

**CAMECO RESOURCES
CROW BUTTE OPERATION**



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

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

August 17, 2016

**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

Marty Link, Water Quality Division Administrator
Nebraska Department of Environmental Quality
P.O. Box 98922
Lincoln, NE 68509-8922

Class III UIC Permit NE0122611
July 2016 Monthly Restoration Report

Dear Ms. Link:

Please find enclosed the July 2016 Monthly Restoration Reports for Mine Units 2, 3, 4, 5 and 6. The reverse osmosis (RO) units continue to inject permeate and reductant into Mine Units 4, 5, and 6 with groundwater sweep continuing in portions of the three mine units.

Mine Units 2 and 3 remain in stability monitoring.

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: Ron Burrows – NRC
CBO - File
ec: CR – Electronic File
Nancy Harris – NDEQ Program Coordinator
Kory Winters – NDEQ Field Office

CROW BUTTE MINE
 MONTHLY RESTORATION REPORT
 JULY 2016
 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	
d. Wellfield Recirculation		X	
e. Other (explain):	X		The Mine Unit is in Stability Monitoring.

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:

No samples were collected during the month.

CROW BUTTE MINE
MONTHLY RESTORATION REPORT

JULY 2016

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	
d. Wellfield Recirculation		X	
e. Other (explain):	X		The Mine Unit is in Stability Monitoring.

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:

No samples were collected during the month.

CROW BUTTE MINE
MONTHLY RESTORATION REPORT
JULY 2016
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		I536P, I539P, and I546P.
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:

BL-8, BL-9, CM2-4, P372, I535P, I543P, I544P, I545P, P6023, P6024, and P6029.

4. LIST WELLS SAMPLED DURING MONTH AND ASSAY RESULTS:

BL-8, BL-9, BL-10, BL-17, CM2-3, CM2-4, CM3-9, CM4-10, P372, P390, P394, P456, I508P, I526P, I535P, I543P, I544P, I545P, I546P, I548P, I549P, I551P, P6023, P6024 and P6029.

Mine Unit 4 Restoration Data

Well Name	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
BL-17	7/19/2016		73.41	357.0	19.30	909.3	915.4	4876	7.38	3302	0.001	5.340	1.510
BL-8	7/19/2016	468.0	18.75	157.0	4.90	359.1	255.1	1963	7.69	1212	0.039	2.564	0.207
	7/26/2016		17.49		4.90	366.1	256.8					2.493	0.193
BL-9	7/19/2016	355.0	15.38	135.0	3.84	288.6	222.7	1626	7.50	1028	0.166	1.517	0.052
	7/26/2016		15.83		3.94	290.3	222.4					1.495	0.065
CM2-3	7/19/2016	333.0	13.60	121.0	2.57	253.8	192.0	1439	7.82	905	0.010	0.113	0.081
CM2-4	7/19/2016	363.0	15.60	145.0	3.84	318.1	248.8	1743	7.91	1089	0.015	0.615	0.048
	7/26/2016		15.42		3.90	311.8	252.2					0.584	0.042
CM3-10	7/19/2016	290.0	9.39	85.0	2.17	204.7	131.9	1136	7.96	682	0.019	0.348	0.158
CM3-9	7/19/2016	269.0	14.60	69.0	2.95	166.1	92.0	950	7.91	587	0.050	0.538	0.126
I508P	7/19/2016	221.0	3.67	66.0	0.74	149.7	84.5	850	8.32	536	0.007	0.474	0.109
I526P	7/19/2016	247.0	12.54	62.0	2.35	154.4	105.8	877	8.05	548	0.005	0.421	0.019
I535P	7/19/2016	450.0	21.97	201.0	5.93	414.0	365.2	2260	8.10	1405	0.001	2.246	0.087
I536P	7/19/2016	452.0	25.96	162.0	6.67	358.1	309.9	2013	7.67	1240	0.002	6.297	0.149
	7/26/2016		26.69		6.91	349.0	313.8					6.245	0.139
I539P	7/19/2016	466.0	20.78	170.0	5.63	375.6	290.1	2047	7.89	1259	0.016	1.941	0.161
	7/26/2016		21.16		5.71	389.9	298.4					1.978	0.168
I543P	7/19/2016	860.0	69.22	269.0	18.18	644.4	608.2	3633	7.33	2423		8.889	0.141
	7/26/2016		68.24		19.02	652.1	621.5					8.597	0.145

