

**CAMECO RESOURCES
CROW BUTTE OPERATION**



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

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

January 16, 2012

**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

Mr. Michael Linder, Director
Nebraska Department of Environmental Quality
P.O. Box 98922
Lincoln, NE 68509-8922

Subject: Class III UIC Permit NE0122611
December 2011 Monthly Restoration Report

Dear Mr. Linder:

Please find enclosed the December 2011 Monthly Restoration Reports for Mine Units 2, 3, 4, 5 and 6. Mine Unit 2 was placed into recirculation on July 7, 2011 in order to homogenize the aquifer in preparation for stability monitoring. This mine unit has been put back into reverse osmosis treatment so that permeate can be injected into patterns connected to Wellhouses 3 and 5. The reverse osmosis (RO) units continue to inject permeate and reductant into Mine Units 3 and 5. In Mine Unit 4, permeate is being injected into one wellhouse while the other two wellhouses remain in ion exchange. A hydrologic bleed was maintained in Mine Unit 6 for excursion control.

If you have any questions regarding this submittal, please feel free to contact me at (308) 665-2215, ext. 114.

Sincerely,
Cameco Resources
Crow Butte Operation

Larry Teahon
SHEQ Manager

Enclosures: As Stated

cc: Lindsey Phillips, NDEQ Chadron Office
Ron Burrows, NRC
CBO File
ec: CR - Cheyenne

CROW BUTTE MINE
MONTHLY RESTORATION REPORT
DECEMBER 2011
MINE UNIT 2

1. RESTORATION ACTIVITY DURING MONTH:

	YES	NO	
a. Groundwater Transfer		X	(if yes, complete part 2)
b. Groundwater Sweep		X	(if yes, complete part 3)
c. Groundwater Treatment	X		RO PR15, P97, I180P, I188P, and P209.
d. Wellfield Recirculation		X	
e. Other (explain):		X	

2. LIST WELLS USED IN GROUNDWATER TRANSFER DURING THE MONTH:

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3. LIST WELLS USED IN GROUNDWATER SWEEP DURING THE MONTH:

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4. LIST WELLS SAMPLED DURING MONTH AND ASSAY RESULTS:

P97, I188P, and P209.

Mine Unit 2 Restoration Data

Well	Date	U ₃ O ₈	V	Total CO ₃	pH	Ca	Na	Cl	SO ₄	Cond
P97	12/07/11	2.15								1355
P97	12/14/11	2.26								
P97	12/21/11	2.34								1349
P97	12/29/11	2.39								
I188P	12/07/11	2.36								1299
I188P	12/14/11	2.16								
I188P	12/21/11	2.26								1243
I188P	12/29/11	2.30								
P209	12/07/11	1.93								1165
P209	12/14/11	1.90								
P209	12/21/11	1.99								1353
P209	12/29/11	2.06								

CROW BUTTE MINE
MONTHLY RESTORATION REPORT
DECEMBER 2011
MINE UNIT 3

1. RESTORATION ACTIVITY DURING MONTH:

	YES	NO	
a. Groundwater Transfer		X	(if yes, complete part 2)
b. Groundwater Sweep		X	(if yes, complete part 3)
c. Groundwater Treatment	X		RO and Reductant CM1-11, IJ13P, P228, I298P, I326P, I343P, RES1E, RES2E, and RES3E.
d. Wellfield Recirculation		X	
e. Other (explain):		X	

2. LIST WELLS USED IN GROUNDWATER TRANSFER DURING THE MONTH:

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3. LIST WELLS USED IN GROUNDWATER SWEEP DURING THE MONTH:

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4. LIST WELLS SAMPLED DURING MONTH AND ASSAY RESULTS:

CM1-11, P228, I298P, I326P, I343P, RES1E, RES2E, and RES3E.

