CROW BUTTE RESOURCES, INC.

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February 19, 2003

Mr. Dwight Chamberlain, Director
Division of Nuclear Material Safety
Region IV
United States Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, Texas 76011

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

Dear Mr. Chamberlain:

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 12.1 of Source Materials License SUA-1534 and 10 CFR Part 40. This report covers the third and fourth quarters of 2002.

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

Sincerely,
CROW BUTTE RESOURCES, INC.

Michael L. Griffin
Manager of Health, Safety, and Environmental Affairs

c: Mr. Daniel M. Gillen
Branch Chief, Fuel Cycle Licensing Branch
Division of Fuel Cycle Safety and Safeguards
c/o Document Control Desk
U.S. Nuclear Regulatory Commission
Washington D.C. 20555

Mr. David Miesbach
Underground Injection Control Program Coordinator
Nebraska Department of Environmental Quality
PO Box 98922
Lincoln, Nebraska 68509-8922

NMSS01

CROW BUTTE RESOURCES, INC.

CROW BUTTE URANIUM PROJECT

RADIOLOGICAL EFFLUENT AND ENVIRONMENTAL MONITORING REPORT

for

THIRD AND FOURTH QUARTERS, 2002

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 1 through 7 during the third and fourth quarters of 2002. Complete excursion monitoring results are available on site for inspection.

CM5-11 and IJ-13 were placed on excursion status during the period. Excursion reports for CM5-11 have been submitted as required in License Condition 12.2.

1.2 Water Supply Wells and Surface Water

The private water supply well sampling program involved additional wells during the third quarter of 2002 due to the commencement of mining operations in Mine Unit 8. The following wells and surface water features were added to the quarterly sampling program based upon their proximity to the active wellfield:

1. Well 134;
2. Well 135;
3. Stream E-5 (English Creek downstream);
4. Impoundment I-3; and
5. Impoundment I-4.

In addition, the well supplying the CBR Maintenance Building was redesignated as Well 133 for the fourth quarter samples.

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 or stream.

Samples were obtained from all sample locations with the following exceptions:

1. Well 17 was not sampled during the third quarter and was removed from the sampling schedule because the well was taken out of service by the owner.
2. A surface water sample was not taken during the third quarter at the Squaw Creek sampling locations S-2 and S-5 because the creek had no water present.
3. Well #BOW 96-1 became a shallow monitor well for Mine Unit 8 at the time of startup and was added to the monitor well sampling regimen. The well was removed from the private well sampling schedule.

4. Surface water sampling location E-4 was relocated after the third quarter sampling due to the startup of Mine Unit 8. The new downstream English Creek sample location was designated as E-5.

2 OPERATIONAL

2.1 Production Data Summary

Mining operations continued through the third and fourth quarters of 2002. Mining operations in Mine Unit 8 were approved by the CBR Safety and Environmental Review Panel (SERP) on July 10, 2002. The average operating production flow rate was 4408 gpm for the third quarter and 4331 gpm for the fourth quarter. The average production flow for the second half of 2002 was 4369 gpm. Injection and production totals from the totalizers and the calculated bleed totals for the reporting period are included in Appendix B.

The main injection trunkline is equipped with a continuous pressure sensor. The average and maximum injection pressures for each wellhouse are included in Appendix C in the Wellfield Injection Pressure table.

2.2 Wastewater Summary

The total volume of wastewater discharged to the ponds was 2,571,565 gallons during the third quarter and 3,792,100 gallons during the fourth quarter. Currently, all five evaporation ponds contain wastewater.

Wastewater that is not disposed of in the evaporation ponds is injected into the Deep Disposal Well (DDW). Currently, the well is operated on a continuous basis and 13,551,262 gallons of wastewater was injected into the well during the second half of 2002. A summary of the total volume of wastewater injected and the average radionuclide content is contained in Appendix D.

2.3 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 second half of 2002 use this release rate estimate.

During the third quarter production occurred at an average flow rate of 4408 gpm (16,686 lpm). During the fourth quarter production occurred at an average flow rate of 4331 gpm (16,395 lpm). Production was maintained continuously for 92 days with the exception of 2 hours during the third quarter. This represents a third quarter operating factor of 99.9%. Production was maintained continuously for 92 days for the fourth quarter with 6.5 hours of downtime. This represents a fourth quarter operating factor of 99.7%. The production flow for the third quarter would result in a calculated radon release of 1,119 Curies. The production flow for the fourth quarter would result in a calculated radon release of 1,098 Curies. Calculations for radon release from production operations are shown in Appendix E.

Additional wells were brought on line during the second half of 2002. Calculations for the start-up of 15.43 acres of a new wellfield are shown in Appendix E. The calculated radon released from start-up of 15.43 acres is 20 Curies.

The total radon emission due to leaching operations from the Crow Butte plant for the second half of 2002 was 2,237 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 second half of 2002, a total of 106,302,827 gallons (402,399,784 l) of restoration water was produced from Mine Units 2 and 3. Based upon an estimated radon concentration of 0.697 μCi/l, the total amount of radon in the restoration solution was calculated to be 280 Curies as shown in Appendix E. The estimated release of radon through wellfield loss at 25% of this total was 70 Curies. The plant loss for ion exchange treatment of the restoration water is estimated at 10% of the remaining radon, or 21 Curies.

Of the total amount of restoration water produced in the second half of 2002, 20,107,272 gallons (76,114,269 l) of the water was treated by reverse osmosis. The release of radon from reverse osmosis treatment is estimated to be 100% of the remaining radon, after correction for wellfield and ion exchange losses. These corrections result in an estimated radon concentration of 0.470 μCi/l. The total estimated radon release from reverse osmosis treatment was 36 Curies. An additional 0.75 acres of wellfields were placed in restoration during the second half of 2002. The calculated radon released from start-up of 0.75 acres is 1 Curie. Calculations for the start-up of 0.75 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 second half of 2002 from restoration activities was 128 Curies. This resulted in a total estimated radon release from the Crow Butte project during the second half of 2002 of 2,364 Curies.

