CAMECO RESOURCES
CROW BUTTE OPERATION

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August 21, 2015

ATTN: Document Control Desk Director
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Semiannual Radiological Effluent and Environmental Monitoring Report
Source Materials License No. SUA-1534, Docket No. 40-8943

Dear Document Control:

Enclosed please find one copy of the Semiannual Radiological Effluent and Environmental Monitoring Report for the Crow Butte Uranium Project. The report is provided in accordance with License Condition 11.1(B) of Source Materials License SUA-1534 and 10 CFR Part 40. This report covers the first and second quarters of 2015.

If you have any questions concerning the report, please feel free to call me at (308) 665-2215 Ext 114.

Sincerely,
CAMECO RESOURCES
CROW BUTTE OPERATION

Larry Teahon

Larry Teahon
Manager of Safety, Health, Environment & Quality

cc: Ron Burrows – NRC
Nancy Harris – NDEQ, Lincoln Office
CBO - File
ec: CR – Casper

NMSS01

CROW BUTTE URANIUM PROJECT

RADIOLOGICAL EFFLUENT AND ENVIRONMENTAL MONITORING REPORT

for

FIRST AND SECOND QUARTERS, 2015

USNRC Source Materials License SUA 1534

Table of Contents

1 WATER QUALITY MONITORING DATA

1.1 Excursion Monitoring

Biweekly excursion monitoring in the shallow aquifer and perimeter monitor wells was continued in Mine Units 2 through 11 during the first and second quarters of 2015.

On February 12, 2015, well CM11-3 was placed on excursion status for exceedance of upper control limits. This well was removed from excursion status on March 10, 2015.

On April 14, 2015, well SM10-18 was placed on excursion status for exceedance of upper control limits. This well was removed from excursion status on May 12, 2015.

On May 20, 2015, well SM8-6 was placed on excursion status for exceedance of upper control limits.

On May 22, 2015, wells SM6-23, SM6-28, and SM8-28 were placed on excursion status for exceedance of upper control limits. All mining activity around SM6-28 and SM8-28 has been stopped until these wells have been removed from excursion status.

On May 28, 2015, well SM10-21 was placed on excursion status for exceedance of upper control limits. CBO has been purging this well to remove the chloride plume created by the excursion at SM10-18. The corrective action appears to be effective in correcting the problem

On May 29, 2015, well SM8-21 was placed on excursion status for exceedance of upper control limits. This well was removed from excursion status on June 17, 2015.

On June 4, 2015, well SM8-5 was placed on excursion status for exceedance of upper control limits.

SM8-5, SM8-6, SM6-23, SM6-28, and SM8-28 went on excursion status due to the abnormally high amount of early spring precipitation received in the area causing the groundwater to rise in mine units 6 and 8. These wells are being over pumped to help lower the groundwater in the area. The corrective action appears to be effective in correcting the problem.

Excursion reports have been submitted to NRC as required in License Condition 11.6. Complete excursion monitoring results are available on site for inspection. A summary table for monitor wells on excursion status during the first half of 2015 follows:

Monitor Well ID	Date On Excursion	Date Off Excursion	Biweekly Sampling Resumed	Causal Factor(s)
CM11-3	12 Feb 15	10 Mar 15	31 Mar 15	Over Injection
SM10-18	14 Apr 15	12 May 15	2 Jun 15	Rain/Purge Water
SM8-6	20 May 15	On going	TBD	High Water Table
SM6-23	22 May 15	On going	TBD	High Water Table
SM6-28	22 May 15	On going	TBD	High Water Table
SM8-28	22 May 15	On going	TBD	High Water Table
SM10-21	28 May 15	On going	TBD	Chloride Plume from SM10-18
SM8-21	29 May 15	17 Jun 15	TBD	High Water Table
SM8-5	4 Jun 15	On going	TBD	High Water Table

1.2 Water Supply Wells and Surface Water

Summary sheets of quarterly radiological analytical data for the reporting period from all surface waters and water supply wells within one kilometer of the active wellfield boundary are included in Appendix A.

The reported radiological data are within the expected ranges for each well and surface water sampling points. Samples were obtained from all sample locations with the exceptions noted in Appendix A.

2 OPERATIONAL

2.1 Production Data Summary

Mining operations continued through the first and second quarters of 2015. The average operating production flow rate was 5,569 gpm for the first quarter and 5,537 gpm for the second quarter. Injection and production totals from the totalizers and the calculated bleed totals for the reporting period are included in Appendix B. Production injection pressures are included in Appendix C.

2.2 Restoration

Restoration activities continued in Mine Units 2, 3, 4, 5, and 6 during the first half of 2015. Permeate continued to be injected into Mine Units 4 and 5. IX treatment continued in Mine Unit 6.

On June 19, 2013, Mine Units 2 and 3 were placed into stabilization, stability monitoring continued in these two mine units during the first half of 2015. Restoration injection and production totals are included in Appendix B. Restoration injection pressures are included in Appendix C.

2.3 Wastewater Summary

The total volume of wastewater discharged to the ponds was 1,618,148 gallons during the first quarter and 1,927,247 gallons during the second quarter. Currently, all five evaporation ponds contain wastewater.

Wastewater that is not disposed of in the evaporation ponds is injected into the two Deep Disposal Wells (DDWs). Currently, the wells are operated on a nearly continuous basis and 45,986,700 gallons of wastewater was injected into the wells during the first half of 2015. A summary of the total volume of wastewater injected and the average radionuclide content is contained in Appendix D.

2.4 Effluent Release

10 CFR §40.65 requires licensees to report quantities of radionuclides in liquid and gaseous effluent releases to the environment. In the Application for Renewal of Source Materials License SUA-1534, submitted December 1995, Table 7.3(A) presented calculations of the annual radon emissions for the Crow Butte Plant. These calculations assumed a 7.04×10^{-4} Curies/m^3 radon release from leaching operations and the radon release calculations for the first half of 2015 use this release rate estimate.

During the first quarter, production occurred at an average flow rate of 5,569 gpm (21,081 lpm). Production was maintained continuously for 90 days during the first quarter with an operating factor of 100%. The production flow for the first quarter results in a calculated radon release of 1,385 Curies. During the second quarter, production occurred at an average flow rate of 5,537 gpm (20,960 lpm). Production was maintained continuously for 91 days during the second quarter with an operating factor of 99.8%. The production flow for the second quarter results in a calculated radon release of 1,389 Curies. Calculations for radon release from production operations are shown in Appendix E.

There were no additional wells brought on line during the first half of 2015.

The total radon emission due to leaching operations from the Crow Butte plant for the first half of 2015 was 2,774 Curies. This calculated release rate is comparable with the releases estimated in CBR's License Renewal Application.

Radon gas is also released from restoration activities. For restoration water that is treated by ion exchange only, the radon concentration is 0.697 μCi/l. Of the total restoration production flow it is assumed that 25% of the radon is released through wellfield loss and 10% of the remaining radon is released during pressurized ion exchange treatment. For water that is treated by reverse osmosis, it is assumed that 100% of the remaining radon is released. For water treated by reverse osmosis the radon concentration is 0.470 μCi/l after adjusting for wellfield loss and ion exchange loss.

During the first half of 2015, a total of 142,303,753 gallons (538,678,050 l) of restoration water was produced from Mine Units 2, 3, 4, 5, and 6. Based upon an estimated radon concentration of 0.697 μCi/l, the total amount of radon in the restoration solution was calculated to be 375 Curies as shown in Appendix E. The estimated release of radon through wellfield loss at 25% of this total was 94 Curies. The plant loss for ion exchange treatment of the restoration water is estimated at 10% of the remaining radon, or 28 Curies. For water that is treated by reverse osmosis, it is assumed that 100% of the remaining radon is released. For water treated by reverse osmosis the radon concentration is 0.470 μCi/l after adjusting for wellfield loss and ion exchange loss.

