



GRANTS OFFICE

Alan D. Cox
Project Manager - Grants

23 February 2007

Mr. Ron C. Linton
Senior Groundwater Hydrologist/Project Manager
U.S. Nuclear Regulatory Commission
Office of Federal and State Materials
and Environmental Management Programs
Mail Stop T-7E18
Washington, DC 20555-0001

RE: Homestake Mining Company of California
– License SUA-1471
Grants Reclamation Project
2006 Tailings Piles Radon Flux Survey

Dear Mr. Linton:

As discussed with you by telephone initially in January and by telephone and email more recently, the results of the 2006 annual radon flux survey completed on the Large Tailing Pile (LTP) and Small Tailings Pile (STP) at the Grants Reclamation Project site indicate that the average radon flux for the Large Tailings Pile (20.6 pCi/M²s) was very slightly above the 20 pCi/M²s criteria for radon flux in 10 CFR 40 Appendix A. The attached survey report prepared by Environmental Restoration Group Inc. presents the results of the 2006 survey for both tailings piles.

Precipitation and associated soil / ground moisture conditions at the Grants site during much of the 2006 summer season prevented the completion of the annual flux survey according to established sampling protocols until late September. When results from the survey were assembled prior to report preparation, it was determined that the average flux level on the Large Tailings Pile (LTP) was 20.6 pCi/M²s. A decision was made at that time to initiate a remedial plan involving placement of supplemental cover on a portion of the LTP to bring the flux level into conformance with the standard. Unfortunately, adverse Fall weather conditions (snow and freezing ground conditions) in early December prevented completion of the work. A trucking contractor was making final preparations to initiate hauling soil during the week of December 4 when wet / snowy weather conditions prevented continuation of work. Since early December, frozen and wet ground conditions have prevented importing and placing additional soil cover on the LTP.

The current plan is to immediately commence with soil hauling, spreading and compaction of a six (6) inch lift of soil material over an area of the LTP as soon as ground conditions allow this Spring. It is anticipated that approximately 6,500 CYDs of soil cover will be placed. The area will be re-sampled for radon flux levels once the soil cover is placed.

As you are aware, in many cases, scarification and re-compaction of existing cover material will reduce radon flux levels. Unfortunately, this is not a feasible option for the LTP at the Grants site due to the numerous pipelines that are in place on top of the pile. These pipelines are integral to the tailings pile water injection and collection operations being conducted as part of the current closure program.

We trust this information is sufficient at this time to inform you of our plans with respect to the LTP. A copy of this letter and the attached radon flux report will be included in the Annual Performance Review Report which is due in your offices by March 31 2007. If you or any members of the NRC staff have any questions, please feel free to contact me. I can be reached at (505) 287-4456 ext. 25 or via cell phone at (505) 400-2794. I can also be reached via e-mail at acox@barrick.com.

Sincerely yours,



HOMESTAKE MINING COMPANY
OF CALIFORNIA

Alan D. Cox – Project Manager / RSO

Cc: Bob Evans – Region IV NRC, Arlington, TX

R. Chase – SLC (w/o attachment)
D. Deisley – SLC (w/o attachment)
B. Ferdinand – SLC (w/o attachment)

Radon Flux Measurements for the HMC Tailings Piles

September 2006

Prepared for:

**Homestake Mining Company of California
P. O. Box 98
Grants, New Mexico 87020**

Prepared by:

**Environmental Restoration Group, Inc.
8809 Washington St. NE, Suite 150
Albuquerque, NM 87113**

Radon Flux Measurements for the HMC Tailings Piles

1. Introduction

Reclamation activities associated with The Large Tailings Pile (LTP) at the Grants Uranium Mill, owned by Homestake Mining Company of California (HMC), were completed in phases. The pile was contoured in 1994 at which time an interim cover was placed on the top of the pile to control the dispersal of tailings by wind and water erosion. Radon barrier was applied to the north, west, and south side slopes, with completion of the work in 1994. Radon flux measurements were made on these side slopes on October 24-25, 1994. Completion of the placement of radon barrier on the east side slope and aprons occurred just prior to making the radon flux measurements on July 24-25, 1995. An evaporation pond was constructed on the Small Tailings Pile (STP) and an interim cover placed on the remainder of the pile. Radon flux measurements were made on the top of the LTP and the interim cover of the Small Tailings Pile (STP) on August 18-19, 1995.

As part of a request for a license amendment extending the milestones in the NRC License, radon flux measurements were repeated in the areas with interim cover on October 21-22, 2003. This license amendment required HMC to repeat these measurements annually. This report presents the data for the Year 2006 flux measurements made on September 26, 2006.

2. Radon Flux and Gamma-Ray Exposure Results

The results of the flux measurements on the LTP and STP are presented in Table 2-1 and Table 2-2, respectively. Ninety-seven canister locations (waypoint numbers) were established on the piles as shown in Figure 2-1. Waypoints 84, 85, 86, 87 and 88 are considered duplicates, with the canisters placed adjacent to one another. A total of 102 flux readings were made on the piles.

The distribution of canisters was allocated so that each canister represented an equal area of the total pile surface. Measurements are reported for 61 locations on the LTP and 36 locations on the STP. The average measured flux was 52.9 pCi/m²s and 27.3 pCi/m²s for the LTP and STP, respectively.

Exposure measurements were made at each canister location using a Ludlum Model 19 microR survey meter. Measurements were made with the survey meter held approximately one meter above the ground surface. Results for the LTP and STP are presented in Figure 2-2 and Table 2-3.

Field and laboratory data sheets for all measurements are located in Appendix A.