2.4 Restoration

Restoration activities continued in Mine Unit #2 and Mine Unit #3 during the second half of 2002. Mine Unit 1 is shut-in following completion of the stabilization period and subsequent approval of restoration by the NDEQ. The Mine Unit #1 Restoration Report was submitted to NRC with a related amendment request on January 14, 2000. NRC completed their review of the Mine Unit 1 Restoration Report and amended SUA-1534 on June 26, 2001 to adjust the restoration parameter list (License Condition 10.3B) and to recognize NDEQ Permit standards as the secondary restoration standards (License Condition 10.3C).

By letter dated March 29, 2002, NRC denied approval of groundwater restoration in Mine Unit 1. As the basis for the denial, the NRC cited evidence of "strongly increasing" trends in six parameters during the stabilization monitoring period. CBR completed additional stabilization monitoring to address NRC concerns with trends during the period. The results of this monitoring were submitted to NRC with a request to approve restoration of Mine Unit 1. NRC is currently reviewing CBR's request.

Restoration injection and production totals are included in Appendix B. Restoration injection pressures are included in Appendix C.

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 F. All of the data for both quarters are within the expected 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 G.

3.3 Stream Sediments

Sediment samples are collected from two locations on Squaw Creek and two locations on English Creek on an annual basis in October. As noted in Section 1.2, sampling at location E-4 was discontinued due to the startup of Mine Unit 8 and a new English Creek downstream sampling location (E-5) was designated. Downstream English Creek sediment sampling for 2002 occurred at location E-5. The results of sediment sampling are contained in Appendix H.

Appendix A

Private Well and Surface Water Radiological Monitoring Results

Third and Fourth Quarter, 2002

CROW BUTTE RESOURCES, INC.

PRIVATE WELL AND SURFACE WATER RADIOLOGICAL MONITORING RESULTS

THIRD QUARTER, 2002

SAMPLE ID	DATE SAMPLED	URANIUM mg/l	URANIUM µCi/ml	RADIUM-226 pCi/l	RADIUM-226 precision ±
Well #8	7/15/2002	0.0159	1.08E-08	0 3	0.2
Well #11	7/12/2002	0 0074	5.00E-09	ND	-
Well #12	7/11/2002	0 0024	1.60E-09	ND	-
Well #16	7/12/2002	0 0060	4.10E-09	ND	-
Well #17	Well taken out of service-Sampling discontinued until placed back in use.				
Well #19	7/12/2002	0 0063	4.20E-09	ND	-
Well #24	7/12/2002	0 0041	2.80E-09	ND	-
Well #25	7/18/2002	0.0045	3.00E-09	ND	-
Well #26	7/12/2002	0.0057	3 80E-09	ND	-
Well #27	7/12/2002	0 0063	4 20E-09	ND	-
Well #28	7/12/2002	0.0052	3 50E-09	ND	-
Well #41	7/12/2002	0.0061	4.10E-09	ND	-
Well #63	7/12/2002	0.0120	8 10E-09	ND	-
Well #125	7/12/2002	0.0060	4.10E-09	ND	-
Well #129	7/12/2002	0.0065	4 40E-09	ND	-
Well #130	7/12/2002	0.0065	4.40E-09	ND	-
Well #131	7/12/2002	0 0038	2 60E-09	ND	-
Well #134	9/19/2002	0 0125	8 50E-09	0 5	0.2
Well #135	9/18/2002	0.0305	2.10E-08	ND	-
Well #BOW 96-1	7/12/2002	0.0103	7.00E-09	0 4	0.2
Drinking Water Well	7/12/2002	0.0060	4.10E-09	ND	-
Maintenance Building #1	7/12/2002	0.0074	5 00E-09	ND	-
Stream S-1	7/11/2002	0.0032	2 20E-09	ND	-
Stream S-2	No sample taken-stream dried up				
Stream S-5	No sample taken-stream dried up				
Stream E-1	7/11/2002	0.0130	8.80E-09	0.5	0.3
Stream E-4	7/11/2002	0.0192	1.30E-07	ND	-
Stream E-5	9/18/2002	0.0037	2.59E-09	ND	-
Impoundment I-3	9/18/2002	0 137	9 38E-08	ND	-
Impoundment I-4	9/18/2002	0 0044	3.00E-10	ND	-
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

FOURTH QUARTER, 2002

SAMPLE ID	DATE SAMPLED	URANIUM mg/l	URANIUM µCi/ml	RADIUM-226 pCi/l	RADIUM-226 precision ±
Well #8	11/7/2002	0 0155	1 00E-08	0 7	0 2
Well #11	11/1/2002	0.0091	6 20E-09	ND	-
Well #12	11/7/2002	0 0045	3.00E-09	0 3	0 2
Well #16	11/1/2002	0.0062	4.20E-09	ND	-
Well #19	11/7/2002	0.0052	3.50E-09	0 3	0.2
Well #24	11/1/2002	0.0046	3.10E-09	ND	-
Well #25	11/1/2002	0 0053	3.60E-09	ND	-
Well #26	11/1/2002	0 0082	5 60E-09	ND	-
Well #27	11/7/2002	0 0073	4 90E-09	ND	-
Well #28	11/7/2002	0 0066	4 50E-09	0 3	0 2
Well #41	11/1/2002	0 0073	4 90E-09	0.4	0 2
Well #63	11/1/2002	0 0142	9 60E-09	ND	-
Well #125	11/1/2002	0 0063	4 30E-09	ND	-
Well #129	11/8/2002	0 0078	5 30E-09	ND	-
Well #130	11/1/2002	0 0071	4 80E-09	0 4	0.3
Well #131	11/1/2002	0 0046	3 10E-09	ND	-
Well #133	11/1/2002	0.0087	5.90E-09	ND	-
Well #134	11/8/2002	0 0114	7.70E-08	ND	-
Well #135	11/8/2002	0 0240	1.60E-08	ND	-
Well #BOW 96-1	Became MU 8 Shallow Monitor Well after 3rd Quarter, 2002 Sample				
Drinking Water Well	11/1/2002	0.0074	5.00E-09	ND	-
Stream S-1	11/8/2002	0 0043	2.90E-09	ND	-
Stream S-2	11/8/2002	0.0043	2.90E-09	ND	-
Stream S-5	11/8/2002	0.0064	4.30E-09	ND	-
Stream E-1	11/8/2002	0.0849	5.70E-08	ND	-
Stream E-4	Relocated Sampling Location to E-5 after 3rd Quarter, 2002-Turned on MU 8				
Stream E-5	11/8/2002	0.0095	6.40E-09	0 4	0 2
Impoundment I-3	11/8/2002	0.2400	1 60E-07	ND	-
Impoundment I-4	11/8/2002	0.0459	3 10E-08	ND	-
Reporting Limit		**0.0003**	**2.00E-10**	**0.2**	-