Of the total amount of restoration water produced in the first half of 2015, 102,627,885 gallons (388,488,622 l) of the water was treated by reverse osmosis. The total estimated radon release from reverse osmosis treatment was 183 Curies.

An additional 3.5 acres of wellfields were placed into restoration during the first half of 2015. The calculated radon released from start-up of 3.5 acres is 4 Curies. Calculations for the start-up of 3.5 acres of a wellfield placed in restoration are shown in Appendix E.

Based upon the calculations shown in Appendix E, the total estimated semiannual radon emission for the first half of 2015 from restoration activities was 309 Curies. This resulted in a total estimated radon release from the Crow Butte project during the first half of 2015 of 3,083 Curies.

2.5 In Plant Isotopic Analyses

The licensee shall conduct isotopic analyses for alpha- and beta-emitting radionuclides on airborne samples at each in-plant air particulate sampling location at a frequency on once every six months for the first two years after the license renewal (November 2014) and annually thereafter to ensure compliance with 10 CFR 20.1204(g). For any changes to operations, the licensee shall conduct an evaluation to determine if more frequent isotopic analyses are required for compliance with 10 CFR 20.1204(g).

There were no changes made to the operation during the first half of 2015. Samples were collected from each of the in-plant air particulate sampling locations. The summary of these samples are shown in Appendix F.

2.6 Mechanical Integrity Testing (MIT)

Mechanical integrity tests shall be performed on each injection and production well before the wells are utilized and on wells that have been serviced with equipment or procedures that could damage the well casing. Additionally, each well shall be retested at least once each five (5) years it is in use. The following table summarizes the MIT's performed during the first half of 2015.

Five (5) Year Retesting			
Required Testing	**Number Tested**	**Number Passed**	**Number Failed**
517	517	517	0

Wells Serviced			
Required Testing	**Number Tested**	**Number Passed**	**Number Failed**
6	6	6	0

3 ENVIRONMENTAL MONITORING

3.1 Air Monitor Stations

Seven air monitoring stations are used to monitor the Crow Butte Plant. Ambient radon-222 concentrations and radionuclide concentrations in air for each monitoring site are listed in Appendix G. Three track etch cups were deployed at each air monitoring station to check for potential variability in data using only one track etch cup. All air monitoring results were within expected historical ranges.

3.2 TLD Monitors

Environmental TLD monitors are located at each air monitoring station. The results of the area TLD monitors fall within the expected ranges and are listed in Appendix H.

Appendix A

Private Well and Surface Water Radiological Monitoring Results

First and Second Quarter, 2015

CROW BUTTE RESOURCES, INC.

PRIVATE WELL AND SURFACE WATER RADIOLOGICAL MONITORING RESULTS

First Quarter, 2015

SAMPLE ID	DATE SAMPLED	URANIUM mg/l	URANIUM µCi/ml	RADIUM-226 pCi/l	RADIUM-226 precision ±
Well #8	03/24/15	0.0134	9.10E-09	ND	0.1
Well #11	03/24/15	0.0090	6.10E-09	ND	0.1
Well #12	03/24/15	0.0031	2.10E-09	ND	0.05
Well #26	03/12/15	0.0066	4.50E-09	0.3	0.1
Well #28	03/12/15	0.0068	4.60E-09	0.3	0.1
Well #38	03/24/15	0.0035	2.40E-09	ND	0.1
Well #41	03/24/15	0.0089	6.00E-09	0.2	0.1
Well #61	03/26/15	ND	ND	3.1	0.2
Well #63	03/24/15	0.0164	1.11E-08	0.3	0.1
Well #66	03/24/15	0.0222	1.50E-08	ND	0.1
Well #125	03/05/15	0.0060	4.10E-09	ND	0.1
Well #129	03/24/15	0.0067	4.50E-09	ND	0.1
Well #131	03/24/15	0.0047	3.20E-09	ND	0.1
Well #133	03/24/15	0.0083	5.60E-09	0.3	0.1
Well #134	03/24/15	0.0081	5.50E-09	0.2	0.1
Well #135	03/24/15	0.0165	1.12E-08	0.2	0.1
Well #138	03/24/15	0.0147	1.00E-08	0.4	0.1
Well #140	03/12/15	0.0108	7.30E-09	ND	0.1
Well #435	03/26/15	0.0078	5.30E-09	0.3	0.1
Well #445	03/24/15	0.0107	7.20E-09	ND	0.02
Drinking Water Well	03/05/15	0.0079	5.40E-09	ND	0.1
Stream S-1	03/24/15	0.0040	2.70E-09	ND	0.1
Stream S-2	03/24/15	0.0039	2.60E-09	ND	0.04
Stream S-5	03/12/15	0.0048	3.30E-09	ND	0.04
Stream E-1	03/24/15	0.0686	4.64E-08	0.2	0.1
Stream E-5	03/24/15	0.0103	7.00E-09	ND	0.05
Impoundment I-3	03/24/15	0.0264	1.79E-08	ND	0.1
Impoundment I-4	03/24/15	0.0275	1.86E-08	ND	0.05
Reporting Limit		**0.0003**	**2.00E-10**	**0.2**	-

ND-Not detected at the reporting limit

CROW BUTTE RESOURCES, INC.

PRIVATE WELL AND SURFACE WATER RADIOLOGICAL MONITORING RESULTS

Second Quarter, 2015

SAMPLE ID	DATE SAMPLED	URANIUM mg/l	URANIUM µCi/ml	RADIUM-226 pCi/l	RADIUM-226 precision ±
Well #8	04/30/15	0.0129	8.70E-09	0.3	0.1
Well #11	No Sample Well Off				
Well #12	04/30/15	0.0030	2.00E-09	1.6	0.1
Well #26	05/01/15	0.0070	4.70E-09	ND	0.1
Well #28	04/30/15	0.0054	3.70E-09	0.8	0.2
Well #38	05/01/15	0.0033	2.20E-09	0.5	0.2
Well #41	05/01/15	0.0078	5.30E-09	0.3	0.1
Well #61	03/26/15	ND	ND	3.3	0.1
Well #63	05/01/15	0.0182	1.23E-08	0.5	0.2
Well #66	05/01/15	0.0190	1.27E-08	0.3	0.2
Well #125	05/01/15	0.0054	3.70E-09	ND	0.1
Well #129	05/01/15	0.0060	4.10E-09	0.4	0.1
Well #131	05/01/15	0.0051	3.50E-09	0.2	0.1
Well #133	05/01/15	0.0090	6.10E-09	0.5	0.1
Well #134	05/01/15	0.0081	5.50E-09	0.6	0.1
Well #135	05/01/15	0.0161	1.09E-08	0.4	0.1
Well #138	05/01/15	0.0150	1.02E-08	0.4	0.1
Well #140	04/30/15	0.0093	6.30E-09	0.3	0.2
Well #435	05/01/15	0.0072	4.90E-09	0.2	0.1
Well #445	05/01/15	0.0098	6.60E-09	ND	0.03
Drinking Water Well	05/01/15	0.0073	4.90E-09	ND	0.05
Stream S-1	05/01/15	0.0039	2.60E-09	0.3	0.1
Stream S-2	05/01/15	0.0039	2.60E-09	0.4	0.1
Stream S-5	05/01/15	0.0040	2.70E-09	ND	0.1
Stream E-1	04/24/15	0.0535	3.62E-08	0.7	0.2
Stream E-5	05/01/15	0.0059	4.00E-09	0.4	0.1
Impoundment I-3	04/24/15	0.0212	1.44E-08	0.5	0.2
Impoundment I-4	04/24/15	0.0174	1.18E-08	0.3	0.2
Reporting Limit		**0.0003**	**2.00E-10**	**0.2**	-