Mine Unit 3 Restoration Data

Well	Date	U ₃ O ₈	V	Total CO ₃	pH	Ca	Na	Cl	SO ₄	Cond
CM1-11	12/07/11	0.55								1712
CM1-11	12/14/11	0.34								
CM1-11	12/21/11	0.28								1740
CM1-11	12/29/11	0.61								
P228	12/07/11	1.21								781
P228	12/14/11	1.32								
P228	12/21/11	1.18								778
P228	12/29/11	1.42								
I298P	12/07/11	0.20								498
I298P	12/14/11	0.16								
I298P	12/21/11	0.04								474
I298P	12/29/11	0.24								
I326P	12/07/11	2.40								1246
I326P	12/14/11	2.38								
I326P	12/21/11	2.17								1344
I343P	12/07/11	5.48								1563
I343P	12/14/11	5.89								
I343P	12/21/11	5.47								1750
RES1E	12/07/11	1.67								955
RES1E	12/14/11	1.65								
RES1E	12/21/11	1.58								958
RES1E	12/29/11	1.70								
RES2E	12/07/11	2.33								1296
RES2E	12/14/11	2.21								
RES2E	12/21/11	2.06								1308
RES2E	12/29/11	2.13								
RES3E	12/07/11	1.62								1073
RES3E	12/14/11	1.47								
RES3E	12/21/11	1.86								1022
RES3E	12/29/11	1.62								

CROW BUTTE MINE
MONTHLY RESTORATION REPORT
DECEMBER 2011
MINE UNIT 4

1. RESTORATION ACTIVITY DURING MONTH:

	YES	NO	
a. Groundwater Transfer		X	(if yes, complete part 2)
b. Groundwater Sweep		X	(if yes, complete part 3)
c. Groundwater Treatment	X		RO and Reductant P371, P429, P430, P437, P438, P442, P443, P447, and I613P. IX P393, P394, P434, P450, P456, P461, I548P, I549P, and I551P
d. Wellfield Recirculation		X	
e. Other (explain):			

2. LIST WELLS USED IN GROUNDWATER TRANSFER DURING THE MONTH:

3. LIST WELLS USED IN GROUNDWATER SWEEP DURING THE MONTH:

4. LIST WELLS SAMPLED DURING MONTH AND ASSAY RESULTS:

P371, P394, P429, P430, P437, P438, P442, P443, P447, P450, P456, P461, I549P, I551P, and I613P.

Mine Unit 4 Restoration Data

Well	Date	U ₃ O ₈	V	Total CO ₃	pH	Ca	Na	Cl	SO ₄	Cond
P371	12/07/11	5.85	<1							2120
P371	12/14/11	6.06								
P371	12/21/11	5.74								2052
P371	12/29/11	6.20								
P394	12/07/11	9.44								4510
P394	12/14/11	9.51								
P394	12/21/11	9.31								4310
P394	12/29/11	9.78								
P429	12/07/11	2.12	<1							811
P430	12/07/11	3.24	<1							1024
P430	12/14/11	3.20								
P430	12/21/11	3.44								1069
P430	12/29/11	3.69								
P437	12/07/11	6.96	<1							3900
P437	12/14/11	6.98								
P437	12/21/11	6.58								3810
P437	12/29/11	6.54								
P438	12/07/11	2.71	<1							3880
P438	12/14/11	2.76								
P438	12/21/11	2.92								3880
P438	12/29/11	2.55								
P442	12/07/11	10.74	<1							3930
P442	12/14/11	11.49								
P442	12/21/11	11.04								3900
P442	12/29/11	10.85								
P443	12/07/11	5.74	<1							3910
P443	12/14/11	5.73								
P443	12/21/11	5.33								3890
P443	12/29/11	5.33								
P447	12/07/11	3.68	<1							3970
P447	12/14/11	3.90								
P447	12/21/11	4.00								3920
P447	12/29/11	3.61								
P450	12/07/11	9.34								4540
P450	12/14/11	10.51								
P450	12/21/11	9.47								4440
P450	12/29/11	9.46								