Mine Unit 4 Restoration Data

Well Name	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
I544P	7/19/2016	987.0	113.80	60.0	28.96	812.0	822.9	4609	7.25	3131	0.001	10.210	0.384
	7/26/2016		113.20		29.27	822.9	878.4					9.792	0.356
I545P	7/19/2016	676.0	53.89	253.0	13.81	535.9	487.4	3054	7.31	1993	0.002	4.287	0.381
	7/26/2016		56.54		13.92	532.3	495.8					4.263	0.370
I546P	7/19/2016	854.0	87.06	377.0	21.93	786.5	719.2	4170	7.28	2805	0.032	2.725	0.077
	7/26/2016		86.17		21.77	746.4	717.4					2.632	0.068
I548P	7/19/2016	323.0	9.26	91.0	1.46	229.1	154.8	1261	8.15	794	0.029	0.623	0.146
I549P	7/19/2016	390.0	21.03	138.0	4.32	316.3	280.5	1770	7.45	1103	0.659	2.859	0.032
I551P	7/19/2016	399.0	17.03	96.0	3.38	264.9	189.2	1481	7.93	928	0.017	2.853	0.388
P372	7/19/2016	422.0	17.47	153.0	4.20	350.6	274.7	1910	7.48	1179	0.025	6.834	0.123
	7/26/2016		18.18		4.51	360.4	280.7					6.857	0.118
P390	7/19/2016	376.0	10.80	104.0	2.56	275.5	195.4	1497	8.15	938	0.006	1.848	0.091
P394	7/19/2016	451.0	29.80	142.0	6.44	349.7	315.4	1951	7.57	1205	0.130	0.527	0.029
P456	7/19/2016	365.0	12.00	94.0	2.48	243.1	158.2	1348	8.08	843	0.153	1.101	0.032
P6023	7/19/2016	601.0	35.32	190.0	8.70	509.8	484.7	2809	7.19	1820	0.004	1.574	0.020
	7/26/2016		34.75		8.74	503.5	467.0					1.498	0.018
P6024	7/19/2016	669.0	47.33	207.0	11.33	534.0	486.5	2927	7.34	1902	0.039	1.344	0.030
	7/26/2016		44.46		11.17	527.2	479.5					1.271	0.029
P6029	7/19/2016		174.90	454.0	41.10	1100.0	1216.0	6043	7.10	3793	0.146	9.323	0.065

Mine Unit 4 Restoration Data

Well Name	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
	7/26/2016		164.50		42.35	1120.0	1212.0					8.907	0.074

CROW BUTTE MINE
 MONTHLY RESTORATION REPORT
 JULY 2016
 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 I676P, I685P, P1117, P1216, and P1239.
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:
 BL5-3, BL5-4, BL5-5, CPW-1, I693P, P694, P699, I698P, P849, and P1002.

4. LIST WELLS SAMPLED DURING MONTH AND ASSAY RESULTS:

BL5-3, BL5-4, BL5-5, CPW-1, I685P, I693P, P694, P837, P849, P1002, and P1239.

Mine Unit 5 Restoration Data

Well Name	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
BL5-3	7/19/2016	403	24.05	184	5.77	384.2	369.2	2158	7.91	1326	0.039	0.028	-0.007
	7/26/2016		22.56		5.48	368.2	362.2					0.154	0.021
BL5-4	7/19/2016	387	15.06	136	3.64	317.7	275.4	1796	8.06	1117	0.029	0.170	0.015
	7/26/2016		15.85		3.87	332.2	275.9					0.166	0.011
BL5-5	7/19/2016	272	10.54	113	2.35	249.7	218.2	1387	8.24	871	0.043	0.094	-0.012
	7/26/2016		10.90		2.50	268.4	231.9					0.099	0.004
CPW-1	7/19/2016	374	16.89	142	3.97	327.8	286.7	1831	8.11	1135	0.040	1.699	0.029
I685P	7/19/2016	468	21.24	205	5.62	455.0	422.1	2445	7.97	1542	0.002	2.414	0.381
I693P	7/19/2016	337	11.46	166	2.54	342.7	336.1	1907	8.13	1177	0.005	5.584	0.500
	7/26/2016		11.58		2.54	337.4	323.1					5.353	0.477
P1002	7/19/2016	353	16.73	185	4.17	379.8	389.5	2103	8.02	1292	0.001	1.346	0.281
	7/26/2016		16.91		4.29	380.5	381.8					1.261	0.257
P1239	7/19/2016	254	5.62	63	1.47	184.6	124.0	996	8.65	601	0.142	2.240	1.026
P694	7/19/2016	396	15.17	183	3.84	378.9	333.2	2065	7.99	1271	0.054	1.721	0.187
	7/26/2016		16.09		3.98	377.3	337.4					1.723	0.184
P837	7/19/2016	274	7.52	91	1.58	207.3	156.7	1196	8.20	715	0.017	0.956	0.072
P849	7/19/2016	303	13.79	193	3.26	355.7	355.2	1976	7.97	1218	0.022	0.679	0.025
	7/26/2016		13.82		3.32	360.5	363.0					0.670	0.022

CROW BUTTE MINE
MONTHLY RESTORATION REPORT
JULY 2016
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		RO and Reductant P1268, P1336, P1374, P1377, P1399, P1439, P1457, P1467, P1598, P1624, and P1701.
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:

P1273, P1312, P1314, P1315, P1402, P1404, P1426, P1440, P1449, P1461, P1476, P1494, P1568, P1590, and P1611.