ND-Not detected at the reporting limit

Appendix B

Plant Production and Waste Totals

First and Second Quarter, 2015

WASTE VOLUME
First Quarter 2015

TOTALIZER	PLANT TO PONDS	PLANT TO DDW 1 & 2	RESTORATION TO DDW	CLEAN WATER INTO PLANT	DDW TOTAL INJECTED	TRUCKED TO POND
January	629,080	2,476,482	1,873,458	466,950	4,349,940	5,200
February	424,120	3,012,609	2,783,540	340,342	5,796,149	25,255
March	492,880	4,307,046	5,108,913	427,163	9,415,959	41,613
TOTAL GAL. EOQ	1,546,080	9,796,137	9,765,911	1,234,455	19,562,048	72,068

TOTAL 1st QTR VOLUME DISCHARGED TO WASTE PONDS =	1,618,148 GALLONS
TOTAL 1st QTR VOLUME DISCHARGED TO DEEP WELL=	19,562,048 GALLONS
TOTAL 1st QTR VOLUME DISCHARGED TO WASTE PONDS + DPWELL =	21,180,196 GALLONS
TOTAL 1st QTR VOLUME WF BLEED FROM WELLFIELDS=	19,873,673 GALLONS

WELLFIELD BLEED
First Quarter 2015

MONTH	January	February	March
BLEED	1.5%	2.1%	2.9%

PLANT FLOW
First Quarter 2015

AVERAGE OPERATING FLOW RATE=	5,569 GPM EOQ
TOTAL GALLONS PRODUCED=	721,802,880 GALLONS EOQ
TOTAL GALLONS INJECTED=	710,460,663 GALLONS EOQ

	TOTAL GALS. PRODUCED	TOTAL GALS. INJECTED	HOURS IN MONTH	HOURS IN PRODUCTION	AVERAGE PROD. GPM	AVERAGE COM INJ GPM	AVERAGE REST INJ GPM	HRS. DOWN TIME
Prev. YTD	0	0	0	0	0	0	0	0
January	248,367,835	245,262,273	744	744	5,564	5,494	416	0
February	224,153,972	220,717,243	672	672	5,559	5,474	379	0
March	249,281,073	244,481,147	744	744	5,584	5,477	331	0
EOQ TOTAL	721,802,880	710,460,663	2,160	2,160	5,569	5,482	375	0
YTD TOTAL	721,802,880	710,460,663	2,160	2,160	5,569	5,482	375	0

	TOTAL MUII GALS PRODUCED	TOTAL MUIII GALS PRODUCED	TOTAL MUIV GALS PRODUCED	TOTAL MUV GALS PRODUCED	TOTAL MUVI GALS PRODUCED	MUII BLEED TO WASTE	MUIII BLEED TO WASTE	MUIV BLEED TO WASTE	MUV BLEED TO WASTE	MUVI BLEED TO WASTE
Prev. YTD	0	0	0	0	0	0	0	0	0	0
January	0	0	6,808,923	12,563,303	3,734,430	0	0	-4,567,965	8,845,894	279,532
February	0	0	5,867,056	12,229,455	3,533,408	0	0	-3,232,550	9,190,092	384,852
March	0	0	7,340,194	12,896,636	4,051,234	0	0	-1,029,836	9,947,301	588,963
EOQ TOTAL	0	0	20,016,173	37,689,394	11,319,072	0	0	-8,830,351	27,983,287	1,253,347
YTD TOTAL	0	0	20,016,173	37,689,394	11,319,072	0	0	-8,830,351	27,983,287	1,253,347

	TOTAL BRINE GALS PRODUCED	TOTAL PERM GALS PRODUCED	COMM BLEED TO RO FEED
Prev. YTD	0	0	0
January	1,873,458	5,514,250	0
February	2,783,540	8,410,382	0
March	5,108,913	15,084,351	0
EOQ TOTAL	9,765,911	29,008,983	0
YTD TOTAL	9,765,911	29,008,983	0

WASTE VOLUME Second Quarter 2015						
TOTALIZER	PLANT TO PONDS	PLANT TO DDW 1 & 2	RESTORATION TO DDW	CLEAN WATER INTO PLANT	DDW TOTAL INJECTED	TRUCKED TO POND
April	757,200	4,265,874	4,849,204	434,172	9,115,078	14,623
May	524,230	3,337,352	4,471,086	356,104	7,808,438	5,444
June	448,750	4,102,987	5,398,149	297,279	9,501,136	177,000
TOTAL GAL. EOQ	1,730,180	11,706,213	14,718,439	1,087,555	26,424,652	197,067

TOTAL 2nd QTR VOLUME DISCHARGED TO WASTE PONDS =	1,927,247 GALLONS
TOTAL 2nd QTR VOLUME DISCHARGED TO DEEP WELL=	26,424,652 GALLONS
TOTAL 2nd QTR VOLUME DISCHARGED TO WASTE PONDS + DPWELL =	28,351,899 GALLONS
TOTAL 2nd QTR VOLUME WF BLEED FROM WELLFIELDS=	27,067,277 GALLONS

WELLFIELD BLEED Second Quarter 2015			
MONTH	April	May	June
BLEED	3.0%	2.4%	2.8%

PLANT FLOW Second Quarter 2015	
AVERAGE OPERATING FLOW RATE=	5,537 GPM EOQ
TOTAL GALLONS PRODUCED=	725,589,642 GALLONS EOQ
TOTAL GALLONS INJECTED=	712,153,249 GALLONS EOQ

	TOTAL GALS. PRODUCED	TOTAL GALS. INJECTED	HOURS IN MONTH	HOURS IN PRODUCTION	AVERAGE PROD. GPM	AVERAGE COM INJ GPM	AVERAGE REST INJ GPM	HRS. DOWN TIME
Prev. YTD	721,802,880	710,460,663	2,161	2,160	5,569	5,482	375	0
April	236,742,156	231,719,082	720	720	5,480	5,364	336	0
May	245,232,484	241,370,902	744	740	5,494	5,407	360	4
June	243,615,002	239,063,265	720	720	5,639	5,534	363	0
EOQ TOTAL	725,589,642	712,153,249	2,184	2,180	5,537	5,435	353	4
YTD TOTAL	1,447,392,522	1,422,613,912	4,345	4,340	5,552	5,457	364	4

	TOTAL MUII GALS PRODUCED	TOTAL MUIII GALS PRODUCED	TOTAL MUIV GALS PRODUCED	TOTAL MUV GALS PRODUCED	TOTAL MUVI GALS PRODUCED	MUII BLEED TO WASTE	MUIII BLEED TO WASTE	MUIV BLEED TO WASTE	MUV BLEED TO WASTE	MUVI BLEED TO WASTE
Prev. YTD	0	0	20,016,173	37,689,394	11,319,072	0	0	-8,830,351	27,983,287	1,253,347
April	0	0	9,474,191	11,077,457	3,682,489	0	0	919,816	8,232,968	584,603
May	0	0	13,153,143	10,361,217	1,301,971	0	0	1,792,433	6,624,296	427,097
June	0	0	13,311,489	10,511,856	405,301	0	0	2,388,273	5,735,105	405,300
EOQ TOTAL	0	0	35,938,823	31,950,530	5,389,761	0	0	5,100,522	20,592,369	1,417,000
YTD TOTAL	0	0	55,954,996	69,639,924	16,708,833	0	0	-3,729,829	48,575,656	2,670,347