3. Average Pile Flux

Since all but the top of the LTP has rock cover, canisters were placed on the top of the pile. The average measured flux was 52.9 pCi/m²s. This compares to 42.1 pCi/m²s measured in 1995. In the earlier data, the average flux on the sides of the pile was 3.27 pCi/m²s, which constitutes 65 percent of the area. If one assumes that the flux on the side slopes remains constant, the average flux for the

Table 2-1

Radon Flux Measurements for HMC Grants Site - LTP



Environmental Restoration Group, Inc.
8809 Washington St. Suite 150
Albuquerque, NM 87113

Canister Number	Lab Date	Start Count Time	Deploy Date	Deploy Time	Retrieve Date	Retrieve Time	Deployed Time (sec)	Count Time (sec)	Peak Counts	Bkg* counts	Detector Efficiency	Canister Activity(pCi)	Flux pCi/m2s	Flux Error 1.00 S.D.	LLD pCi/m2s	Remarks
81	9/27/2006	19:25	9/26/2006	10:04	09/27/06	13:09	97500	239	7097	2457	1.14E-02	4.62E+04	15.45	0.20	0.2	OK
97	9/28/2006	06:09	9/26/2006	08:37	09/27/06	08:58	87660	1200	5362	2457	1.14E-02	5.76E+03	1.67	0.05	0.1	OK
70	9/28/2006	06:45	9/26/2006	08:33	09/27/06	08:53	87600	45	11339	2457	1.14E-02	4.70E+05	173.11	1.65	0.7	OK
5	9/28/2006	06:47	9/26/2006	08:30	09/27/06	08:52	87720	64	7774	2457	1.14E-02	1.98E+05	82.64	0.96	0.6	OK
202	9/28/2006	06:49	9/26/2006	07:44	09/27/06	08:03	87540	1200	6316	2457	1.14E-02	7.66E+03	2.25	0.05	0.1	OK
202B	9/28/2006	07:18	9/26/2006	07:44	09/27/06	08:03	87540	1200	6115	2457	1.14E-02	7.26E+03	2.14	0.05	0.1	OK
35	9/28/2006	07:42	9/26/2006	07:42	09/27/06	08:02	87600	65	7360	2457	1.14E-02	1.80E+05	78.06	0.94	0.6	OK
33	9/28/2006	07:45	9/26/2006	07:45	09/27/06	08:05	87600	1200	8185	2457	1.14E-02	1.14E+04	3.36	0.06	0.1	OK
46	9/28/2006	08:05	9/26/2006	07:47	09/27/06	08:07	87600	229	9257	2457	1.14E-02	7.07E+04	27.01	0.30	0.3	OK
103	9/28/2006	08:10	9/26/2006	07:33	09/27/06	07:59	87960	270	8988	2457	1.14E-02	5.76E+04	21.94	0.25	0.3	OK
27	9/28/2006	08:15	9/26/2006	07:39	09/27/06	08:00	87660	412	8991	2457	1.14E-02	3.78E+04	13.94	0.17	0.2	OK
11	9/28/2006	08:25	9/26/2006	07:35	09/27/06	07:56	87660	156	16639	2457	1.14E-02	2.16E+05	73.86	0.59	0.4	OK
59	9/28/2006	08:29	9/26/2006	07:37	09/27/06	07:55	87480	709	7315	2457	1.14E-02	1.63E+04	5.86	0.09	0.2	OK
4	9/28/2006	08:47	9/26/2006	07:28	09/27/06	07:52	87840	1200	3770	2457	1.14E-02	2.61E+03	0.77	0.05	0.1	OK
49	9/28/2006	09:08	9/26/2006	07:31	09/27/06	07:53	87720	381	9450	2457	1.14E-02	4.37E+04	16.15	0.19	0.2	OK
252	9/28/2006	09:19	9/26/2006	07:27	09/27/06	07:51	87840	670	6861	2457	1.14E-02	1.57E+04	5.82	0.10	0.2	OK
252B	9/28/2006	09:31	9/26/2006	07:27	09/27/06	07:51	87840	761	7854	2457	1.14E-02	1.69E+04	5.89	0.09	0.2	OK
256	9/28/2006	09:46	9/26/2006	07:23	09/27/06	07:50	88020	643	9700	2457	1.14E-02	2.68E+04	9.28	0.12	0.2	OK
38	9/28/2006	09:59	9/26/2006	08:50	09/27/06	09:09	87540	45	16397	2457	1.14E-02	7.38E+05	256.80	2.02	0.8	OK
105	9/28/2006	10:01	9/26/2006	08:53	09/27/06	09:07	87240	820	7067	2457	1.14E-02	1.34E+04	4.68	0.08	0.2	OK
261	9/28/2006	10:17	9/26/2006	09:01	09/27/06	09:15	87240	265	10156	2457	1.14E-02	6.92E+04	25.84	0.28	0.3	OK
259	9/28/2006	10:23	9/26/2006	08:36	09/27/06	08:57	87660	45	9953	2457	1.14E-02	3.97E+05	155.82	1.58	0.8	OK
3	9/28/2006	10:25	9/26/2006	08:57	09/27/06	09:12	87300	1200	8111	2457	1.14E-02	1.12E+04	3.36	0.06	0.1	OK
78	9/28/2006	10:47	9/26/2006	09:16	09/27/06	09:29	87180	49	6941	2457	1.14E-02	2.18E+05	99.67	1.22	0.7	OK

Table 2-1

Radon Flux Measurements for HMC Grants Site - LTP



Environmental Restoration Group, Inc.
8809 Washington St. Suite 150
Albuquerque, NM 87113