ND-Not detected at the reporting limit

Appendix B

Plant Production and Waste Totals

Third and Fourth Quarter, 2002

WASTE VOLUME
Third Quarter 2002

TOTALIZER	PLANT TO PONDS	PLANT TO DDW	RESTORATION TO DDW	CLEAN WATER INTO PLANT	TRUCKS TO POND
July	704170	1287962	1049468	598924	
August	661730	1319420	905489	518521	
September	1050140	1292101	884972	570217	
TOTAL GAL. EOQ	2416040	3899483	2839929	1687662	155525

TOTAL 3rd QTR VOLUME DISCHARGED TO WASTE PONDS =	2571565 GALLONS
TOTAL 3rd QTR VOLUME DISCHARGED TO DEEP WELL=	6739412 GALLONS
TOTAL 3rd QTR VOLUME DISCHARGED TO WASTE PONDS + DPWELL =	9310977 GALLONS
TOTAL 3rd QTR VOLUME WF BLEED FROM WELLFIELDS=	7623315 GALLONS

WELLFIELD BLEED
Third Quarter 2002

MONTH	July	August	September
BLEED	1 1%	1.0%	1 2%

PLANT FLOW
Third Quarter 2002

AVERAGE OPERATING FLOW RATE=	4408 GPM EOQ
TOTAL GALLONS PRODUCED=	583914280 GALLONS EOQ
TOTAL GALLONS INJECTED=	575695018 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	1140298041	1091706404	4344	4327				17 5
July	197110373	198029115	744	744	4416	4436	402	0
August	197562708	192439756	744	744	4426	4311	374	2
September	189241199	185226147	720	720	4381	4288	338	0
EOQ TOTAL	583914280	575695018	2208	2208	4408	4346	372	2
YTD TOTAL	1724212321	1667401422	6552	6535	4386	4241	367	19 5

	TOTAL MUII GALS PRODUCED	TOTAL MUIII GALS PRODUCED	TOTAL BRINE GALS PRODUCED	TOTAL PERM GALS PRODUCED	PLANT BLEED	MUIII BLEED TO DDW
Prev. YTD	12871096	89373099	2736969	11239459	10880059	1132267
July	3521025	15762933	652229	3242508	2149820	397239
August	3068695	15048581	551720	2666482	2059678	353769
September	2725666	12977074	636508	2426921	2291322	248464
EOQ TOTAL	9315386	43788588	1840457	8335911	6500820	999472
YTD TOTAL	22186482	133161687	4577426	19575370	17380879	2131739

WASTE VOLUME
Fourth Quarter 2002

TOTALIZER	PLANT TO PONDS	PLANT TO DDW	RESTORATION TO DDW	CLEAN WATER INTO PLANT	TRUCKS TO POND
October	1015130	987187	1264648	660323	
November	1083870	692372	1487214	620836	
December	1563800	689588	1690841	672543	
TOTAL GAL. EOQ	3662800	2369147	4442703	1953702	129300

TOTAL 3rd QTR VOLUME DISCHARGED TO WASTE PONDS =	3792100 GALLONS
TOTAL 3rd QTR VOLUME DISCHARGED TO DEEP WELL=	6811850 GALLONS
TOTAL 3rd QTR VOLUME DISCHARGED TO WASTE PONDS + DPWELL =	10603950 GALLONS
TOTAL 3rd QTR VOLUME WF BLEED FROM WELLFIELDS=	8650248 GALLONS

WELLFIELD BLEED
Fourth Quarter 2002

MONTH	October	November	December
BLEED	1 1%	1 2%	1 4%

PLANT FLOW
Fourth Quarter 2002

AVERAGE OPERATING FLOW RATE=	4331 GPM EOQ
TOTAL GALLONS PRODUCED=	573784698 GALLONS EOQ
TOTAL GALLONS INJECTED=	565559475 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	1724212321	1667401422	6552	6535				19 5
October	192692332	191929499	744	744	4317	4299	394	0
November	187868237	185970765	720	720	4349	4305	360	0
December	193224129	187659211	744	738	4328	4204	344	6 5
EOQ TOTAL	573784698	565559475	2208	2202	4331	4269	366	6 5
YTD TOTAL	2297997019	2232960897	8760	8737	4372	4248	367	26

	TOTAL MUII GALS PRODUCED	TOTAL MUIII GALS PRODUCED	TOTAL BRINE GALS PRODUCED	TOTAL PERM GALS PRODUCED	PLANT BLEED	MUIII BLEED TO DDW
Prev. YTD	22186482	133161687	4548410	19575370	17380879	2131739
October	4185734	14562114	867409	3778162	2182919	397239
November	3455569	13654961	1133445	3318451	2263962	353769
December	3150583	14189892	988686	3010246	2734017	702155
EOQ TOTAL	10791886	42406967	2989540	10106859	7180898	1453163
YTD TOTAL	32978368	175568654	7537950	29682229	24561777	3584902