	TOTAL BRINE GALS PRODUCED	TOTAL PERM GALS PRODUCED	COMM BLEED TO RO FEED
Prev. YTD	9,765,911	29,008,983	0
April	4,849,204	15,687,114	0
May	4,471,086	15,236,522	0
June	5,398,149	18,210,916	0
EOQ TOTAL	14,718,439	49,134,552	0
YTD TOTAL	24,484,350	78,143,535	0

Appendix C

Wellfield Injection Pressures

First and Second Quarter, 2015

WELLFIELD INJECTION PRESSURE - PSI First Quarter 2015										
	WF HOUSE #3		WF HOUSE #4		WF HOUSE #5		WF HOUSE #6		WF HOUSE #7	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
January	45	50	50	56	39	44	42	46	30	40
February	42	48	47	54	36	40	39	44	26	32
March	37	49	42	56	30	44	35	46	22	40
AVERAGE	41	50	46	56	35	44	39	46	26	40
	WF HOUSE #8		WF HOUSE #9		WF HOUSE #10		WF HOUSE #11		WF HOUSE #12	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
January	45	49	39	44	28	33	23	29	38	44
February	42	47	35	40	24	31	20	24	35	40
March	38	56	30	43	20	40	15	36	29	42
AVERAGE	42	56	35	44	24	40	19	36	34	44
	WF HOUSE #13		WF HOUSE #14		WF HOUSE #15		WF HOUSE #16		WF HOUSE #17	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
January	32	38	44	48	36	48	55	59	30	34
February	29	35	40	45	32	37	51	56	26	32
March	24	36	36	42	27	36	46	66	20	28
AVERAGE	29	38	40	48	32	48	51	66	25	34
	WF HOUSE #18		WF HOUSE #19		WF HOUSE #20		WF HOUSE #21		WF HOUSE #22	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
January	44	54	53	74	40	44	2	4	68	72
February	40	45	47	53	35	40	1	4	67	72
March	36	60	43	51	31	48	2	2	66	66
AVERAGE	40	60	48	74	35	48	2	4	67	72
	WF HOUSE #23		WF HOUSE #24		WF HOUSE #25		WF HOUSE #26		WF HOUSE #27	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
January	63	77	80	84	84	88	74	78	84	88
February	62	66	80	84	84	88	71	77	84	87
March	60	62	78	80	82	84	72	82	82	84
AVERAGE	62	77	79	84	83	88	72	82	83	88
	WF HOUSE #28		WF HOUSE #29		WF HOUSE #30		WF HOUSE #31		WF HOUSE #32	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
January	88	90	92	95	87	90	62	80	67	70
February	88	90	92	94	87	90	62	64	66	70
March	88	89	92	94	87	90	62	62	66	69
AVERAGE	88	90	92	95	87	90	62	80	67	70
	WF HOUSE #33		WF HOUSE #34		WF HOUSE #35		WF HOUSE #36		WF HOUSE #37	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
January	82	86	91	94	90	92	89	90	89	96
February	75	95	90	92	90	92	89	92	91	94
March	73	75	92	92	89	91	88	90	89	99
AVERAGE	77	95	91	94	90	92	89	92	90	99
	WF HOUSE #38		WF HOUSE #39		WF HOUSE #40		WF HOUSE #41		WF HOUSE #42	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
January	90	92	83	88	89	92	91	92	83	91
February	90	94	84	88	90	92	90	92	81	84
March	88	90	86	88	89	91	90	92	82	84
AVERAGE	89	94	84	88	89	92	91	92	82	91
	WF HOUSE #43		WF HOUSE #44		WF HOUSE #45		WF HOUSE #46		WF HOUSE #46A	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
January	80	86	94	96	94	95	81	92	89	94
February	82	94	93	95	92	95	81	92	90	96
March	95	96	95	98	95	96	69	92	77	96
AVERAGE	86	96	94	98	94	96	77	92	85	96
	WF HOUSE #47		WF HOUSE #47A/65		WF HOUSE #48		WF HOUSE #49		WF HOUSE #50	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
January	91	95	93	95	88	92	90	91	86	90
February	90	92	91	94	85	90	90	92	90	92
March	93	95	95	96	87	90	90	92	91	92
AVERAGE	91	95	93	96	87	92	90	92	89	92
	WF HOUSE #51		WF HOUSE #52		WF HOUSE #53		WF HOUSE #54		WF HOUSE #55	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
January	90	94	91	92	91	94	73	75	84	88
February	91	92	91	93	91	93	73	89	83	85
March	92	94	90	94	91	94	72	91	82	84
AVERAGE	91	94	91	94	91	94	73	91	83	88
	WF HOUSE #56			WF HOUSE #57						
	AVERAGE	MAXIMUM		AVERAGE	MAXIMUM					
January	72	81	January	86	88					
February	74	94	February	86	90					
March	73	75	March	85	87					
AVERAGE	73	94	AVERAGE	81	90					
	WF HOUSE #60		WF HOUSE #61		WF HOUSE #62		WF HOUSE #63		WF HOUSE #64	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
January	94	96	88	89	80	86	94	95	94	96
February	94	95	86	88	78	87	91	94	92	95
March	94	96	87	89	80	98	93	95	93	97
AVERAGE	94	96	87	89	79	98	92	95	93	97

WELLFIELD INJECTION PRESSURE - PSI Second Quarter 2015										
	WF HOUSE #3		WF HOUSE #4		WF HOUSE #5		WF HOUSE #6		WF HOUSE #7	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
April	38	43	43	48	32	37	36	40	23	27
May	48	54	54	60	42	48	46	56	31	38
June	49	55	53	60	42	48	45	53	31	44
AVERAGE	44	55	50	60	38	48	42	56	28	44
	WF HOUSE #8		WF HOUSE #9		WF HOUSE #10		WF HOUSE #11		WF HOUSE #12	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
April	39	45	31	38	21	26	17	30	31	36
May	50	58	41	48	31	38	26	38	41	48
June	49	58	41	48	32	39	26	32	40	47
AVERAGE	46	58	38	48	28	39	23	38	37	48
	WF HOUSE #13		WF HOUSE #14		WF HOUSE #15		WF HOUSE #16		WF HOUSE #17	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
April	25	38	35	42	27	34	47	58	21	32
May	35	40	44	50	36	42	57	72	31	38
June	35	40	44	56	37	44	54	63	32	54
AVERAGE	32	40	41	56	33	44	53	72	28	54
	WF HOUSE #18		WF HOUSE #19		WF HOUSE #20		WF HOUSE #21		WF HOUSE #22	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
April	35	41	44	50	31	44	1	2	69	99
May	44	50	52	58	39	48	2	2	61	72
June	44	51	52	58	39	46	3	50	53	60
AVERAGE	41	51	49	58	37	48	2	50	61	99
	WF HOUSE #23		WF HOUSE #24		WF HOUSE #25		WF HOUSE #26		WF HOUSE #27	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
April	63	66	81	86	85	88	74	82	84	86
May	54	66	73	84	77	87	67	77	78	85
June	46	54	65	86	69	78	58	66	70	78
AVERAGE	54	66	73	86	77	88	66	82	77	86
	WF HOUSE #28		WF HOUSE #29		WF HOUSE #30		WF HOUSE #31		WF HOUSE #32	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
April	87	90	91	94	87	88	61	64	66	69
May	88	90	91	94	87	89	61	64	66	69
June	84	89	88	94	83	88	59	66	63	68
AVERAGE	86	90	90	94	86	89	60	66	65	69
	WF HOUSE #33		WF HOUSE #34		WF HOUSE #35		WF HOUSE #36		WF HOUSE #37	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
April	73	84	92	95	89	94	88	90	90	92
May	73	75	91	94	89	90	88	90	90	92
June	70	74	88	94	87	92	86	98	87	91
AVERAGE	72	84	90	95	88	94	87	98	89	92
	WF HOUSE #38		WF HOUSE #39		WF HOUSE #40		WF HOUSE #41		WF HOUSE #42	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
April	88	90	86	89	90	92	90	92	82	83
May	89	92	86	89	89	92	90	93	82	93
June	86	92	83	88	87	91	86	92	78	82
AVERAGE	88	92	85	89	89	92	89	93	80	93
	WF HOUSE #43		WF HOUSE #44		WF HOUSE #45		WF HOUSE #46		WF HOUSE #46A	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
April	94	96	95	96	94	97	82	92	93	96
May	94	95	95	96	93	95	84	93	94	96
June	92	95	94	96	94	96	83	86	94	95
AVERAGE	93	96	94	96	94	97	83	93	94	96
	WF HOUSE #47		WF HOUSE #47A/65		WF HOUSE #48		WF HOUSE #49		WF HOUSE #50	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
April	91	96	91	96	88	94	90	92	91	93
May	93	96	94	95	89	92	90	92	91	92
June	93	95	94	96	88	96	90	96	90	92
AVERAGE	92	96	93	96	88	96	90	96	91	93
	WF HOUSE #51		WF HOUSE #52		WF HOUSE #53		WF HOUSE #54		WF HOUSE #55	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
April	92	96	92	98	92	94	72	78	81	92
May	91	93	92	93	91	93	71	82	81	82
June	92	94	91	92	90	92	71	76	79	82
AVERAGE	92	96	92	98	91	94	71	82	80	92
	WF HOUSE #56			WF HOUSE #57						
	AVERAGE	MAXIMUM		AVERAGE	MAXIMUM					
April	75	92	April	84	88					
May	71	82	May	84	89					
June	73	92	June	85	94					
AVERAGE	73	92	AVERAGE	81	94					
	WF HOUSE #60		WF HOUSE #61		WF HOUSE #62		WF HOUSE #63		WF HOUSE #64	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
April	94	96	88	90	79	81	93	95	93	95
May	94	96	87	88	78	82	92	94	91	93
June	94	96	85	89	79	89	91	98	90	93
AVERAGE	94	96	87	90	78	89	91	98	91	95