Canister Number	Lab Date	Start Count Time	Deploy Date	Deploy Time	Retrieve Date	Retrieve Time	Deployed Time (sec)	Count Time (sec)	Peak Counts	Bkg* counts	Detector Efficiency	Canister Activity(pCi)	Flux pCi/m2s	Flux Error 1.00 S.D.	LLD pCi/m2s	Remarks
18	9/28/2006	10:49	9/26/2006	07:51	09/27/06	08:14	87780	42	7776	2457	1.14E-02	3.02E+05	131.17	1.51	0.8	OK
80	9/28/2006	10:51	9/26/2006	07:55	09/27/06	08:17	87720	93	5985	2457	1.14E-02	9.03E+04	44.66	0.61	0.5	OK
52	9/28/2006	10:54	9/26/2006	08:25	09/27/06	08:42	87420	22	6751	2457	1.14E-02	4.65E+05	218.54	2.69	1.1	OK
52B	9/28/2006	10:55	9/26/2006	08:25	09/27/06	08:42	87420	25	7432	2457	1.14E-02	4.74E+05	211.70	2.48	1.0	OK
76	9/28/2006	10:57	9/26/2006	07:53	09/27/06	08:16	87780	77	6026	2457	1.14E-02	1.10E+05	54.64	0.73	0.6	OK
203	9/28/2006	11:00	9/26/2006	08:11	09/27/06	08:19	86880	1200	5359	2457	1.14E-02	5.76E+03	1.75	0.05	0.1	OK
251	9/28/2006	11:21	9/26/2006	08:14	09/27/06	08:21	86820	1171	9279	2457	1.14E-02	1.39E+04	4.27	0.07	0.1	OK
20	9/28/2006	11:42	9/26/2006	08:28	09/27/06	08:46	87480	1200	6251	2457	1.14E-02	7.53E+03	2.28	0.06	0.1	OK
101	9/28/2006	12:03	9/26/2006	08:15	09/27/06	08:23	86880	35	7062	2457	1.14E-02	3.13E+05	145.61	1.76	0.9	OK
55	9/28/2006	12:05	9/26/2006	08:17	09/27/06	08:24	86820	71	6087	2457	1.14E-02	1.22E+05	61.06	0.81	0.6	OK
90	9/28/2006	12:07	9/26/2006	07:58	09/27/06	08:19	87660	304	6463	2457	1.14E-02	3.14E+04	13.91	0.20	0.3	OK
22	9/28/2006	12:14	9/26/2006	08:21	09/27/06	08:27	86760	1200	5884	2457	1.14E-02	6.80E+03	2.09	0.06	0.1	OK
96	9/28/2006	12:36	9/26/2006	07:48	09/27/06	08:13	87900	465	7455	2457	1.14E-02	2.56E+04	10.15	0.14	0.2	OK
85	9/28/2006	12:45	9/26/2006	08:19	09/27/06	08:26	86820	78	8627	2457	1.14E-02	1.88E+05	79.59	0.88	0.6	OK
85B	9/28/2006	12:47	9/26/2006	08:19	09/27/06	08:26	86820	67	7559	2457	1.14E-02	1.81E+05	81.23	0.96	0.6	OK
1	9/28/2006	12:50	9/26/2006	08:45	09/27/06	09:03	87480	35	7445	2457	1.14E-02	3.39E+05	152.76	1.80	0.9	OK
63	9/28/2006	12:52	9/26/2006	08:49	09/27/06	09:06	87420	1200	3725	2457	1.14E-02	2.52E+03	0.77	0.05	0.1	OK
69	9/28/2006	13:13	9/26/2006	08:58	09/27/06	09:13	87300	263	6286	2457	1.14E-02	3.47E+04	15.91	0.23	0.3	OK
51	9/28/2006	13:19	9/26/2006	09:14	09/27/06	09:22	86880	53	6283	2457	1.14E-02	1.72E+05	85.12	1.10	0.7	OK
50	9/28/2006	13:20	9/26/2006	09:11	09/27/06	09:19	86880	39	6326	2457	1.14E-02	2.36E+05	117.08	1.50	0.8	OK
64	9/28/2006	13:22	9/26/2006	09:20	09/27/06	09:25	86700	91	7070	2457	1.14E-02	1.21E+05	55.38	0.69	0.5	OK
17	9/28/2006	13:25	9/26/2006	09:13	09/27/06	09:24	87060	20	7078	2457	1.14E-02	5.50E+05	256.71	3.08	1.2	OK
100	9/28/2006	13:27	9/26/2006	09:32	09/27/06	09:40	86880	1023	8489	2457	1.14E-02	1.40E+04	4.57	0.07	0.2	OK
109	9/28/2006	13:45	9/26/2006	09:30	09/27/06	09:37	86820	1200	10291	2457	1.14E-02	1.55E+04	4.79	0.07	0.1	OK

Table 2-1

Radon Flux Measurements for HMC Grants Site - LTP



Environmental Restoration Group, Inc.
8809 Washington St. Suite 150
Albuquerque, NM 87113

Canister Number	Lab Date	Start Count Time	Deploy Date	Deploy Time	Retrieve Date	Retrieve Time	Deployed Time (sec)	Count Time (sec)	Peak Counts	Bkg* counts	Detector Efficiency	Canister Activity(pCi)	Flux pCi/m2s	Flux Error 1.00 S.D.	LLD pCi/m2s	Remarks
36	9/28/2006	14:10	9/26/2006	10:02	09/27/06	09:52	85800	585	7045	2457	1.14E-02	1.87E+04	7.41	0.12	0.2	OK
36B	9/28/2006	14:20	9/26/2006	10:02	09/27/06	09:52	85800	519	6137	2457	1.14E-02	1.69E+04	7.26	0.12	0.2	OK
42	9/28/2006	14:30	9/26/2006	08:46	09/27/06	09:05	87540	63	6150	2457	1.14E-02	1.40E+05	70.12	0.92	0.7	OK
258	9/28/2006	14:32	9/26/2006	08:42	09/27/06	09:02	87600	1200	5693	2457	1.14E-02	6.42E+03	1.98	0.06	0.1	OK
53	9/28/2006	14:54	9/26/2006	08:55	09/27/06	09:11	87360	1200	4261	2457	1.14E-02	3.58E+03	1.11	0.05	0.1	OK
25	9/28/2006	15:17	9/26/2006	09:23	09/27/06	09:29	86760	122	23889	2457	1.14E-02	4.18E+05	143.75	0.94	0.5	OK
16	9/28/2006	15:20	9/26/2006	09:25	09/27/06	09:30	86700	40	6301	2457	1.14E-02	2.29E+05	115.44	1.48	0.8	OK
98	9/28/2006	15:22	9/26/2006	09:08	09/27/06	09:20	87120	110	6345	2457	1.14E-02	8.42E+04	41.19	0.55	0.5	OK
60	9/28/2006	15:25	9/26/2006	09:41	09/27/06	09:43	86520	45	6069	2457	1.14E-02	1.91E+05	98.71	1.30	0.8	OK
24	9/28/2006	15:26	9/26/2006	08:34	09/27/06	08:55	87660	171	6894	2457	1.14E-02	6.18E+04	28.28	0.37	0.4	OK
8	9/28/2006	15:30	9/26/2006	10:03	09/27/06	09:54	85860	77	6828	2457	1.14E-02	1.35E+05	64.78	0.81	0.6	OK
8B	9/28/2006	15:32	9/26/2006	10:03	09/27/06	09:54	85860	74	6436	2457	1.14E-02	1.28E+05	63.53	0.82	0.6	OK
7	9/28/2006	15:34	9/26/2006	09:36	09/27/06	09:41	86700	182	6001	2457	1.14E-02	4.64E+04	22.97	0.33	0.4	OK
15	9/28/2006	15:39	9/26/2006	09:27	09/27/06	09:37	87000	169	6127	2457	1.14E-02	5.17E+04	25.36	0.35	0.4	OK
34	9/28/2006	15:42	9/26/2006	09:44	09/27/06	09:43	86340	290	6014	2457	1.14E-02	2.92E+04	13.95	0.21	0.3	OK
82	9/28/2006	15:48	9/26/2006	09:34	09/27/06	09:40	86760	103	6062	2457	1.14E-02	8.33E+04	42.25	0.57	0.5	OK
47	9/28/2006	15:51	9/26/2006	09:56	09/27/06	09:44	85680	1200	7322	2457	1.14E-02	9.65E+03	3.05	0.06	0.1	OK
73	9/28/2006	16:27	9/26/2006	09:43	09/27/06	09:48	86700	1200	6940	2457	1.14E-02	8.89E+03	2.79	0.06	0.1	OK
54	9/28/2006	16:57	9/26/2006	09:58	09/27/06	09:54	86160	883	10746	2457	1.14E-02	2.24E+04	7.64	0.10	0.2	OK
54B	9/28/2006	17:11	9/26/2006	09:58	09/27/06	09:54	86160	783	9340	2457	1.14E-02	2.09E+04	7.47	0.10	0.2	OK