4. LIST WELLS SAMPLED DURING MONTH AND ASSAY RESULTS:

P1268, P1273, P1312, P1314, P1315, P1336, P1374, P1377, P1399, P1402, P1404, P1426, P1439, P1440, P1449, P1457, P1461, P1467, P1476, P1494, P1568, and P1701.

MU6 Restoration Data

Well Name	Date	Alk	Cl	Ca	Mg	Na	SO4	Cond	pH	TDS	As	Fe	U	V
P1268	7/19/2016	348	97	8.40	2.11	243.0	154.7	1334	8.31	836		0.00	2.853	5.003
P1273	7/19/2016	929	434	59.39	14.95	831.5	739.9	4502	7.48	2970		0.15	20.150	0.232
	7/26/2016			61.73	15.27	823.7	747.8						20.730	0.230
P1312	7/19/2016	682	277	33.66	8.16	544.4	445.8	2985	7.98	1944		0.07	12.370	1.302
	7/26/2016			30.56	7.52	497.2	418.7						11.340	1.527
P1314	7/19/2016	819	401	39.26	11.98	732.1	655.7	4077	7.69	2692		0.02	3.835	1.095
	7/26/2016			39.59	12.13	724.8	663.0						3.922	1.066
P1315	7/19/2016	620	334	44.10	10.80	591.4	561.7	3357	7.67	2229		0.04	0.806	0.221
	7/26/2016			44.34	10.77	598.0	576.4						0.786	0.215
P1336	7/19/2016	444	111	12.55	3.23	312.1	210.7	1681	7.92	1056		0.12	5.008	1.070
P1374	7/19/2016	553	151	14.21	3.91	389.7	284.6	2157	8.03	1325		0.04	4.507	1.435
	7/26/2016			14.18	3.93	400.4	282.8						4.304	1.514
P1377	7/19/2016	414	199	25.87	6.06	396.5	384.3	2241	7.84	1390		0.02	1.790	0.401
	7/26/2016			26.76	6.15	396.8	382.1						1.796	0.386
P1399	7/19/2016	620	269	44.90	9.64	528.6	481.5	2953	7.66	1927		0.04	2.242	0.432
	7/26/2016			45.81	9.93	531.1	489.8						2.267	0.428
P1402	7/19/2016	716	261	29.90	7.42	555.5	464.3	3056	7.65	1995		0.06	7.860	0.139
	7/26/2016			30.73	7.40	554.1	454.6						7.880	0.140
P1404	7/19/2016	851	385	51.87	12.75	737.0	669.6	4095	7.78	2700		0.07	6.097	0.113
	7/26/2016			52.10	12.75	747.2	681.2						6.473	0.112
P1426	7/19/2016	393	162	16.21	3.85	338.7	314.3	1945	7.86	1200		0.04	4.153	0.266
	7/26/2016			16.21	3.83	336.7	310.7						3.959	0.254
P1439	7/19/2016	717	224	20.78	6.01	513.8	382.5	2834	8.22	1837		0.01	4.510	1.407

MU6 Restoration Data

Well Name	Date	Alk	Cl	Ca	Mg	Na	SO4	Cond	pH	TDS	As	Fe	U	V
P1440	7/26/2016			20.09	5.73	498.0	358.1						4.288	1.462
	7/19/2016	567	193	20.97	6.19	433.4	317.8	2319	7.85	1452		0.00	2.717	2.336
P1449	7/26/2016			20.74	6.11	419.6	319.4						2.644	2.372
	7/19/2016	967	325	39.58	10.76	760.0	590.4	3890	7.68	2608		0.02	15.350	0.460
P1457	7/26/2016			37.33	10.40	714.3	565.1						15.300	0.482
	7/19/2016	511	122	8.76	2.89	336.3	198.1	1786	8.30	1111		0.02	1.020	2.905
P1461	7/19/2016	433	259	23.38	6.02	458.2	474.5	2606	7.86			0.00	2.991	0.587
	7/26/2016			24.00	6.27	463.9	483.1						2.944	0.580
P1467	7/19/2016	727	312	25.26	7.96	616.3	512.6	3346	7.83	2221		0.00	6.686	1.466
	7/26/2016			25.12	7.98	605.9	510.8						6.493	1.491
P1476	7/19/2016	549	184	19.03	4.70	441.5	377.6	2409	7.76	1526		0.01	11.070	0.583
	7/26/2016			18.78	4.61	429.2	367.1						10.620	0.571
P1494	7/19/2016	893	442	47.78	12.94	783.6	706.0	4375	7.61	2907		0.08	6.986	0.384
	7/26/2016			53.98	13.73	785.3	715.0						7.127	0.391
P1568	7/19/2016	353	132	11.87	2.99	302.2	287.2	1699	8.05	1064		0.02	4.378	1.178
P1701	7/19/2016	382	107	10.53	2.64	266.1	176.4	1483	8.16	929		0.07	1.564	2.652