Appendix D

Deep Disposal Wells Injection Radiological Data

First and Second Quarter, 2015

Crow Butte Uranium Mine

Deep Disposal Well #1 Injection Radiological Data

Month	Total Gallons Injected	Average Natural Uranium (mg/l)	Total Natural Uranium Injected (mg)	Total Natural Uranium Injected (uCi)	Average Radium-226 (pCi/l)	Total Radium-226 Injected (uCi)
January-15	2,871,729	5	5.44E+07	3.68E+04	726	7.89E+03
February-15	4,473,913	7	1.19E+08	8.03E+04	1,060	1.80E+04
March-15	7,968,913	6	1.81E+08	1.23E+05	759	2.29E+04
April-15	7,760,115	11	3.23E+08	2.19E+05	783	2.30E+04
May-15	6,692,691	14	3.55E+08	2.40E+05	969	2.45E+04
June-15	8,116,517	10	3.07E+08	2.08E+05	1,040	3.20E+04
Totals	37,883,878		1.34E+09	9.06E+05		1.28E+05

Crow Butte Uranium Mine

Deep Disposal Well #2 Injection Radiological Data

Month	Total Gallons Injected	Average Natural Uranium (mg/l)	Total Natural Uranium Injected (mg)	Total Natural Uranium Injected (uCi)	Average Radium-226 (pCi/l)	Total Radium-226 Injected (uCi)
January-15	1,478,211	1	5.60E+06	3.79E+03	419	2.34E+03
February-15	1,322,236	1	5.01E+06	3.39E+03	539	2.70E+03
March-15	1,447,046	1	5.48E+06	3.71E+03	445	2.44E+03
April-15	1,254,963	1	4.75E+06	3.22E+03	473	2.25E+03
May-15	1,115,747	1	4.22E+06	2.86E+03	510	2.15E+03
June-15	1,384,619	1	5.24E+06	3.55E+03	506	2.65E+03
Totals	8,002,822		3.03E+07	2.05E+04		1.45E+04

Appendix E

Radon Release Calculations

First and Second Quarter, 2015

Radon Effluent Release Calculation (Production and Startup)

First Quarter 2015 Radon Release from Leaching Operations:

Curies/M3	*Production Flow (liters)*	*Radon-222 Decay Constant*	*Operating Days*	*Operating Factor*	*M3/liter conversion*	*Hours/Day Conversion*	*Minutes/Hour Conversion*	*Total Radon Release from Leaching*
7.04E-04	21,081	0.72	90	100.0%	0.001	24	60	1,385

Second Quarter 2015 Radon Release from Leaching Operations:

Curies/M3	*Production Flow (liters)*	*Radon-222 Decay Constant*	*Operating Days*	*Operating Factor*	*M3/liter conversion*	*Hours/Day Conversion*	*Minutes/Hour Conversion*	*Total Radon Release from Leaching*
7.04E-04	20,960	0.72	91	99.8%	0.001	24	60	1,389

First Half 2015 Radon Release From Startup:

Curies/M3	*Total Acres of New Wellfield*	*Meter2/Acre Conversion*	*Orebody Thickness (meters)*	*Porosity*	*Total Radon Release from Startup*
7.04E-04	0.0	4,074	1.52	0.29	0

Total Estimated Radon Release from Production: **2,774**

Radon Effluent Release Calculation (Restoration)

First Half 2015 Radon Release From Restoration:

Total Restoration Flow (liters)	*Microcuries/liter*	*Curies/Microcurie*	*Production Potential*
538,678,050	0.697	1.00E-06	375

Wellfield Loss (25% of Production Potential):	94
Ion Exchange Loss (10% of Production Potential minus Wellfield Loss):	28
Reverse Osmosis Loss (100% of remaining activity at 0.470 microcuries/liter)	183

Total Reverse Osmosis Flow (liters)	*Microcuries/liter*	*Curies/Microcurie*
388,488,622	0.470	1.00E-06

First Half 2015 Radon Release From Startup of New Restoration:

Curies/M3	*Total Acres of New Wellfield*	*Meter2/Acre Conversion*	*Orebody Thickness (meters)*	*Porosity*	*Total Radon Release from Startup*
7.04E-04	3.5	4074	1.52	0.29	4