Table 2-2

Radon Flux Measurements for HMC Grants Site - STP



Environmental Restoration Group, Inc.
8809 Washington St. Suite 150
Albuquerque, NM 87113

Canister Number	Lab Date	Start Count Time	Deploy Date	Deploy Time	Retrieve Date	Retrieve Time	Deployed Time (sec)	Count Time (sec)	Peak Counts	Bkg* counts	Detector Efficiency	Canister Activity(pCi)	Flux pCi/m2s	Flux Error 1.00 S.D.	LLD pCi/m2s	Remarks
45	9/27/2006	16:54	9/26/2006	11:53	09/27/06	11:53	86400	168	36905	2457	1.14E-02	4.88E+05	118.32	0.62	0.3	OK
95	9/27/2006	17:00	9/26/2006	11:58	09/27/06	11:58	86400	50	7696	2457	1.14E-02	2.49E+05	82.51	0.96	0.5	OK
67	9/27/2006	17:06	9/26/2006	11:32	09/27/06	11:30	86280	262	6811	2457	1.14E-02	3.96E+04	13.08	0.18	0.2	OK
263	9/27/2006	17:12	9/26/2006	11:28	09/27/06	11:30	86520	294	6128	2457	1.14E-02	2.97E+04	11.63	0.17	0.2	OK
102	9/27/2006	17:22	9/26/2006	11:35	09/27/06	11:35	86400	209	6010	2457	1.14E-02	4.05E+04	16.55	0.24	0.3	OK
68	9/27/2006	17:32	9/26/2006	11:02	09/27/06	11:00	86280	444	7018	2457	1.14E-02	2.45E+04	8.58	0.13	0.2	OK
87	9/27/2006	17:50	9/26/2006	10:28	09/27/06	12:06	92280	122	6822	2457	1.14E-02	8.52E+04	31.36	0.40	0.4	OK
19	9/27/2006	18:04	9/26/2006	11:07	09/27/06	11:03	86160	206	6566	2457	1.14E-02	4.75E+04	18.65	0.25	0.3	OK
65	9/27/2006	18:08	9/26/2006	11:40	09/27/06	11:43	86580	1200	8564	2457	1.14E-02	1.21E+04	3.16	0.05	0.1	OK
79	9/27/2006	18:34	9/26/2006	11:56	09/27/06	11:57	86460	1200	4980	2457	1.14E-02	5.01E+03	1.31	0.04	0.1	OK
79B	9/27/2006	19:00	9/26/2006	11:56	09/27/06	11:57	86460	1200	4988	2457	1.14E-02	5.02E+03	1.31	0.04	0.1	OK
43	9/27/2006	19:31	9/26/2006	12:00	09/27/06	12:03	86580	358	7122	2457	1.14E-02	3.10E+04	11.09	0.15	0.2	OK
201	9/27/2006	19:40	9/26/2006	11:42	09/27/06	11:40	86280	791	7219	2457	1.14E-02	1.43E+04	4.44	0.07	0.2	OK
72	9/27/2006	19:48	9/26/2006	11:31	09/27/06	11:30	86340	482	6024	2457	1.14E-02	1.76E+04	6.62	0.11	0.2	OK
107	9/27/2006	20:02	9/26/2006	12:00	09/27/06	12:03	86580	650	12600	2457	1.14E-02	3.72E+04	10.94	0.11	0.2	OK
260	9/27/2006	20:15	9/26/2006	11:58	09/27/06	11:58	86400	56	6088	2457	1.14E-02	1.54E+05	67.52	0.89	0.6	OK
56	9/27/2006	21:04	9/26/2006	11:56	09/27/06	11:57	86460	1200	7326	2457	1.14E-02	9.66E+03	2.59	0.05	0.1	OK
30	9/27/2006	21:28	9/26/2006	11:55	09/27/06	11:54	86340	1200	6026	2457	1.14E-02	7.08E+03	1.90	0.05	0.1	OK
30B	9/27/2006	21:49	9/26/2006	11:55	09/27/06	11:54	86340	1200	6041	2457	1.14E-02	7.11E+03	1.92	0.05	0.1	OK
255	9/28/2006	04:53	9/26/2006	11:52	09/27/06	11:47	86100	1094	10899	2457	1.14E-02	1.84E+04	5.38	0.07	0.1	OK
253	9/28/2006	05:12	9/26/2006	11:48	09/27/06	11:45	86220	711	8522	2457	1.14E-02	2.03E+04	6.76	0.10	0.2	OK
6	9/28/2006	05:26	9/26/2006	11:53	09/27/06	11:53	86400	51	11103	2457	1.14E-02	4.04E+05	146.41	1.41	0.7	OK
48	9/28/2006	05:28	9/26/2006	11:55	09/27/06	11:54	86340	1200	5218	2457	1.14E-02	5.48E+03	1.57	0.05	0.1	OK
12	9/28/2006	06:30	9/26/2006	11:50	09/27/06	11:50	86400	683	8443	2457	1.14E-02	2.09E+04	7.07	0.10	0.2	OK
28	9/28/2006	16:49	9/26/2006	10:25	09/27/06	10:28	86580	70	7771	2457	1.14E-02	1.81E+05	81.33	0.95	0.6	OK