Appendix C

Wellfield Injection Pressures

Third and Fourth Quarter, 2002

WELLFIELD INJECTION PRESSURE Third Quarter 2002										
	WF HOUSE #1		WF HOUSE #2		WF HOUSE #3		WF HOUSE #4		WF HOUSE #5	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
July	0	0	0	0	49	85	55	90	45	78
August	0	0	0	0	38	70	44	74	34	63
September	0	0	0	0	29	59	33	63	22	51
AVERAGE	0	0	0	0	38	85	44	90	33	78
	WF HOUSE #6		WF HOUSE #7		WF HOUSE #8		WF HOUSE #9		WF HOUSE #10	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
July	25	28	0	0	15	17	0	0	68	72
August	23	25	0	0	15	17	0	0	65	74
September	21	28	0	0	13	16	0	0	67	73
AVERAGE	23	28	0	0	14	17	0	0	67	74
	WF HOUSE #11		WF HOUSE #12		WF HOUSE #13		WF HOUSE #14		WF HOUSE #15	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
July	64	69	0	0	0	0	95	98	0	0
August	63	70	0	0	0	0	94	98	0	0
September	67	72	0	0	0	0	90	95	0	0
AVERAGE	65	72	0	0	0	0	93	98	0	0
	WF HOUSE #16		WF HOUSE #17		WF HOUSE #18		WF HOUSE #19		WF HOUSE #20	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
July	0	0	80	83	0	0	0	0	88	90
August	28	98	79	82	0	0	0	0	86	90
September	1	13	76	81	0	0	0	0	82	90
AVERAGE	10	98	79	83	0	0	0	0	85	90
	WF HOUSE #21		WF HOUSE #22		WF HOUSE #23		WF HOUSE #24		WF HOUSE #25	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
July	94	96	94	96	0	0	97	99	95	97
August	92	95	95	96	0	0	96	98	96	97
September	92	96	92	98	0	0	93	98	92	97
AVERAGE	93	96	94	98	0	0	95	99	94	97
	WF HOUSE #26		WF HOUSE #27		WF HOUSE #28		WF HOUSE #30		WF HOUSE #31	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
July	95	97	84	90	60	64	58	65	79	85
August	96	98	90	93	64	70	62	67	86	90
September	92	97	88	94	64	70	62	68	85	92
AVERAGE	94	98	87	94	63	70	61	68	83	99
	WF HOUSE #32		WF HOUSE #33		WF HOUSE #34		WF HOUSE #35		WF HOUSE #36	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
July	91	96	84	89	51	95				
August	96	99	89	98	90	92				
September	92	99	88	96	84	94				
AVERAGE	93	99	87	98	75	95				

WELLFIELD INJECTION PRESSURE Fourth Quarter 2002										
	WF HOUSE #1		WF HOUSE #2		WF HOUSE #3		WF HOUSE #4		WF HOUSE #5	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
October	0	0	0	0	42	54	49	64	34	48
November	0	0	0	0	49	62	56	69	41	50
December	0	0	0	0	44	68	51	70	38	66
AVERAGE	0	0	0	0	45	68	52	70	38	66
	WF HOUSE #6		WF HOUSE #7		WF HOUSE #8		WF HOUSE #9		WF HOUSE #10	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
October	22	26	0	0	14	19	0	0	71	74
November	21	25	0	0	12	15	0	0	70	75
December	25	49	0	0	14	15	0	0	73	76
AVERAGE	23	49	0	0	14	19	0	0	72	76
	WF HOUSE #11		WF HOUSE #12		WF HOUSE #13		WF HOUSE #14		WF HOUSE #15	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
October	71	72	0	0	0	0	93	95	0	0
November	69	74	0	0	0	0	90	95	0	0
December	73	76	0	0	0	0	94	96	0	0
AVERAGE	71	76	0	0	0	0	92	96	0	0
	WF HOUSE #16		WF HOUSE #17		WF HOUSE #18		WF HOUSE #19		WF HOUSE #20	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
October	0	0	80	82	0	0	0	0	86	95
November	0	0	77	80	0	0	0	0	82	89
December	0	0	80	87	0	0	0	0	85	88
AVERAGE	0	0	79	87	0	0	0	0	85	95
	WF HOUSE #21		WF HOUSE #22		WF HOUSE #23		WF HOUSE #24		WF HOUSE #25	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
October	95	95	96	97	0	0	96	97	96	97
November	92	96	93	97	0	0	92	97	92	96
December	94	95	97	98	0	0	95	96	96	98
AVERAGE	94	96	95	98	0	0	95	97	95	98
	WF HOUSE #26		WF HOUSE #27		WF HOUSE #28		WF HOUSE #30		WF HOUSE #31	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
October	95	96	94	97	69	95	65	66	89	92
November	92	96	92	96	67	74	64	68	84	90
December	95	98	96	98	71	90	68	70	89	96
AVERAGE	94	98	94	98	69	95	66	70	87	99
	WF HOUSE #32		WF HOUSE #33		WF HOUSE #34		WF HOUSE #35		WF HOUSE #36	
	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM	AVERAGE	MAXIMUM
October	94	98	91	99	86	95	0	0		
November	91	98	91	97	82	94	87	98		
December	96	99	95	98	88	97	92	98		
AVERAGE	94	99	92	99	86	97	90	98		

Appendix D

Deep Disposal Well Injection Radiological Data

Third and Fourth Quarter, 2002

Crow Butte Uranium Mine

Deep Disposal Well 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)
July-02	2,337,430	13	1.15E+08	7.79E+04	877	7.76E+03
August-02	2,224,909	23	1.94E+08	1.31E+05	920	7.75E+03
September-02	2,177,073	18	1.48E+08	1.00E+05	1,150	9.48E+03
October-02	2,251,835	16	1.36E+08	9.23E+04	963	8.21E+03
November-02	2,179,586	7	5.78E+07	3.91E+04	910	7.51E+03
December-02	2,380,429	6	5.41E+07	3.66E+04	875	7.88E+03
Totals	13,551,262		7.05E+08	4.77E+05		4.86E+04

Appendix E

Radon Release Calculations

Third and Fourth Quarter, 2002

Radon Effluent Release Calculation (Production and Startup)

Third Quarter 2002 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	16,686	0.72	92	99.9%	0.001	24	60	1,119

Fourth Quarter 2002 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	16,395	0.72	92	99.7%	0.001	24	60	1,098

Second Half 2002 Radon Release From Startup:

Curies/M3	*Total Acres of New Wellfield*	*Meter3/Acre Conversion*	*Orebody Thickness (meters)*	*Porosity*	*Total Radon Release from Startup*
7 04E-04	15.43	4,074	1.52	0.29	20

Total Estimated Radon Release from Production: 2,237

Radon Effluent Release Calculation (Restoration)

Second Half 2002 Radon Release From Restoration:

