86 Crow Butte Road  
P.O. Box 169  
Crawford, Nebraska 69339-0169**

**(308) 665-2215  
(308) 665-2341 – FAX**

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June 5, 2018

**USPS PRIORITY MAIL  
SIGNATURE CONFIRMATION**

Marty Link, Water Quality Division Administrator  
Nebraska Department of Environmental Quality (NDEQ)  
PO Box 98922  
Lincoln, Nebraska 68509-8922

Dear Ms. Link:

In a conference call on April 5, 2018, Cameco Resources, Crow Butte Operation (CBO) staff and NDEQ staff discussed two potential minor modifications of Class III Underground Injection Control (UIC) Permit NE0122611 (hereafter referred to as the Permit). The purpose of this letter is to formally request that NDEQ modify the Permit as was suggested during the April 5, 2018 conference call.

Due to unfavorable market conditions and depleted uranium concentrations in the permitted portion of the Chadron aquifer, CBO has suspended production operations and would like to continue restoration activities in as efficient a manner as possible. There are two purposes for the requested Permit modifications; first to allow all mine units to officially be placed in the restoration phase and second to eliminate required daily pressure readings in well houses that have been isolated and no longer have the potential for flow of mining solutions to or from the well house.

In the current version of the Permit, Part II A. 2. requires that CBO has no more than five mine units in production, five mine units in restoration, and three mine units constructed ahead of active mining at any given time. When CBO was in the active mining phase, this requirement helped protect the water resource by ensuring that CBO actively restored ground water concurrent with production activities. Under the current operating model in which CBO is no longer pursuing commercially viable production and has shifted to a restoration only focus, this requirement only serves to limit CBO's ability to restore in the most efficient, cost effective, and timely manner possible. The public's interest in timely restoration of the groundwater resource would be better served by removing the so called "five and five rule" requirements when CBO is no longer in the active mining phase.

Table 2.1: *Injection Well Requirements*, in the current version of the Permit, requires that well head pressures are recorded daily by recording the reading on the manifold gauge in each well house. CBO is limited to 100 PSIG of injection pressure, in order to protect the Chadron formation from any potential damage that could be caused by over pressurization. In the current operating model for the mine, CBO anticipates that a number of well houses will be removed from operation for an extended period of time. These houses will be isolated from any potential for any kind of flow during this period, and the wells associated with the isolated houses will not be under any pressure, eliminating the potential for damaging the formation through over pressuring a well. CBO proposes that it would be appropriate to remove the requirement to record daily manifold pressure readings in houses that are isolated.

CBO suggests that these two objectives could be accomplished with the addition of language in the current Permit as described below. The changes proposed include only adding additional text, no existing text is removed from the Permit. Each proposed change below is numbered with a description of the location in



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the Permit where the change should be inserted. The proposed change is written in red text so that it is readily distinguishable from the existing text.

1. The first revision should be in Part II. A. 1. Table 2.1 as shown below:

**TABLE 2.1: INJECTION WELL REQUIREMENTS**

CHARACTERISTICS	LIMITATIONS	MONITORING REQUIREMENTS	
	Maximum Limits	Measurement Frequency	Sample Type
<b>Well Head Pressure</b>	100 PSIG	Once/day*	Manifold Gauge
<b>Flow Rate</b>	See Table 2.2	Once/day	24 Hr. Average
<b>Injection Fluid</b>			
Chloride	≤ 5000 mg/l	Once/day	24 Hr. Composite
Sulfate	≤ 5000 mg/l	Once/day	24 Hr. Composite
Sodium	≤ 6000 mg/l	Once/day	24 Hr. Composite
Alkalinity	≤ 4100 mg/l	Once/day	24 Hr. Composite
pH	6.0 to 10.5 S.U.	Once/day	Grab
<b>Bleed Rate</b>	None	Once/day	Totalizer Meter

*\*Daily well head pressure readings are not required in isolated well houses.*

2. The second revision should be in Part II A. 2. as shown below:

## 2. Mine Unit Limitations

The following mine unit limitations apply when the permittee is in the active mining phase of operations.

The permittee shall have no more than five mine units in the mining stage at any given time.

The permittee shall not have more than five mine units in restoration (excluding those units in stabilization) at any given time.

The permittee shall not have more than three mine units constructed in advance of the active mining.

3. The third revision should the addition of an active mining definition as “F.” under Part VII:

### F. Active Mining

The addition of sodium carbonate/bicarbonate solution along with an oxidant (oxygen or hydrogen peroxide) to the ion exchange columns tails solution, then the reinjection of this solution into the uranium-bearing formation for the purpose of solubilizing uranium.

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4. The fourth revision should be the addition of an isolated wellhouse definition as “G.” under Part VII:

**G. Isolated Well house**

A well house will be deemed isolated when the injection manifold has been separated from the injection wellhead piping, providing an air gap, so the mining solution piping is not physically connected.

Thank you for your consideration of these proposed changes. If you have any questions or concerns on this matter, please do not hesitate to call me at 308-665-2215 ext. 117.

Sincerely,

A handwritten signature in blue ink that reads "Walt Nelson". The signature is fluid and cursive.

Walt Nelson  
SHEQ Coordinator

Enclosure

cc: CBO – File  
ec: Amanda Jones – NDEQ Program Coordinator  
Kory Winters – NDEQ Field Office  
CR – Electronic File