

**CAMECO RESOURCES,
CROW BUTTE OPERATION**



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

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

July 1, 2009

Mr. Keith I McConnell, Deputy Director
Decommissioning and Uranium Recovery Licensing Directorate
Division of Waste Management and Environmental Protection
Office of Federal and State Materials and Environmental Management Programs
Mailstop T8-F5
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Re: Source Materials License SUA-1534
Docket No. 40-8943
Evaporation Pond 1 Liner Leak

Dear Mr. McConnell:

On June 5, 2009 routine evaporation pond monitoring results from June 4, 2009 were reviewed. The conductivity and water level readings from Cameco Resources, Crow Butte Operation (CBO) Evaporation Pond 1 southwest underdrain indicated a potential pond liner leak. A sample was collected from the underdrains and analyzed for chloride, alkalinity, conductivity, sodium, and sulfate. The results of these samples indicated that the concentration of the indicator analytes in the underdrain was similar to the pond contents. Based upon these results, it was determined that a liner leak potentially existed in the southwest quadrant of Pond 1.

Mr. Ronald Burrows, Program Manager was notified by e-mail at 8:30 a.m. MDT on June 5, 2009 of the liner leak. As required by License Condition 12.3, this report is submitted within 30 days of discovery of a liner leak and discusses analytical data, mitigative actions, and the results of those actions.

Upon confirmation of a liner leak, CBO began weekly sampling of the southwest underdrain and analysis for alkalinity, chloride, sodium, conductivity, and sulfate. Attachment 1 contains copies of the analytical results from the CBO laboratory for these samples as well as results of weekly pond content samples for these analytes. Samples were obtained on June 5, 11, 18 and 25, 2009.

In addition to weekly analysis of the underdrain, CBO obtained non-routine samples from pond monitor wells CPM-1 and CPM-2. CPM-1 and CPM-2 are completed in the first aquifer and are located downgradient of Pond 1 at the fenced restricted area boundary. The samples were obtained



Mr. Keith I McConnell
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and analyzed for the indicator analytes on June 5, 11, 18 and 25, 2009 to ensure that there was no indication of leakage in the secondary liner. Analytical results were consistent with historical sampling results and are contained in Attachment 2.

Upon confirmation of the liner leak on June 5, CBO began to lower the level of Pond 1 by pumping water to Pond 4. Concurrently, an immediate visual inspection of the liner along the west side of the pond was performed. During the initial inspection, an old patch that was leaking was identified at the water line. CBO continued to lower the water level from 9.3' to 8.4'. Visual inspections of the liner were performed during this period. No additional leaks in the liner were identified.

Colorado Linings was contacted to repair the liner on June 8, 2009. They arrived on site on June 15 for site preparation, and completed the repair on June 16, 2009. Attachment 3 contains copies of the Commercial Pond Inspection Forms for the period of June 4 to June 25, 2009. Underdrain levels are recorded on this form. The southwest underdrain level has remained at 9 inches since the leak was detected and the pond level was lowered for the repair. This data indicates that the leak was near the 9.3' level and that the old patch identified in the initial visual inspection and repaired by Colorado Linings was likely the source of the leak.

Weekly analysis of the underdrain contents will be continued until CBO is sure that all leaks have been located and repaired. When CBO is confident that all leaks have been repaired, the affected underdrain will be pumped dry. When this is completed, clean water will be added to flush the underdrain. Then, the underdrain will be pumped dry and allowed to refill. When this process is completed, a sample will be obtained and analyzed for the indicator analytes. If the concentrations remain elevated in the underdrains, the pond level will be lowered and inspections will be performed to determine whether there are other areas of potential liner leakage.

CROW BUTTE RESOURCES, INC.



Mr. Keith I McConnell
July 1, 2009
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If you have any questions or require any further information, please do not hesitate to call me at (308) 665-2215 ext 117.