Total Restoration Flow (liters)	*Microcuries/liter*	*Curies/Microcurie*	*Production Potential*
402,399,784	0.697	1 00E-06	280

Wellfield Loss (25% of Production Potential):	70
Ion Exchange Loss (10% of Production Potential minus Wellfield Loss).	21
Reverse Osmosis Loss (100% of remaining activity at 0 470 microcuries/liter)	36

Total Reverse Osmosis Flow (liters)	*Microcuries/liter*	*Curies/Microcurie*
76,114,269	0.470	1 00E-06

Second Half 2002 Radon Release From Startup of New Restoration:

Curies/M3	*Total Acres of New Wellfield*	*Meter3/Acre Conversion*	*Orebody Thickness (meters)*	*Porosity*	*Total Radon Release from Startup*
7.04E-04	0.8	4074	1.52	0.29	1

Total Estimated Radon Release from Restoration: **128**

Total Estimated Radon Release, Second Half 2002: **2,364**

Appendix F

Environmental Air Monitoring Results

Third and Fourth Quarter, 2002

Crow Butte Resources, Inc.
Crow Butte Uranium Project

Track Etch Cup Ambient Radon Concentrations

Air Monitoring Station No. | ***Period: July 1, 2002 to January 2, 2003***

	Gross Count	Average Radon Concentration (x 10^{-9} uCi/ml)	Accuracy (x 10^{-9} uCi/ml)	Percent Effluent Concentration
AM-1	46	0.5	0.07	5.0%
AM-2	54	0.6	0.08	6.0%
AM-3	23	0.2	0.04	2.0%
AM-4	31	0.2	0.04	2.0%
AM-5	39	0.4	0.06	4.0%
AM-6	42	0.5	0.08	5.0%
AM-8	65	0.8	0.10	8.0%
AB-3 (AM-3 Duplicate)	26	0.2	0.04	2.0%
AB-6 (AM-6 Duplicate)	30	0.2	0.04	2.0%

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

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HIGH VOLUME AIR SAMPLING REPORT

CLIENT: CROW BUTTE RESOURCES

REPORT DATE: February 11, 2003

SAMPLE ID: A.M.-1

Quarter/Date Sampled Air Volume	Radionuclide	Concentration µCi/mL	Error Estimate µCi/mL	L.L.D. µCi/mL	Effluent Conc.* µCi/mL	% Effluent Concentration
C02040182-001A	^{nat}U	1.50E-16	N/A	1.00E-16	9.00E-14	1.66E-01
01/02/2002-03/27/2002	^{226}Ra	< 1.00E-16	N/A	1 00E-16	9.00E-13	< 1.11E-02
Air Volume in mLs	^{210}Pb	1.34E-14	1.94E-15	2.00E-15	6.00E-13	2.24E+00
4.32E+09						
C02070366-001A	^{nat}U	2.94E-16	N/A	1.00E-16	9.00E-14	3.27E-01
04/01/2002-07/01/2002	^{226}Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
Air Volume in mLs	^{210}Pb	8 52E-15	1.11E-15	2.00E-15	6.00E-13	1.42E+00
4 81E+09						
C02100184-001A	^{nat}U	2.16E-16	N/A	1.00E-16	9.00E-14	2 40E-01
07/01/2002-09/23/2002	^{226}Ra	< 1.00E-16	N/A	1 00E-16	9.00E-13	< 1.11E-02
Air Volume in mLs	^{210}Pb	1.03E-14	1.24E-15	2 00E-15	6 00E-13	1.72E+00
4 44E+09						
C03010189-001A	^{nat}U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
10/01/2002-01/02/2003	^{226}Ra	1.09E-16	4.67E-17	1.00E-16	9.00E-13	1 21E-02
Air Volume in mLs	^{210}Pb	6.32E-15	8.25E-16	2 00E-15	6.00E-13	1.05E+00
6 10E+09						

Final prep volume is 0.95 liter
LLD's are from Reg. Guide 4.14
*Effluent Concentration from the NEW 10 CFR Part 20 - Appendix B - Table 2
Year for Natural Uranium
Week for Radium-226
Day for Lead-210

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HIGH VOLUME AIR SAMPLING REPORT

CLIENT: CROW BUTTE RESOURCES

REPORT DATE: February 11, 2003

SAMPLE ID: A.M.-2

Quarter/Date Sampled Air Volume	Radionuclide	Concentration µCi/mL	Error Estimate µCi/mL	L.L.D. µCi/mL	Effluent Conc.* µCi/mL	% Effluent Concentration
C02040182-002A	^{nat}U	1.49E-16	N/A	1.00E-16	9.00E-14	1.65E-01
O1/02/2002-03/27/2002	^{226}Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
Air Volume in mLs	^{210}Pb	1.62E-14	1.97E-15	2.00E-15	6.00E-13	2.70E+00
4 34E+09						
C02070366-002A	^{nat}U	2.10E-16	N/A	1.00E-16	9.00E-14	2.34E-01
O4/01/2002-07/01/2002	^{226}Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
Air Volume in mLs	^{210}Pb	9.79E-15	1.17E-15	2.00E-15	6 00E-13	1.63E+00
4 61E+09						
C02100184-002A	^{nat}U	4.62E-16	N/A	1.00E-16	9.00E-14	5.13E-01
O7/01/2002-09/23/2002	^{226}Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
Air Volume in mLs	^{210}Pb	8 76E-15	1.27E-15	2.00E-15	6.00E-13	1 46E+00
4.26E+09						
C03010189-002A	^{nat}U	3.82E-16	N/A	1.00E-16	9.00E-14	4.24E-01
10/01/2002-01/02/2003	^{226}Ra	1.81E-16	6.04E-17	1.00E-16	9.00E-13	2.01E-02
Air Volume in mLs	^{210}Pb	4.93E-15	1.01E-15	2 00E-15	6.00E-13	8.22E-01
4 72E+09						

Final prep volume is 0.95 liter
LLD's are from Reg Guide 4 14
*Effluent Concentration from the NEW 10 CFR Part 20 - Appendix B - Table 2
Year for Natural Uranium
Week for Radium-226
Day for Lead-210

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HIGH VOLUME AIR SAMPLING REPORT