Total Estimated Radon Release from Restoration: **309**

Total Estimated Radon Release, First Half 2015: **3,083**

Appendix F

In Plant Isotopic Analyses

First Half, 2015

In Plant Isotopic Air Samples

Analyte	Result	Precision ±	Result	Precision ±	RL	10 CFR Pt 20	Effluent	% Effluent
	pCi/filter	pCi/filter	uCi/ml	uCi/ml	uCi/ml	Effluent Limit	Class	Concentration
First Half 2015								
Between IX Train [Sample Air Volume 438,503.6 liters]								
Lead 210	15.2	4	4.00E-14	9.00E-15	2E-15	1E-10	Day	0.040
Radium 226	0.6	0.2	2.00E-15	5.00E-16	1E-16	3E-10	Week	0.00067
Thorium 230	<0.2	-	<1E-16	-	1E-16	6E-12	Year	0.000
Uranium	34.4	--	8.00E-14		1E-16	2E-11	Year	0.40
Below Thickener Tank [Sample Air Volume 416,566.8 liters]								
Lead 210	23.8	4.5	6.00E-14	1.00E-14	2E-15	1E-10	Day	0.06
Radium 226	2	0.3	5.00E-15	7.00E-16	1E-16	3E-10	Week	0.0017
Thorium 230	<0.2	--	<1E-16	--	1E-16	6E-12	Year	0
Uranium	66.5	--	2.00E-13	--	1E-16	2E-11	Year	1.0
Top of Precip B [Sample Air Volume 438,213.6 liters]								
Lead 210	8.1	3.4	2.00E-14	8.00E-15	2E-15	1E-10	Day	0.020
Radium 226	0.4	0.2	8.00E-16	5.00E-16	1E-16	3E-10	Week	0.00027
Thorium 230	<0.2	-	<1E-16	--	1E-16	6E-12	Year	0.000
Uranium	15.1	--	3.00E-14	--	1E-16	2E-11	Year	0.15
Belt Filter Room [Sample Air Volume 484,387.2 liters]								
Lead 210	9.4	3.6	2.00E-14	7.00E-15	2E-15	1E-10	Day	0.02
Radium 226	1.5	0.3	3.00E-15	6.00E-16	1E-16	3E-10	Week	0.001
Thorium 230	<0.2	--	<1E-16	--	1E-16	6E-12	Year	0
Uranium	2080	--	4.00E-12	--	1E-16	2E-11	Year	20.0
Top of Tall White Tanks [Sample Air Volume 520,106.4 liters]								
Lead 210	20.5	4.7	4.00E-14	9.00E-15	2E-15	1E-10	Day	0.04
Radium 226	0.8	0.2	2.00E-15	4.00E-16	1E-16	3E-10	Week	0.00067
Thorium 230	<0.2	--	<1E-16	--	1E-16	6E-12	Year	0
Uranium	329	--	6.00E-13	--	1E-16	2E-11	Year	3.0
Dryer Change Room [Sample Air Volume 494,026.2 liters]								
Lead 210	7.7	3.5	2.00E-14	7.00E-15	2E-15	1E-10	Day	0.020
Radium 226	0.8	0.2	2.00E-15	4.00E-16	1E-16	3E-10	Week	0.0007
Thorium 230	<0.2	--	<1E-16	--	1E-16	6E-12	Year	0
Uranium	45.4	--	9.00E-14	--	1E-16	2E-11	Year	0.5
R.O. Building (Sample Air Volume 397,652.6 liters]								
Lead 210	5.3	3.6	1.00E-14	9.00E-15	2E-15	1E-10	Day	0.010
Radium 226	0.7	0.2	2.00E-15	5.00E-16	1E-16	3E-10	Week	0.00067
Thorium 230	0.2	0.2	6.00E-16	5.00E-16	1E-16	6E-12	Year	0.010
Uranium	0.5	--	1.00E-15	--	1E-16	2E-11	Year	0.005

RL – Reporting Limit
uCi/ml – microuries per milliliter
pCi/filter – picocuries per filter

Appendix G

Environmental Air Monitoring Results

First and Second Quarter, 2015

Crow Butte Resources, Inc.
Crow Butte Uranium Project

Track Etch Cup Ambient Radon Concentrations

Air Monitoring Station No.

Period: January 2, 2014 to July 2, 2014

	Gross Count	Average Radon Concentration (x 10^{-9} µCi/ml)	Accuracy (x 10^{-9} µCi/ml)	Percent Effluent Concentration
AM-1A	105.0	0.2	0.02	2.0%
AM-1B	73.0	0.2	0.02	2.0%
AM-1C	88.0	0.2	0.02	2.0%
AM-2A	95.0	0.2	0.02	2.0%
AM-2B	110.0	0.2	0.02	2.0%
AM-2C	88.0	0.2	0.02	2.0%
AM-3A	75.0	0.2	0.02	2.0%
AM-3B	73.0	0.2	0.02	2.0%
AM-3C	60.0	0.2	0.03	2.0%
AM-4A	78.0	0.2	0.02	2.0%
AM-4B	110.0	0.2	0.02	2.0%
AM-4C	84.0	0.2	0.02	2.0%
AM-5A	129.0	0.3	0.03	3.0%
AM-5B	119.0	0.2	0.02	2.0%
AM-5C	92.0	0.2	0.02	2.0%
AM-6A	89.0	0.2	0.02	2.0%
AM-6B	61.0	0.2	0.03	2.0%
AM-6C	84.0	0.2	0.02	2.0%
AM-8A	108.0	0.2	0.02	2.0%
AM-8B	88.0	0.2	0.02	2.0%
AM-8C	97.0	0.2	0.02	2.0%

LLD (x 10^{-9} µCi/ml)	0.2
Effluent Concentration Limit, 10 CFR 20 App B Column 2:	10

Crow Butte Resources, Inc.
Crow Butte Uranium Project

Track Etch Cup Ambient Radon Concentrations

Air Monitoring Station No. ***Period: January2, 2015 to July 1, 2015***

	Gross Count	Average Radon Concentration (x 10^{-9} µCi/ml)	Accuracy (x 10^{-9} µCi/ml)	Percent Effluent Concentration
AM-22A	152.0	0.5	0.04	5.0%
AM-22B	224.0	0.9	0.06	9.0%
AM-22C	144.0	0.4	0.03	4.0%
AM-23A	204.0	0.8	0.06	8.0%
AM-23B	224.0	0.9	0.06	9.0%
AM-23C	200.0	0.7	0.05	7.0%
AM-24A	271.0	1.1	0.07	11.0%
AM-24B	273.0	1.1	0.07	11.0%
AM-24C	286.0	1.2	0.07	12.0%
AM-25A	387.0	1.7	0.09	17.0%
AM-25B	396.0	1.8	0.09	18.0%
AM-25C	422.0	1.9	0.09	19.0%

LLD (x 10^{-9} µCi/ml)	20.0%
Effluent Concentration Limit, 10 CFR 20 App B Column 2:	1000.0%

Crow Butte Resources
Crow Butte Uranium Project

Perimeter Air Monitoring Stations

Analyte	Result	Precision ±	Result	Precision ±	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Concentration
	pCi/filter	pCi/filter	uCi/ml	uCi/ml	uCi/ml			
First Quarter 2015								
AM-1 [Sample Air Volume 6381027 liters]								
Lead 210	91.6	6.8	1E-14	1E-15	2E-15	6E-13	Day	1.70
Radium 226	<0.3	-	<1E-16	-	1E-16	9E-13	Week	0.00
Thorium	<0.2	-	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	0.3	-	<1E-16	-	1E-16	9E-14	Year	0.00
AM-2 [Sample Air Volume 6410133 liters]								
Lead 210	97.0	6.9	2E-14	1E-15	2E-15	6E-13	Day	3.30
Radium 226	0.4	0.1	<1E-16	-	1E-16	9E-13	Week	0.00
Thorium	<0.2	-	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	0.3	-	<1E-16	-	1E-16	9E-14	Year	0.00
AM-3 [Sample Air Volume 6378300 liters]								
Lead 210	90.6	6.8	1E-14	1E-15	2E-15	6E-13	Day	1.70
Radium 226	<0.3	-	<1E-16		1E-16	9E-13	Week	0.01
Thorium	<0.2	-	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	0.3	-	<1E-16	-	1E-16	9E-14	Year	0.00
AM-4 [Sample Air Volume 6381513 liters]								
Lead 210	90.1	7.0	1E-14	1E-15	2E-15	6E-13	Day	1.70
Radium 226	0.4	0.1	<1E-16	-	1E-16	9E-13	Week	0.00
Thorium	<0.2	-	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	0.3	-	<1E-16	-	1E-16	9E-14	Year	0.00
AM-5 [Sample Air Volume 6378383 liters]								
Lead 210	90.7	6.9	1E-14	1E-15	2E-15	6E-13	Day	1.70
Radium 226	0.6	0.2	<1E-16	-	1E-16	9E-13	Week	0.00
Thorium	<0.2	-	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	0.4	-	<1E-16	-	1E-16	9E-14	Year	0.00
AM-6 [Sample Air Volume 6383611 liters]								
Lead 210	88.8	6.6	1E-14	1E-15	2E-15	6E-13	Day	1.70
Radium 226	0.3	0.1	<1E-16	-	1E-16	9E-13	Week	0.00
Thorium	<0.2	-	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	<0.3	-	<1E-16	-	1E-16	9E-14	Year	0.00
AM-8 (Sample Air Volume 6371140 liters]								
Lead 210	89.2	6.8	1E-14	1E-15	2E-15	6E-13	Day	1.70
Radium 226	0.6	0.2	<1E-16	-	1E-16	9E-13	Week	0.00
Thorium	<0.2	-	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	0.3	-	<1E-16	-	1E-16	9E-14	Year	0.00
AM-9 (Sample Air Volume 6376296 liters]								
Lead 210	100.0	7.0	2E-14	1E-15	2E-15	6E-13	Day	3.30
Radium 226	0.6	0.2	<1E-16	-	1E-16	9E-13	Week	0.00
Thorium	<0.2	-	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	0.5	-	<1E-16	-	1E-16	9E-14	Year	0.00