Sincerely,
CAMECO RESOURCES,
CROW BUTTE OPERATION

A handwritten signature in black ink, appearing to read "Walter D. Nelson". The signature is fluid and cursive, with a long horizontal stroke at the end.

Walter D. Nelson
Environmental Leadership Coordinator

Enclosures: As Stated

cc: Mr. Steve Collings - CBO, Denver
Mr. Ronald Burrows – Project Manager



Attachment 1

Pond 4 Underdrain Analysis

5-Jun-09

SM/LG

	<u>Alk</u> mg/L	<u>Cl</u> mg/L	<u>Cond</u> µmhos	<u>SO₄</u> mg/L	<u>Na</u> mg/L
Pond #1 SW	2400	49,280	113,500	5769	33,366

5-Jun-09

SM/LG

	<u>Alk</u> mg/L	<u>Cl</u> mg/L	<u>Cond</u> µmhos	<u>SO₄</u> mg/L	<u>Na</u> mg/L
Pond #1 Contents	2600	51,052	115,200	6051	34,974

11-Jun-09

SM/CK

	<u>Alk</u> mg/L	<u>Cl</u> mg/L	<u>Cond</u> µmhos	<u>SO₄</u> mg/L	<u>Na</u> mg/L
Pond #1 SW	2800	46,798	113,600	5408	33,868

11-Jun-09

SM/CK

	<u>Alk</u> mg/L	<u>Cl</u> mg/L	<u>Cond</u> µmhos	<u>SO₄</u> mg/L	<u>Na</u> mg/L
Pond #1 Contents	2600	46,798	112,500	5347	33,165

18-Jun-09

SM/CK

	<u>Alk</u> mg/L	<u>Cl</u> mg/L	<u>Cond</u> µmhos	<u>SO₄</u> mg/L	<u>Na</u> mg/L
Pond #1 Contents	2700	48,216	114,000	5328	33,936
Pond #1 SW	2400	48,925	113,300	5180	34,340

26-Jun-09

SM/LT/CK

	<u>Alk</u> mg/L	<u>Cl</u> mg/L	<u>Cond</u> µmhos	<u>SO₄</u> mg/L	<u>Na</u> mg/L
Pond #1 SW	2400	50,343	113,000	5431	34,340
Pond #1 Contents	2750	51,761	117,500	5701	35,350



Attachment 2

Pond Monitor Well CPM-1 and CPM-2 Analysis

5/Jun/09

SM/LT/CK

	<u>Alk</u>	<u>Cl</u>	<u>Cond</u>	<u>SO₄</u>	<u>Na</u>
	mg/L	mg/L	umhos	mg/L	mg/L
Commercial Pond Monitor #1	200	4.8	440	14	15
Commercial Pond Monitor #2	180	5.1	420	13	14

11/Jun/09

SM/CK

	<u>Alk</u>	<u>Cl</u>	<u>Cond</u>	<u>SO₄</u>	<u>Na</u>
	mg/L	mg/L	umhos	mg/L	mg/L
Commercial Pond Monitor #1	200	5.0	440	15	16
Commercial Pond Monitor #2	180	5.7	420	15	15

18/Jun/09

SM/CK

	<u>Alk</u>	<u>Cl</u>	<u>Cond</u>	<u>SO₄</u>	<u>Na</u>
	mg/L	mg/L	umhos	mg/L	mg/L
Commercial Pond Monitor #1	201	5.4	440	14	15
Commercial Pond Monitor #2	186	5.3	420	15	13

26/Jun/09

SM/LT/CK

	<u>Alk</u> mg/L	<u>Cl</u> mg/L	<u>Cond</u> umhos	<u>SO₄</u> mg/L	<u>Na</u> mg/L
Commercial Pond Monitor #1	200	5.1	440	14	16
Commercial Pond Monitor #2	185	5.5	420	13	14