CLIENT: CROW BUTTE RESOURCES

REPORT DATE: February 11, 2003

SAMPLE ID: A.M.-3

Quarter/Date Sampled Air Volume	Radionuclide	Concentration µCi/mL	Error Estimate µCi/mL	L.L.D. µCi/mL	Effluent Conc.* µCi/mL	% Effluent Concentration
C02040182-003A	^{nat}U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
01/02/2002-03/27/2002	^{226}Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
Air Volume in mLs	^{210}Pb	1.00E-14	1.86E-15	2.00E-15	6.00E-13	1.67E+00
4.35E+09						
C02070366-003A	^{nat}U	1.80E-16	N/A	1.00E-16	9.00E-14	2.00E-01
04/01/2002-07/01/2002	^{226}Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1 11E-02
Air Volume in mLs	^{210}Pb	7.75E-15	1.13E-15	2.00E-15	6 00E-13	1.29E+00
4.64E+09						
C02100184-003A	^{nat}U	1.67E-16	N/A	1.00E-16	9 00E-14	1.86E-01
07/01/2002-09/23/2002	^{226}Ra	< 1.00E-16	N/A	1.00E-16	9 00E-13	< 1.11E-02
Air Volume in mLs	^{210}Pb	7.93E-15	1.24E-15	2.00E-15	6 00E-13	1.32E+00
4 29E+09						
C03010189-003A	^{nat}U	1 08E-16	N/A	1.00E-16	9.00E-14	1.20E-01
10/01/2002-01/02/2003	^{226}Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
Air Volume in mLs	^{210}Pb	5.22E-15	9.02E-16	2.00E-15	6.00E-13	8.70E-01
5 37E+09						

Final prep volume is 0.95 liter
LLD's are from Reg. Guide 4.14
*Effluent Concentration from the NEW 10 CFR Part 20 - Appendix B - Table 2
Year for Natural Uranium
Week for Radium-226
Day for Lead-210

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HIGH VOLUME AIR SAMPLING REPORT

CLIENT: CROW BUTTE RESOURCES

REPORT DATE: February 11, 2003

SAMPLE ID: A.M.-4

Quarter/Date Sampled Air Volume	Radionuclide	Concentration µCi/mL	Error Estimate µCi/mL	L.L.D. µCi/mL	Effluent Conc.* µCi/mL	% Effluent Concentration
C02040182-004A	^{nat}U	1.49E-16	N/A	1.00E-16	9.00E-14	1.65E-01
01/02/2002-03/27/2002	^{226}Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
Air Volume in mLs	^{210}Pb	1.49E-14	1.94E-15	2.00E-15	6.00E-13	2.48E+00
4.35E+09						
C02070366-004A	^{nat}U	2.63E-16	N/A	1.00E-16	9.00E-14	2.92E-01
04/01/2002-07/01/2002	^{226}Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
Air Volume in mLs	^{210}Pb	9.11E-15	1.14E-15	2.00E-15	6 00E-13	1.52E+00
4 66E+09						
C02100184-004A	^{nat}U	3.36E-16	N/A	1.00E-16	9.00E-14	3.74E-01
07/01/2002-09/23/2002	^{226}Ra	< 1.00E-16	N/A	1 00E-16	9.00E-13	< 1.11E-02
Air Volume in mLs	^{210}Pb	9.32E-15	1.26E-15	2.00E-15	6 00E-13	1 55E+00
4.31E+09						
C03010189-004A	^{nat}U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
10/01/2002-01/02/2003	^{226}Ra	1.60E-16	4.81E-17	1.00E-16	9.00E-13	1.78E-02
Air Volume in mLs	^{210}Pb	4.61E-15	8.17E-16	2.00E-15	6.00E-13	7.69E-01
5.93E+09						

Final prep volume is 0.95 liter
LLD's are from Reg. Guide 4.14
*Effluent Concentration from the NEW 10 CFR Part 20 - Appendix B - Table 2
Year for Natural Uranium
Week for Radium-226
Day for Lead-210

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HIGH VOLUME AIR SAMPLING REPORT

CLIENT: CROW BUTTE RESOURCES

REPORT DATE: February 11, 2003

SAMPLE ID: A.M.-5

Quarter/Date Sampled Air Volume	Radionuclide	Concentration µCi/mL	Error Estimate µCi/mL	L.L.D. µCi/mL	Effluent Conc.* µCi/mL	% Effluent Concentration
C02040182-005A	^{nat}U	1.91E-16	N/A	1.00E-16	9.00E-14	2.13E-01
01/02/2002-03/27/2002	^{226}Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
Air Volume in mLs	^{210}Pb	9.13E-15	1.85E-15	2.00E-15	6.00E-13	1.52E+00
4.37E+09						
C02070366-005A	^{nat}U	1.65E-16	N/A	1.00E-16	9.00E-14	1.83E-01
04/01/2002-07/01/2002	^{226}Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
Air Volume in mLs	^{210}Pb	7.37E-15	1.12E-15	2.00E-15	6.00E-13	1.23E+00
4.68E+09						
C02100184-005A	^{nat}U	3.88E-16	N/A	1.00E-16	9.00E-14	4.31E-01
07/01/2002-09/23/2002	^{226}Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
Air Volume in mLs	^{210}Pb	3.99E-15	1.17E-15	2.00E-15	6.00E-13	6.65E-01
4.31E+09						
C03010189-005A	^{nat}U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
10/01/2002-01/02/2003	^{226}Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
Air Volume in mLs	^{210}Pb	6.53E-15	8.93E-16	2.00E-15	6.00E-13	1.09E+00
5.53E+09						

Final prep volume is 0.95 liter
LLD's are from Reg. Guide 4.14
*Effluent Concentration from the NEW 10 CFR Part 20 - Appendix B - Table 2
Year for Natural Uranium
Week for Radium-226
Day for Lead-210

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HIGH VOLUME AIR SAMPLING REPORT