Mine Unit 4 Restoration Data

Well	Date	U ₃ O ₈	V	Total CO ₃	pH	Ca	Na	Cl	SO ₄	Cond
P456	12/07/11	3.74								3500
P456	12/14/11	4.11								
P456	12/21/11	3.99								3340
P456	12/29/11	3.89								
P461	12/07/11	7.44								4960
P461	12/14/11	7.96								
P461	12/21/11	8.10								4940
P461	12/29/11	7.61								
I549P	12/07/11	6.78								4580
I549P	12/14/11	7.00								
I549P	12/21/11	7.09								4600
I549P	12/29/11	7.46								
I551P	12/07/11	9.96								4250
I551P	12/14/11	10.44								
I551P	12/21/11	10.10								4130
I551P	12/29/11	9.85								
I613P	12/07/11	2.78	<1							1448
I613P	12/14/11	2.76								
I613P	12/21/11	3.08								1519
I613P	12/29/11	2.86								

CROW BUTTE MINE
MONTHLY RESTORATION REPORT
DECEMBER 2011
MINE UNIT 5

1. RESTORATION ACTIVITY DURING MONTH:

	YES	NO	
a. Groundwater Transfer		X	(if yes, complete part 2)
b. Groundwater Sweep		X	(if yes, complete part 3)
c. Groundwater Treatment	X		RO and Reductant BL5-5, I676P, P707, P709, P773, P790, P800, and I854P.
d. Wellfield Recirculation		X	
e. Other (explain):		X	

2. LIST WELLS USED IN GROUNDWATER TRANSFER DURING THE MONTH:

3. LIST WELLS USED IN GROUNDWATER SWEEP DURING THE MONTH:

4. LIST WELLS SAMPLED DURING MONTH AND ASSAY RESULTS:

BL5-5, I676P, P709, P773, P790, P800, and I854P.

Mine Unit 5 Restoration Data

Well	Date	U ₃ O ₈	V	Total CO ₃	pH	Ca	Na	Cl	SO ₄	Cond
BL5-5	12/07/11	0.68								3300
BL5-5	12/14/11	0.54								
BL5-5	12/21/11	0.41								3270
BL5-5	12/29/11	0.71								
I676P	12/07/11	8.31								2711
I676P	12/14/11	8.57								
I676P	12/21/11	8.73								2727
I676P	12/29/11	9.21								
P709	12/07/11	9.31								3170
P709	12/14/11	9.43								
P709	12/21/11	8.45								3140
P709	12/29/11	9.04								
P773	12/07/11	2.25								2030
P773	12/14/11	2.65								
P773	12/21/11	2.19								2117
P773	12/29/11	2.49								
P790	12/07/11	3.46								1799
P790	12/14/11	3.60								
P790	12/21/11	3.48								1764
P790	12/29/11	3.53								
P800	12/07/11	3.65								2863
P800	12/14/11	3.93								
P800	12/21/11	3.70								2915
P800	12/29/11	3.75								
I854P	12/07/11	2.61								3630
I854P	12/14/11	2.48								
I854P	12/21/11	2.53								3610
I854P	12/29/11	2.57								

CROW BUTTE MINE
MONTHLY RESTORATION REPORT
DECEMBER 2011
MINE UNIT 6

1. RESTORATION ACTIVITY DURING MONTH:

	YES	NO	
a. Groundwater Transfer		X	(if yes, complete part 2)
b. Groundwater Sweep		X	(if yes, complete part 3)
c. Groundwater Treatment		X	
d. Wellfield Recirculation		X	
e. Other (explain):	X		Wellfield bleed for excursion control. P1567 and P1633.

2. LIST WELLS USED IN GROUNDWATER TRANSFER DURING THE MONTH:

3. LIST WELLS USED IN GROUNDWATER SWEEP DURING THE MONTH:

4. LIST WELLS SAMPLED DURING MONTH AND ASSAY RESULTS:

P1567 and P1633

Mine Unit 6 Restoration Data

Well	Date	U ₃ O ₈	V	Total CO ₃	pH	Ca	Na	Cl	SO ₄	Cond
P1567	12/07/11	10.81								3730
P1567	12/29/11	11.24								
P1633	12/29/11	23.16								