Attachment 3

Commercial Pond Inspection Forms

WJ
6/5/09

CROW BUTTE RESOURCES, INC.
WEEKLY EVAPORATION POND UNDERDRAIN ANALYSIS

COMMERCIAL PONDS		UNDERDRAIN WATER DEPTH / INCHES	METER READING	TEMP °C	CONDUCTIVITY µmhos/cm	LAB RESULTS µmhos/cm																																																	
Depth = 17 feet	POND # 1	POND LEVEL	9.3																																																				
		*FREEBOARD	7.7																																																				
		NE UNDERDRAIN	0																																																				
		NM UNDERDRAIN	0																																																				
		NW UNDERDRAIN	4																																																				
		SE UNDERDRAIN	0																																																				
		SM UNDERDRAIN	0																																																				
		SW UNDERDRAIN	9	83.8 mS	12.5																																																		
Depth = 17.5 feet	POND # 3	POND LEVEL	9.9																																																				
		*FREEBOARD	7.6																																																				
		NE UNDERDRAIN	4																																																				
		NM UNDERDRAIN	7	20.64 mS	11.2																																																		
		NW UNDERDRAIN	0																																																				
		SE UNDERDRAIN	0																																																				
		SM UNDERDRAIN	4																																																				
		SW UNDERDRAIN	4																																																				
Depth = 17.5 feet	POND # 4	POND LEVEL	4.4																																																				
		*FREEBOARD	13.1																																																				
		NE UNDERDRAIN	15	96.2 mS	16																																																		
		NM UNDERDRAIN	12	23.68 mS	12.9																																																		
		NW UNDERDRAIN	5	13.14 mS	13																																																		
		SE UNDERDRAIN	18	4293 uS	17.2																																																		
		SM UNDERDRAIN	12																																																				
		SW UNDERDRAIN	0																																																				
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6/11/09

CROW BUTTE RESOURCES, INC.
WEEKLY EVAPORATION POND UNDERDRAIN ANALYSIS

COMMERCIAL PONDS		UNDERDRAIN WATER DEPTH / INCHES	METER READING	TEMP °C	CONDUCTIVITY µmhos/cm	LAB RESULTS µmhos/cm
Depth = 17 feet POND # 1	POND LEVEL	8.4'				
	*FREEBOARD	8.6'				
	NE UNDERDRAIN	0				
	NM UNDERDRAIN	0				
	NW UNDERDRAIN	4				
	SE UNDERDRAIN	0				
	SM UNDERDRAIN	0				
	SW UNDERDRAIN	9	83.5 ms	12.9		
Depth = 17.5 feet POND # 3	POND LEVEL	10'				
	*FREEBOARD	7.5'				
	NE UNDERDRAIN	4				
	NM UNDERDRAIN	7	20.68 ms	11.3		
	NW UNDERDRAIN	0				
	SE UNDERDRAIN	0				
	SM UNDERDRAIN	4				
	SW UNDERDRAIN	5				
Depth = 17.5 feet POND # 4	POND LEVEL	55'				
	*FREEBOARD	12.0				
	NE UNDERDRAIN	15	94.1 ms	16.1		
	NM UNDERDRAIN	12	23.80 ms	12.9		
	NW UNDERDRAIN	5				
	SE UNDERDRAIN	18	4297 us	17.3		
	SM UNDERDRAIN	12	159 ms	13		
	SW UNDERDRAIN	0				
R & D POND LEVELS (Depth = 15 ft) EAST LEVEL: 7.9 **EAST FREEBOARD: 7.1' EAST UNDERDRAIN: 25 WEST LEVEL: 7.9 **WEST FREEBOARD: 7.1' WEST UNDERDRAIN: 0			REMARKS: wet cool day dead skunk N end of pond 4. *COMMERCIAL POND FREEBOARD = 5 FT MAX ** R&D POND FREEBOARD = 3 FT MAX SAMPLER: Bass-Rilton DATE: 6-11-09			