Table 2-2

Radon Flux Measurements for HMC Grants Site - STP



Environmental Restoration Group, Inc.
8809 Washington St, Suite 150
Albuquerque, NM 87113

Canister Number	Lab Date	Start Count Time	Deploy Date	Deploy Time	Retrieve Date	Retrieve Time	Deployed Time (sec)	Count Time (sec)	Peak Counts	Bkg* counts	Detector Efficiency	Canister Activity(pCi)	Flux pCi/m2s	Flux Error 1.00 S.D.	LLD pCi/m2s	Remarks
110	9/28/2006	16:56	9/26/2006	10:33	09/27/06	10:30	86220	67	6784	2457	1.14E-02	1.54E+05	74.37	0.93	0.6	OK
104	9/28/2006	17:25	9/26/2006	10:23	09/27/06	10:28	86700	789	12607	2457	1.14E-02	3.06E+04	10.44	0.11	0.2	OK
86	9/28/2006	17:40	9/26/2006	10:35	09/27/06	10:33	86280	459	7446	2457	1.14E-02	2.59E+04	10.68	0.15	0.2	OK
21	9/28/2006	17:50	9/26/2006	10:33	09/27/06	10:30	86220	712	50114	2457	1.14E-02	1.59E+05	51.62	0.24	0.2	OK
58	9/28/2006	18:03	9/26/2006	10:38	09/27/06	10:34	86160	74	9884	2457	1.14E-02	2.39E+05	99.45	1.02	0.6	OK
99	9/28/2006	18:05	9/26/2006	10:35	09/27/06	10:33	86280	91	9214	2457	1.14E-02	1.77E+05	74.95	0.80	0.6	OK
250	9/28/2006	18:08	9/26/2006	11:00	09/27/06	11:03	86580	516	6899	2457	1.14E-02	2.05E+04	8.50	0.13	0.2	OK
44	9/28/2006	18:19	9/26/2006	10:58	09/27/06	11:00	86520	417	7767	2457	1.14E-02	3.03E+04	12.48	0.17	0.3	OK
84	9/28/2006	18:28	9/26/2006	10:52	09/27/06	11:13	87660	1200	9493	2457	1.14E-02	1.40E+04	4.36	0.07	0.1	OK
9	9/28/2006	18:53	9/26/2006	11:37	09/27/06	11:33	86160	669	7550	2457	1.14E-02	1.81E+04	6.98	0.11	0.2	OK
257	9/28/2006	19:05	9/26/2006	10:49	09/27/06	10:49	86400	208	6837	2457	1.14E-02	5.01E+04	23.39	0.31	0.4	OK
257B	9/28/2006	19:09	9/26/2006	10:49	09/27/06	10:49	86400	261	8385	2457	1.14E-02	5.41E+04	22.84	0.27	0.3	OK
41	9/28/2006	19:15	9/26/2006	10:43	09/27/06	10:45	86520	770	7460	2457	1.14E-02	1.55E+04	5.80	0.09	0.2	OK
254	9/28/2006	19:29	9/26/2006	10:38	09/27/06	10:34	86160	83	7772	2457	1.14E-02	1.52E+05	70.01	0.82	0.6	OK
37	9/28/2006	19:32	9/26/2006	10:40	09/27/06	10:37	86220	303	9446	2457	1.14E-02	5.49E+04	22.25	0.25	0.3	OK
91	9/28/2006	19:38	9/26/2006	11:04	09/27/06	11:03	86340	516	7340	2457	1.14E-02	2.25E+04	9.27	0.14	0.2	OK
92	9/28/2006	19:48	9/26/2006	10:44	09/27/06	10:57	87180	384	8126	2457	1.14E-02	3.52E+04	14.45	0.19	0.3	OK
23	9/28/2006	19:56	9/26/2006	10:41	09/27/06	10:56	87300	705	8876	2457	1.14E-02	2.17E+04	7.97	0.11	0.2	OK
262	9/28/2006	20:10	9/26/2006	10:50	09/27/06	10:50	86400	624	9513	2457	1.14E-02	2.69E+04	10.10	0.13	0.2	OK