CLIENT: CROW BUTTE RESOURCES

REPORT DATE: February 11, 2003

SAMPLE ID: A.M.-6

Quarter/Date Sampled Air Volume	Radionuclide	Concentration µCi/mL	Error Estimate µCi/mL	L.L.D. µCi/mL	Effluent Conc.* µCi/mL	% Effluent Concentration
C02040182-006A	^{nat}U	1.50E-16	N/A	1.00E-16	9.00E-14	1.66E-01
01/02/2002-03/27/2002	^{226}Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
Air Volume in mLs	^{210}Pb	1.14E-14	1.89E-15	2.00E-15	6.00E-13	1.91E+00
4.32E+09						
C02070366-006A	^{nat}U	1.61E-16	N/A	1.00E-16	9 00E-14	1.79E-01
04/01/2002-07/01/2002	^{226}Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
Air Volume in mLs	^{210}Pb	7.55E-15	1.10E-15	2 00E-15	6.00E-13	1.26E+00
4 77E+09						
C02100184-006A	^{nat}U	1 10E-16	N/A	1.00E-16	9 00E-14	1 22E-01
07/01/2002-09/23/2002	^{226}Ra	< 1.00E-16	N/A	1.00E-16	9 00E-13	< 1.11E-02
Air Volume in mLs	^{210}Pb	7.35E-15	1.21E-15	2.00E-15	6 00E-13	1.22E+00
4 41E+09						
C03010189-006A	^{nat}U	< 1.00E-16	N/A	1 00E-16	9 00E-14	< 1.11E-01
10/01/2002-01/02/2003	^{226}Ra	1.16E-16	4.99E-17	1.00E-16	9 00E-13	1.29E-02
Air Volume in mLs	^{210}Pb	4.68E-15	8.49E-16	2.00E-15	6 00E-13	7.79E-01
5.71E+09						

Final prep volume is 0 95 liter
LLD's are from Reg. Guide 4.14
*Effluent Concentration from the NEW 10 CFR Part 20 - Appendix B - Table 2
Year for Natural Uranium
Week for Radium-226
Day for Lead-210

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HIGH VOLUME AIR SAMPLING REPORT

CLIENT: CROW BUTTE RESOURCES

REPORT DATE: February 11, 2003

SAMPLE ID: A.M.-8

Quarter/Date Sampled Air Volume	Radionuclide	Concentration µCi/mL	Error Estimate µCi/mL	L.L.D. µCi/mL	Effluent Conc.* µCi/mL	% Effluent Concentration
C02040182-007A	^{nat}U	2.09E-16	N/A	1.00E-16	9.00E-14	2.33E-01
01/02/2002-03/27/2002	^{226}Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
Air Volume in mLs 4 31E+09	^{210}Pb	9.92E-15	1.87E-15	2 00E-15	6.00E-13	1.65E+00
C02070366-007A	^{nat}U	2.14E-16	N/A	1.00E-16	9.00E-14	2.38E-01
04/01/2002-07/01/2002	^{226}Ra	6.45E-14	1.47E-15	1.00E-16	9.00E-13	7.17E+00
Air Volume in mLs 4 52E+09	^{210}Pb	3.89E-15	5.68E-16	2.00E-15	6.00E-13	6.48E-01
C02100184-007A	^{nat}U	2.09E-16	N/A	1 00E-16	9.00E-14	2 32E-01
07/01/2002-09/23/2002	^{226}Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
Air Volume in mLs 4 18E+09	^{210}Pb	4.68E-15	1 23E-15	2.00E-15	6 00E-13	7.80E-01
C03010189-007A	^{nat}U	5.08E-16	N/A	1.00E-16	9.00E-14	5.64E-01
10/01/2002-01/02/2003	^{226}Ra	1.38E-16	5.93E-17	1.00E-16	9.00E-13	1.54E-02
Air Volume in mLs 4 81E+09	^{210}Pb	6 79E-15	1.03E-15	2 00E-15	6 00E-13	1.13E+00

Final prep volume is 0 95 liter
LLD's are from Reg. Guide 4 14
*Effluent Concentration from the NEW 10 CFR Part 20 - Appendix B - Table 2
Year for Natural Uranium
Week for Radium-226
Day for Lead-210

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Appendix G

Environmental TLD Monitoring Results

Third and Fourth Quarter, 2002

Crow Butte Resources
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Crawford, NE 69339

Attn: Rhonda Grantham

SPHERICAL X9 ENVIRONMENTAL REPORT
Prepared by Landauer, Inc.

Account Number:	**306192**
Process Number:	X9SP GC496
Received Date:	3-Oct-02
Report Date:	10-Oct-02
Released by:	CJO

Participant No.	Name/Description	Reading 1 (mrem)	Reading 2 (mrem)	Reading 3 (mrem)	Reading 4 (mrem)	Reading 5 (mrem)	Mean Ambient Dose Equivalent (mrem)	**Net Values after control subtraction** Mean Ambient Dose Equivalent (mrem)	Standard Deviation (mrem)	95% Confidence Interval (mrem)
Quarterly Monitoring Period startin				July 1, 2002						
Control		26	25	25	25	26	25		0.5	0.7
1001	AM-1	34	35	34	35	35	35	9	0.5	0.7
1002	AM-2	27	34	32	34	33	32	7	2.9	3.6
1003	AM-6	31	34	36	35	33	34	8	1.9	2.4
1008	AM-8	39	43	43	41	35	40	15	3.3	4.1
1009	AM-3	35	38	41	37	40	38	13	2.4	3.0
1010	AM-4	48	45	40	41	46	44	19	3.4	4.2
1011	AM-5	35	32	36	36	35	35	9	1.6	2.0

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95% Confidence Interval is based on the standard error of the mean

Crow Butte Resources
PO Box 169
Crawford, NE 69339

Attn: Rhonda Grantham

SPHERICAL X9 ENVIRONMENTAL REPORT
Prepared by Landauer, Inc.