CROW BUTTE RESOURCES, INC.
WEEKLY EVAPORATION POND UNDERDRAIN ANALYSIS

W.D.
6/18/09

COMMERCIAL PONDS		UNDERDRAIN WATER DEPTH / INCHES	METER READING	TEMP °C	CONDUCTIVITY µmhos/cm	LAB RESULTS µmhos/cm																												
POND # 1 Depth = 17 feet	POND LEVEL	8.4'																																
	*FREEBOARD	8.6'																																
	NE UNDERDRAIN	0																																
	NM UNDERDRAIN	0																																
	NW UNDERDRAIN	6	71.7 ms	13.6																														
	SE UNDERDRAIN	0																																
	SM UNDERDRAIN	0																																
	SW UNDERDRAIN	9	85.3 ms	13.9																														
POND # 3 Depth = 17.5 feet	POND LEVEL	10.0'																																
	*FREEBOARD	7.5'																																
	NE UNDERDRAIN	4																																
	NM UNDERDRAIN	7	21.36 ms	12.4																														
	NW UNDERDRAIN	5																																
	SE UNDERDRAIN	0																																
	SM UNDERDRAIN	4																																
	SW UNDERDRAIN	5																																
POND # 4 Depth = 17.5 feet	POND LEVEL	5.6'																																
	*FREEBOARD	11.9'																																
	NE UNDERDRAIN	16	99.5 ms	16.9																														
	NM UNDERDRAIN	14	101.6 ms	13.7																														
	NW UNDERDRAIN	15	74.9 ms	17.3																														
	SE UNDERDRAIN	22	111.8 ms	17.6																														
	SM UNDERDRAIN	32	103.4 ms	13.6																														
	SW UNDERDRAIN	0																																
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CROW BUTTE RESOURCES, INC.
WEEKLY EVAPORATION POND UNDERDRAIN ANALYSIS

WN
6/25/09

COMMERCIAL PONDS		UNDERDRAIN WATER DEPTH / INCHES	METER READING	TEMP °C	CONDUCTIVITY µmhos/cm	LAB RESULTS µmhos/cm
POND # 1 Depth = 17 feet	POND LEVEL	8.7'				
	*FREEBOARD	9.3'				
	NE UNDERDRAIN	0				
	NM UNDERDRAIN	0				
	NW UNDERDRAIN	6'	72.2 ms	14.1		
	SE UNDERDRAIN	0				
	SM UNDERDRAIN	0				
	SW UNDERDRAIN	9	88.1 ms	14.9		
POND # 3 Depth = 17.5 feet	POND LEVEL	10.1'				
	*FREEBOARD	7.5'				
	NE UNDERDRAIN	4				
	NM UNDERDRAIN	7	2140 ms	13.7		
	NW UNDERDRAIN	5				
	SE UNDERDRAIN	0				
	SM UNDERDRAIN	4				
	SW UNDERDRAIN	6	582 us	13.1		
POND # 4 Depth = 17.5 feet	POND LEVEL	5.2'				
	*FREEBOARD	12.3'				
	NE UNDERDRAIN	16	100.3 ms	17.6		
	NM UNDERDRAIN	19	101.8 ms	14.3		
	NW UNDERDRAIN	19	73.5 ms	17.5		
	SE UNDERDRAIN	22	91.4 ms	18.3		
	SM UNDERDRAIN	32	103.3 ms	14.3		
	SW UNDERDRAIN	40	111.3 ms	18.1		
R & D POND LEVELS (Depth = 15 ft)			REMARKS: Hot + Windy *COMMERCIAL POND FREEBOARD = 5 FT MAX ** R&D POND FREEBOARD = 3 FT MAX SAMPLER: Pelton / Bass DATE: 6/25/09			
EAST LEVEL: 8.1'						
**EAST FREEBOARD: 6.9'						
EAST UNDERDRAIN: 2.5"						
WEST LEVEL: 8.1'						
**WEST FREEBOARD: 6.9'						
WEST UNDERDRAIN: 0"						