Figure 2-1 Canister Locations

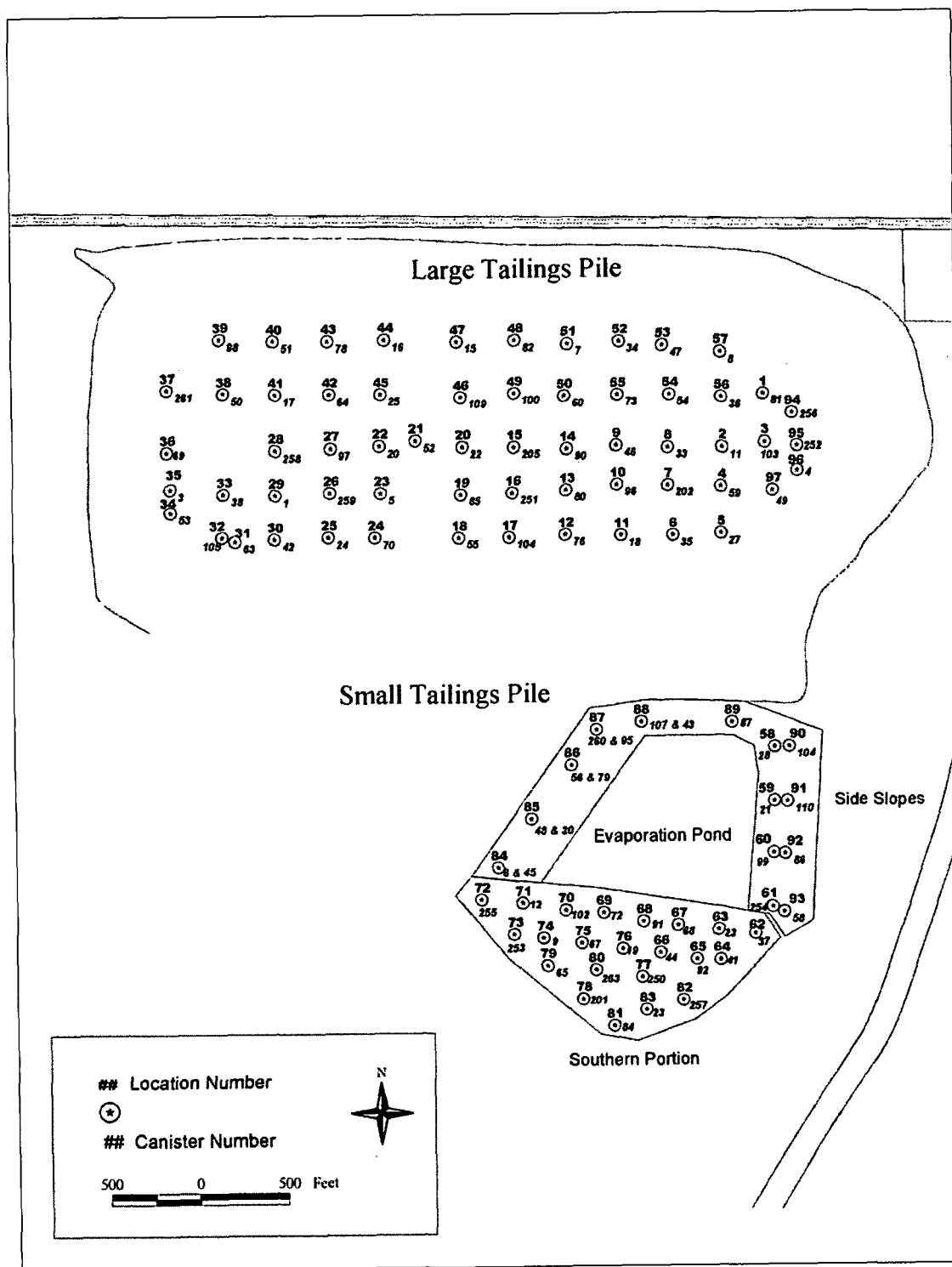


Figure 2-2 Canister Locations with Exposure Readings

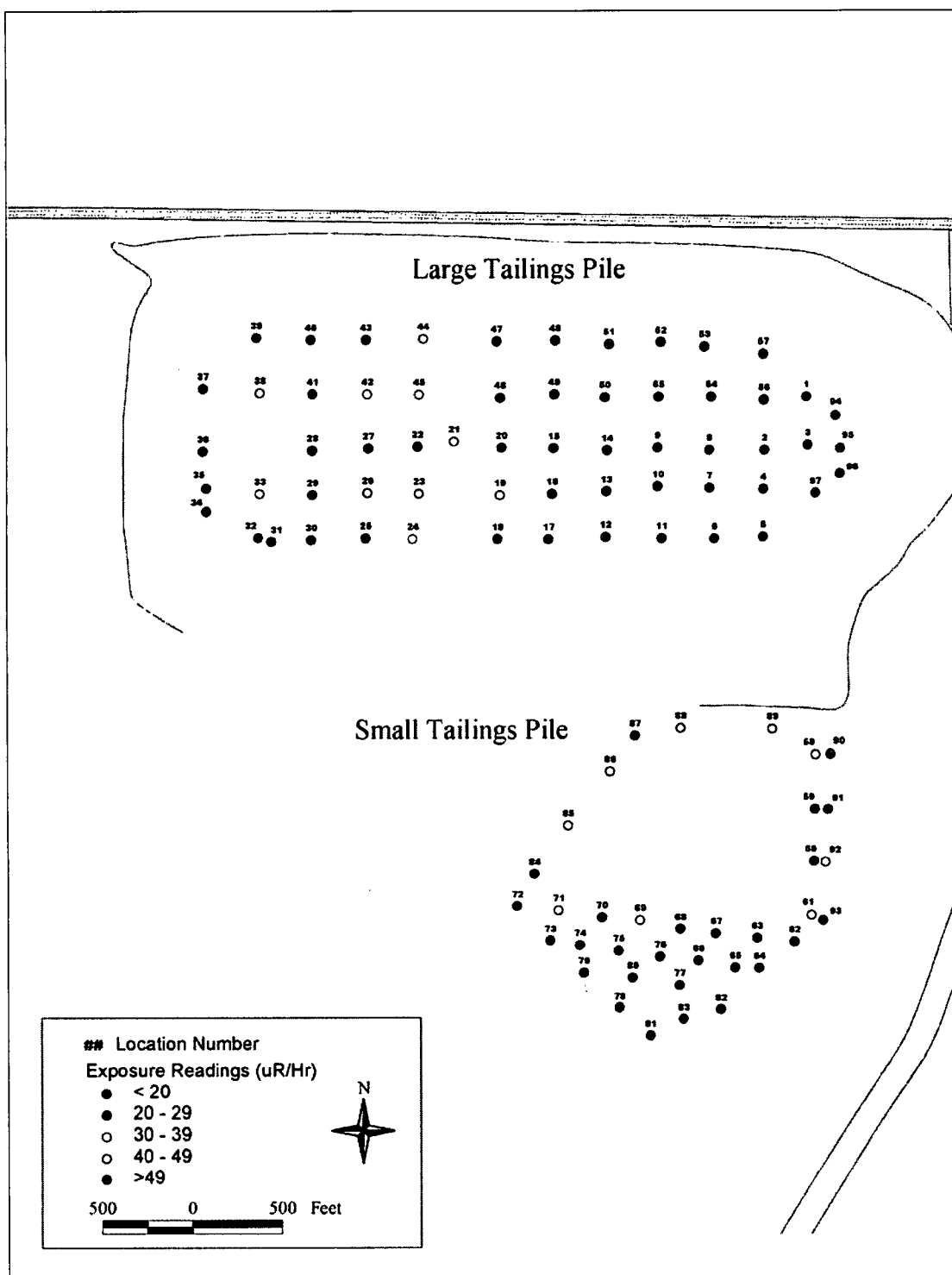


Table 2-3 Exposure Measurement Results

Location	Canister Number	Exposure Reading (uR/Hr)
1	81	15
2	11	16
3	103	12
4	59	15
5	27	15
6	35	19
7	202	23
8	33	19
9	46	21
10	96	25
11	18	25
12	76	23
13	80	26
14	90	21
15	205	22
16	251	24
17	104	26
18	55	27
19	85	36
20	22	17
21	52	35
22	20	20
23	5	44
24	70	37
25	24	23
26	259	42
27	97	22
28	258	21
29	1	75
30	42	21
31	63	20
32	105	15