Account Number:	**306192**
Process Number:	X9SP GC815
Received Date:	7-Jan-03
Report Date:	10-Jan-03
Released by:	CJO

Participant No.	Name/Description	Reading 1 (mrem)	Reading 2 (mrem)	Reading 3 (mrem)	Reading 4 (mrem)	Reading 5 (mrem)	Mean Ambient Dose Equivalent (mrem)	**Net Values after control subtraction** Mean Ambient Dose Equivalent (mrem)	Standard Deviation (mrem)	95% Confidence Interval (mrem)
Quarterly Monitoring Period starting:				October 1, 2002						
Control		47	42	48	41	43	44		3.1	3.9
1001	AM-1	47	51	48	51	48	49	5	1.9	2.3
1002	AM-2	45	46	47	48	51	47	3	2.3	2.9
1003	AM-6	47	48	52	49	49	49	5	1.9	2.3
1008	AM-8	53	54	51	50	50	52	7	1.8	2.3
1009	AM-3	48	49	51	49	51	50	5	1.3	1.7
1010	AM-4	52	49	52	49	52	51	7	1.6	2.0
1011	AM-5	51	52	51	54	52	52	8	1.2	1.5

95% Confidence Interval is based on the standard error of the mean

Appendix H

Sediment Sampling Results

Third and Fourth Quarter, 2002

ENERGY LABORATORIES, INC. • 2393 Salt Creek Highway (82601) • P.O. Box 3258 • Casper, WY 82602
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LABORATORY ANALYTICAL REPORT

Client: Crow Butte Resources
Project: Not Indicated

Lab Order: C02110335
Report Date: 11/26/02

Lab ID: C02110335-001
Client Sample ID: Sample #20 Stream Sed S-1
Matrix: SEDIMENT

Collection Date: 11/08/02
DateReceived: 11/08/02

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES - TOTAL							
Lead 210	ND	pCi/g-dry		0 2		NERHL-65-4	11/20/02 12 00 / ph
Radium 226	0 4	pCi/g-dry		0 1		E903 0	11/20/02 16 07 / rs
Radium 226 precision	0 1	±				E903 0	11/20/02 16.07 / rs
Uranium	0 43	pCi/g-dry		0 01		SW6020	11/21/02 19 25 / smd

Lab ID: C02110335-002
Client Sample ID: Sample #21 Stream Sed S-2
Matrix: SEDIMENT

Collection Date: 11/08/02
DateReceived: 11/08/02

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES - TOTAL							
Lead 210	ND	pCi/g-dry		0 2		NERHL-65-4	11/20/02 12 00 / ph
Radium 226	0 4	pCi/g-dry		0 1		E903 0	11/20/02 16.07 / rs
Radium 226 precision	0 1	±				E903 0	11/20/02 16:07 / rs
Uranium	0 39	pCi/g-dry		0 01		SW6020	11/21/02 19:28 / smd

Lab ID: C02110335-003
Client Sample ID: Sample #22 Stream Sed S-5
Matrix: SEDIMENT

Collection Date: 11/08/02
DateReceived: 11/08/02

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES - TOTAL							
Lead 210	ND	pCi/g-dry		0 2		NERHL-65-4	11/20/02 12 00 / ph
Radium 226	0 2	pCi/g-dry		0 1		E903 0	11/20/02 16 07 / rs
Radium 226 precision	0 1	±				E903 0	11/20/02 16 07 / rs
Uranium	0 39	pCi/g-dry		0 01		SW6020	11/21/02 19 42 / smd

Report Definitions: RL - Analyte reporting limit
QCL - Quality control limit
MCL - Maximum contaminant level
ND - Not detected at the reporting limit

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LABORATORY ANALYTICAL REPORT

Client: Crow Butte Resources
Project: Not Indicated

Lab Order: C02110335
Report Date: 11/26/02

Lab ID: C02110335-004
Client Sample ID: Sample #23 Stream Sed E1
Matrix: SEDIMENT

Collection Date: 11/08/02
DateReceived: 11/08/02

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES - TOTAL							
Lead 210	ND	pCi/g-dry		0 2		NERHL-65-4	11/20/02 12.00 / ph
Radium 226	0 7	pCi/g-dry		0 1		E903.0	11/20/02 16 07 / rs
Radium 226 precision	0 1	±				E903 0	11/20/02 16 07 / rs
Uranium	2 11	pCi/g-dry		0 01		SW6020	11/21/02 19·49 / smd

Lab ID: C02110335-005
Client Sample ID: Sample #24 Impoundment I-3
Matrix: SEDIMENT

Collection Date: 11/08/02
DateReceived: 11/08/02

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES - TOTAL							
Lead 210	ND	pCi/g-dry		0 2		NERHL-65-4	11/20/02 12:00 / ph
Radium 226	0 7	pCi/g-dry		0 1		E903 0	11/20/02 16·07 / rs
Radium 226 precision	0 1	±				E903 0	11/20/02 16 07 / rs
Uranium	1 09	pCi/g-dry		0 01		SW6020	11/21/02 19 53 / smd

Lab ID: C02110335-006
Client Sample ID: Sample #25 Impoundment I-4
Matrix: SEDIMENT

Collection Date: 11/08/02
DateReceived: 11/08/02

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES - TOTAL							
Lead 210	ND	pCi/g dry		0 2		NERHL-65-4	11/20/02 12 00 / ph
Radium 226	0 5	pCi/g-dry		0 1		E903 0	11/20/02 16 07 / rs
Radium 226 precision	0 1	±				E903 0	11/20/02 16 07 / rs
Uranium	4 16	pCi/g-dry		0 01		SW6020	11/21/02 19 56 / smd

Report Definitions
RL - Analyte reporting limit
QCL - Quality control limit
MCL - Maximum contaminant level
ND - Not detected at the reporting limit

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LABORATORY ANALYTICAL REPORT

Client: Crow Butte Resources
Project: Not Indicated

Lab Order: C02110335
Report Date: 11/26/02

Lab ID: C02110335-007
Client Sample ID: Sample #26 Stream E5
Matrix: SEDIMENT

Collection Date: 11/08/02
DateReceived: 11/08/02

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES - TOTAL							
Lead 210	ND	pCi/g-dry		0 2		NERHL-65-4	11/20/02 12:00 / ph
Radium 226	0 5	pCi/g-dry		0 1		E903 0	11/20/02 16:07 / rs
Radium 226 precision	0 1	±				E903 0	11/20/02 16 07 / rs
Uranium	0 87	pCi/g-dry		0 01		SW6020	11/21/02 20.00 / smd

Report Definitions
RL - Analyte reporting limit
QCL - Quality control limit
MCL - Maximum contaminant level
ND - Not detected at the reporting limit

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