RL – Reporting Limit
uCi/ml – microuries per milliliter
pCi/filter – picocuries per filter

Crow Butte Resources
Crow Butte Uranium Project

Perimeter Air Monitoring Stations

Analyte	Result pCi/filter	Precision ± pCi/filter	Result uCi/ml	Precision ± uCi/ml	RL uCi/ml	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Concentration
Second Quarter 2015								
AM-1 [Sample Air Volume 6407149 liters]								
Lead 210	78.3	6.9	1E-14	1E-15	2E-15	6E-13	Day	1.70
Radium 226	<0.3	-	<1E-16	-	1E-16	9E-13	Week	0.00
Thorium	<0.2	-	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	0.4	-	<1E-16	-	1E-16	9E-14	Year	0.00
AM-2 [Sample Air Volume 6487650 liters]								
Lead 210	83.5	8.4	1E-14	1E-15	2E-15	6E-13	Day	1.70
Radium 226	<0.3	-	<1E-16	-	1E-16	9E-13	Week	0.00
Thorium	<0.2	-	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	1.3	-	2E-16	-	1E-16	9E-14	Year	0.22
AM-3 [Sample Air Volume 6488056 liters]								
Lead 210	78.3	7.2	1E-14	1E-15	2E-15	6E-13	Day	1.70
Radium 226	<0.3	-	<1E-16		1E-16	9E-13	Week	0.00
Thorium	<0.2	-	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	0.5	-	<1E-16	-	1E-16	9E-14	Year	0.00
AM-4 [Sample Air Volume 6487853 liters]								
Lead 210	75.7	8.3	1E-14	1E-15	2E-15	6E-13	Day	1.70
Radium 226	<0.3	-	<1E-16	-	1E-16	9E-13	Week	0.00
Thorium	<0.2	-	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	1.3	-	2E-16	-	1E-16	9E-14	Year	0.22
AM-5 [Sample Air Volume 6497330 liters]								
Lead 210	73.2	7.5	1E-14	1E-15	2E-15	6E-13	Day	1.70
Radium 226	<0.3	-	<1E-16	-	1E-16	9E-13	Week	0.00
Thorium	<0.2	-	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	0.6	-	<1E-16	-	1E-16	9E-14	Year	0.00
AM-6 [Sample Air Volume 6503718 liters]								
Lead 210	79.6	7.4	1E-14	1E-15	2E-15	6E-13	Day	1.70
Radium 226	<0.3	-	<1E-16	-	1E-16	9E-13	Week	0.00
Thorium	<0.2	-	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	0.4	-	<1E-16	-	1E-16	9E-14	Year	0.00
AM-8 (Sample Air Volume 6503718 liters]								
Lead 210	83.5	9.0	1E-14	1E-15	2E-15	6E-13	Day	1.70
Radium 226	<0.3	-	<1E-16	-	1E-16	9E-13	Week	0.00
Thorium	0.2	0.2	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	0.5	-	<1E-16	-	1E-16	9E-14	Year	0.00
AM-9 (Sample Air Volume 6500614 liters]								
Lead 210	78.5	7.1	1E-14	1E-15	2E-15	6E-13	Day	1.70
Radium 226	0.3	0.1	<1E-16	-	1E-16	9E-13	Week	0.00
Thorium	0.16	0.2	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	0.5	-	<1E-16	-	1E-16	9E-14	Year	0.00

RL – Reporting Limit
uCi/ml – microuries per milliliter
pCi/filter – picocuries per filter

Crow Butte Resources
Crow Butte Uranium Project

Operational Air Monitoring Stations

Analyte	Result	Precision ±	Result	Precision ±	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Concentration
	pCi/filter	pCi/filter	uCi/ml	uCi/ml	uCi/ml			
First Quarter 2015								
AM-22 [Sample Air Volume 5810177 liters]								
Lead 210	95.9	6.9	2E-14	1E-15	2E-15	6E-13	Day	3.30
Radium 226	0.5	0.2	<1E-16	-	1E-16	9E-13	Week	0.00
Thorium 230	<0.2	-	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	0.5	-	<1E-16	-	1E-16	9E-14	Year	0.00
AM-23 [Sample Air Volume 5628470 liters]								
Lead 210	86.0	6.5	2E-14	1E-15	2E-15	6E-13	Day	3.30
Radium 226	0.3	0.1	<1E-16	-	1E-16	9E-13	Week	0.00
Thorium 230	0.3	0.2	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	0.8	-	1E-16	-	1E-16	9E-14	Year	0.11
AM-24 [Sample Air Volume 6355381 liters]								
Lead 210	98.1	7.1	2E-14	1E-15	2E-15	6E-13	Day	3.30
Radium 226	0.3	0.1	<1E-16	-	1E-16	9E-13	Week	0.00
Thorium 230	0.2	0.2	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	1.6	-	3E-16	-	1E-16	9E-14	Year	0.33
AM-25 [Sample Air Volume 6180486 liters]								
Lead 210	71.1	6.1	1E-14	9E-16	2E-15	6E-13	Day	1.70
Radium 226	0.3	0.1	<1E-16	-	1E-16	9E-13	Week	0.00
Thorium 230	0.3	0.2	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	0.8	-	1E-16	-	1E-16	9E-14	Year	0.11

RL – Reporting Limit
uCi/ml – microuries per milliliter
pCi/filter – picocuries per filter