Location	Canister Number	Exposure Reading (uR/Hr)
33	38	34
34	53	15
35	3	20
36	69	17
37	261	18
38	50	33
39	98	25
40	51	26
41	17	130
42	64	34
43	78	28
44	16	42
45	25	37
46	109	22
47	15	25
48	82	22
49	100	21
50	60	24
51	7	25
52	34	23
53	47	26
54	54	25
55	73	22
56	36	22
57	8	22
58	28	33
59	21	28
60	99	26
61	254	36
62	37	23
63	23	23
64	41	17

Location	Canister Number	Exposure Reading (uR/Hr)
65	92	20
66	44	19
67	68	28
68	91	29
69	72	31
70	102	23
71	12	32
72	255	11
73	253	19
74	9	18
75	67	24
76	19	20
77	250	16
78	201	16
79	65	17
80	263	16
81	84	17
82	257	24
83	23	15
84	6 & 45	130
85	48 & 30	31
86	56 & 79	34
87	260 & 95	160
88	107 & 43	42
89	87	42
90	104	28
91	110	80
92	86	34
93	58	50
94	256	11
95	252	12
96	4	11
97	49	13

pile now is 20.6 pCi/m²s. This is higher than the 14 pCi/m² measured in 2003 and slightly higher than the measurements for the years 2004 (20.3 pCi/m²s) and 2005 (15.3 pCi/m²s).

An evaporation pond is placed on the STP and therefore that portion of the pile has 0 pCi/m²s flux. The flux values for the waypoints corresponding to the other portions of the pile (Side Slopes and Southern Portion) were averaged and the corresponding areas were used to obtain an area weighted average flux of 6.9 pCi/m²s.

The areas for the side slopes, Southern Portion, and Evaporation Pond are 137,000, 874,000, and 1,331,000 square feet, respectively. The corresponding average flux for these areas was 51.9, 10.2, and 0 pCi/m²s, respectively.

The data show that the small tailings average (6.9 pCi/m²s) is below the 20 pCi/m²s standard in 10 CFR 40 Appendix A and the large tailings average (20.6 pCi/m²s) is slightly above the standard.

4. Quality Assurance

The EPA Method 115 requirements were met for the measurements. No rainfall was reported during the 24 hours prior to the measurements. Also the temperature exceeded 35 degrees F.

Two independent sources were used to calibrate the spectrometer, using identical geometry conditions to that of the canisters. Agreement between calibration factors was within five percent of the mean. The results of these measurements are included in Table 4-1.

The comparative analysis of every 10th canister analyzed is shown in Table 4-2. Agreements between measurements were well within ten percent and consistent with state-of-the art gamma spectroscopy results.

Two trip blanks (Canister Nos. 39 and 93) were included in the batch and counted without exposing them to radon. The measured flux of 0.10 and 0.11 pCi/m²s for the canisters is near the expected 0 pCi/m²s value. These results indicate that the canisters had not been exposed, confirming the integrity of the bags.

Four sets of duplicates were placed. Canisters 6 and 45 were placed at Location Number 84. The radon flux results for these two canisters are 118.32 and 146.41 pCi/m²s, respectively. Duplicate canisters 48 and 30 were placed at Waypoint Number 85. The radon flux results for these two canisters are 1.57 and 1.90 pCi/m²s, respectively. Canisters 56 and 79 were placed at Location Number 86. The radon flux results for these two canisters are 2.59 and 1.31 pCi/m²s, respectively. Canisters 260 and 95 were placed at Location Number 87. The radon flux results for these two canisters are 67.52 and 82.51 pCi/m²s, respectively. Canisters 107 and 43 were placed at Location Number 88. The radon flux results for these two canisters are 10.94 and 11.09 pCi/m²s, respectively.

The agreement is about what can be expected since the canisters were only placed near one another, and weren't true duplicates.

Table 4-1 Quality Assurance Results of Standard Analysis

Standard	Date	Count Time (seconds)	Standard (nCi)	Counts	Average Bkg Counts	Efficiency	Error (1.00 SD)
STD 1A	09/27/06	1200	80	46222	2457	0.0123	6.2115E-05
STD 3	09/27/06	1200	78.83	40077	2457	0.0107	5.8924E-05
STD 1A	09/28/06	1200	80	44739	2743	0.0118	6.1347E-05
STD 3	09/28/06	1200	78.83	39536	2743	0.0105	5.8747E-05
Mean						0.0114	

Table 4-2 Comparison Data of Every Tenth Sample Analyzed

Cannister	First Analysis (A) pCi/m ² s	Second Analysis (B) pCi/m ² s	Difference
79	1.31	1.31	0.0%
30	1.9	1.92	1.1%
202	2.25	2.14	4.9%
252	5.82	5.89	1.2%
52	218.54	211.70	3.1%
85	79.59	81.23	2.1%
36	7.41	7.26	2.0%
8	64.78	63.53	1.9%
54	7.64	7.47	2.2%
257	23.39	22.84	2.4%

Appendix A



Designer and Manufacturer
of
Scientific and Industrial
Instruments

CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.

POST OFFICE BOX 810 PH. 325-235-5494
501 OAK STREET FAX NO. 325-235-4672
SWEETWATER, TEXAS 79556, U.S.A.

CUSTOMER ENVIRONMENTAL RESTORATION GRP ORDER NO. 255160/302122

Mfg. Ludlum Measurements, Inc. Model 19 Serial No. 104625

Mfg. _____ Model _____ Serial No. _____

Cal. Date 8-May-06 Cal Due Date 8-May-07 Cal. Interval 1 Year Meterface 202-016

check mark ☒ applies to applicable instr. and/or detector IAW mfg. spec. T. 72 °F RH 42 % Alt 696.8 mm Hg

☐ New Instrument ☐ Instrument Received ☒ Within Toler. $\pm 10\%$ ☐ 10-20% ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See comments

☒ Mechanical ck. ☒ Meter Zeroed ☐ Background Subtract ☐ Input Sens. Linearity

☒ F/S Resp. ck. ☒ Reset ck. ☐ Window Operation ☒ Geotropism

☒ Audio ck. ☐ Alarm Setting ck. ☒ Batt. ck. (Min. Volt) 2.2 VDC

☐ Calibrated in accordance with LMI SOP 14.8 rev 12/05/89. ☐ Calibrated in accordance with LMI SOP 14.9 rev 02/07/97.

Instrument Volt Set 550 V Input Sens. 32 mV Det. Oper. _____ V at _____ mV Threshold Dial Ratio _____ = _____ mV

☒ HV Readout (2 points) Ref./Inst. _____ / _____ V Ref./Inst. _____ / _____ V

COMMENTS: No "As Found" Due to repairs.

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.

RANGE/MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT REC'D "AS FOUND READING"	INSTRUMENT METER READING*
5000	4000 μ R/hr	N/A	4000
5000	1000 μ R/hr		1000
500	400 μ R/hr = 74000 cpm		400
500	100 μ R/hr		100
250	200 μ R/hr = 37000 cpm		200
250	100 μ R/hr		100
50	7400 cpm		40
50	1750 cpm		10
25	3700 cpm		20
25	925 cpm		5

*Uncertainty within $\pm 10\%$ C.F. within $\pm 20\%$

50.25 Range(s) Calibrated Electronically

REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*	Log Scale	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques. Calibration system conforms to the requirements of ANSI/NCCL 2540-1-1994 and ANSI N323-1978 State of Texas Calibration License No. LO-1963

Reference Instruments and/or Sources:

137 Gamma S/N ☐ 1162 ☐ G112 ☐ M565 ☐ 5105 ☐ T1008 ☐ T879 ☐ E552 ☐ E551 ☒ 720 ☐ 734 ☐ 1616 ☐ Neutron Am-241 Be S/N T-304

☐ Alpha S/N _____ ☐ Beta S/N _____ ☐ Other _____

☒ m 500 S/N 121036 ☐ Oscilloscope S/N _____ ☒ Multimeter S/N 62840682

Calibrated By: Annette Brumley Date 8 May - 06

Reviewed By: Michael J. Thomas Date 11-May-06

This certificate shall not be reproduced except in full, without the written approval of Ludlum Measurements, Inc.
RM C22A 11/26/2003

AC Inst. ☐ Passed Dielectric (Hi-Pot) and Continuity Test
Only ☐ Failed: _____

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61 21415

ERG Radon Flux Cannister Data Log

Site Lg P. 6

Page: 1 of 5

Location Number	Cannister Number	Deployment Date	Deployment Time	Collection Date	Collection Time	Comments / Notes
		(mm/dd/yy)	(24:00)	(mm/dd/yy)	(24:00)	
94	256	9-26-06	0723	9-27-06	0750	11
95	252		0727		0751	12
96	4		0728		0752	11
97	49		0731		0753	13
3	103		0733		0759	12
2	11		0735		0756	16
4	59		0737		0755	15
5	27		0739		0800	15
6	35		0742		0802	19
7	202		0744		0803	23
8	33		0745		0805	19
9	46		0747		0807	21
10	98		0748		0813	25
11	18		0751		0814	25
12	76		0753		0816	23
13	80		0755		0817	26
14	90		0758		0819	21
15	205		0811		0819	22
16	251		0814		0821	24
17	101		0815		0823	26
18	55		0817		0824	27
19	85		0819		0826	30
20	22		0821		0827	17
21	52		0825		0842	35

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ERG Radon Flux Cannister Data Log

Site LP-6Page: 2 of 5

Location Number	Cannister Number	Deployment Date	Deployment Time	Collection Date	Collection Time	Comments / Notes
		(mm/dd/yy)	(24:00)	(mm/dd/yy)	(24:00)	
22	26	9-26-06	0828	9-27-06	0846	20
23	5		0830		0852	44
24	70		0833		0853	37
25	24		0834		0855	23
26	254		0836		0857	42
27	97		0837		0858	22
28	258		0842		0902	21
29	1		0845		0903	75
30	42		0846		0905	21
31	63		0849		0906	20
33	38		0850	0909	0909	34
32	105		0853		0907	15
34	53		0855		0911	15
35	3		0857		0912	20
36	69		0858		0913	17
37	261		0901		0915	15
39	98		0908		0920	25
38	50		0911		0919	33
41	17		0913		0924	130
40	51		0914		0922	26
43	78		0916		0929	28
42	64		0920		0925	34
45	25		0923		0929	37
44	16	✓	0925	✓	0930	42

ERG Radon Flux Cannister Data Log

Site: LS P. 6

Page: 3 of 5

[illegible]

ERG Radon Flux Data Log
(505) 298-4224
www.ERGNTec.com

Blanks 93, 39 8 in R
1230

Site: SnP. 6

Page: 4 of 5

[illegible]

ERG Radon Flux Data Log
(505) 298-4224
www.ERGOffice.com

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ERG Radon Flux Cannister Data Log

Site: Sm. A. 1e ^{Total} 141

Page: 5 of 5

Location Number	Cannister Number	Deployment Date	Deployment Time	Collection Date	Collection Time	Comments / Notes
		(mm/dd/yy)	(24.00)	(mm/dd/yy)	(24.00)	
90	104	29.26.06	1023	9.27.06	1028	28
58	10228		1025		1028	38
85	67		1028		1030.1206	42
91	110		1033		1030	80
55	21		1033		1030	28
92	86		1035		1033	34
60	99		1035		1033	26
93	58		1038		1034	50
61	254		1038		1034	36
62	37		1040		1037	23
63	23		1041		1056	28
6564	41		1043		1045	17
- 65	62		1044		1057	20
- 62	257		1046/1049		1049	24
- 83	262		1050		1050	15
- 81	84		1052		1113	17
- 66	25044		1058		1100	19
- 67747	44250		1106		1103	16
- 67746	68		1102		1100	28
- 68	91		1104		1122	29
- 76	19		1107		1103	20
86	263		1128		1130	16
69	72		1131		1130	31
75	67		1132		1130	24
701	102		1135		1135	23