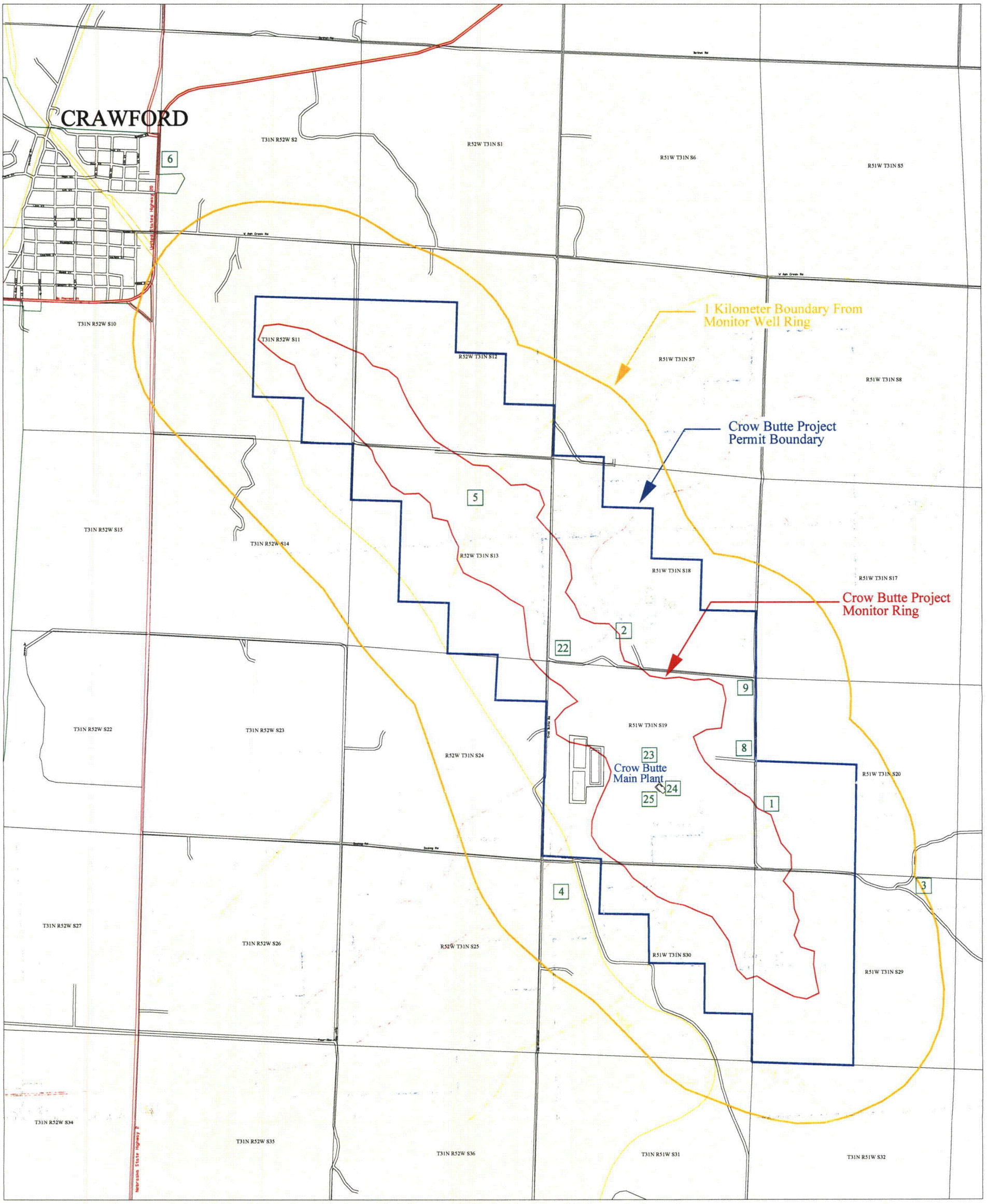
Crow Butte Resources
Crow Butte Uranium Project

Operational Air Monitoring Stations

Analyte	Result	Precision ±	Result	Precision ±	RL	10 CFR Pt 20 Effluent Limit	Effluent Class	% Effluent Concentration
	pCi/filter	pCi/filter	uCi/ml	uCi/ml	uCi/ml			
Second Quarter 2015								
AM-22 [Sample Air Volume 6268011 liters]								
Lead 210	82.3	7.0	1E-14	1E-15	2E-15	6E-13	Day	1.70
Radium 226	0.4	0.1	<1E-16	-	1E-16	9E-13	Week	0.00
Thorium 230	0.3	0.2	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	2.6	-	4E-16	-	1E-16	9E-14	Year	0.44
AM-23 [Sample Air Volume 5765263 liters]								
Lead 210	84.6	9.0	2E-14	2E-15	2E-15	6E-13	Day	3.30
Radium 226	<0.3	-	<1E-16	-	1E-16	9E-13	Week	0.00
Thorium 230	<0.2	-	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	1.8	-	3E-16	-	1E-16	9E-14	Year	0.33
AM-24 [Sample Air Volume 5896721 liters]								
Lead 210	81.3	8.0	1E-14	1E-15	2E-15	6E-13	Day	1.70
Radium 226	<0.3	-	<1E-16	-	1E-16	9E-13	Week	0.00
Thorium 230	<0.2	-	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	2.5	-	4E-16	-	1E-16	9E-14	Year	0.44
AM-25 [Sample Air Volume 5920161 liters]								
Lead 210	93.3	8.1	2E-14	1E-15	2E-15	6E-13	Day	3.30
Radium 226	<0.3	-	<1E-16	-	1E-16	9E-13	Week	0.00
Thorium 230	<0.2	-	<1E-16	-	1E-16	3E-14	Year	0.00
Uranium	2.2	-	4E-16	-	1E-16	9E-14	Year	0.44

RL – Reporting Limit
uCi/ml – microuries per milliliter
pCi/filter – picocuries per filter

Regional Sampling Locations



CROW BUTTE RESOURCES

8 Air Monitoring Station, Radon, Soil, Direct Radiation

0 500 1000 2000 meters

0 1000 3000 5000 feet

Appendix H

Environmental OSL Monitoring Results

First and Second Quarter, 2015

Crow Butte Resources

Crow Butte Uranium Project

Perimeter Air Monitoring Stations

Gamma Exposure Results

Location	Exposure of Dosimeter (mrems ambient dose equivalent)		Net Cumulative Totals		
	Gross	Net	Calendar Quarter	Year to Date	Permanent
04/01/2015 - 06/30/2015					
Transient Control	--	0.0	Q2	2015	--
Deploy Control	31	0.0	--	--	--
AM-1	37.8	6.9	6.9	12.1	231.2
AM-2	39.6	8.6	8.6	15.6	249.4
AM-3	40.5	9.5	9.5	17.1	273.2
AM-4	35.0	4.1	4.1	10.2	198.0
AM-5	39.1	8.2	8.2	14.6	262.8
AM-6	37.6	6.6	6.6	14.8	242.8
AM-8	40.4	9.4	9.4	16.3	323.5
AM-22	40.0	9.0	9.0	14.9	104.1
AM-23	42.2	11.2	11.2	17.2	111.3
AM-24	48.3	17.4	17.4	33.9	199.0
AM-25	54.6	23.7	23.7	43.7	272.6

mrem – millirems

AM-1 air sampling locations

Minimum Detectable Dose = 0.1 mrems ambient dose equivalent

Crow Butte Resources
Crow Butte Uranium Project
Perimeter Air Monitoring Stations

Gamma Exposure Results

Location	Exposure of Dosimeter (mrems ambient dose equivalent)		Net Cumulative Totals		
	Gross	Net	Calendar Quarter	Year to Date	Permanent
01/01/2015 - 03/31/2015					
Transient Control	--	0.0	Q1	2015	--
Deploy Control	27.8	0.0	--	--	--
AM-1	33.0	5.2	5.2	5.2	224.3
AM-2	34.8	7.0	7.0	7.0	240.7
AM-3	35.3	7.5	7.5	7.5	263.7
AM-4	33.9	6.1	6.1	6.1	193.9
AM-5	34.3	6.5	6.5	6.5	254.7
AM-6	36.0	8.2	8.2	8.2	236.2
AM-8	34.7	6.9	6.9	6.9	314.1
AM-22	33.6	5.8	5.8	5.8	95.1
AM-23	33.8	6.0	6.0	6.0	100.0
AM-24	44.3	16.5	16.5	16.5	181.6
AM-25	47.8	20.0	20.0	20.0	249.0

mrem – millirems

AM-1 air sampling locations

Minimum Detectable Dose = 0.1 mrems ambient dose equivalent