

**CIMARRON CORPORATION**  
**CIMARRON FACILITY**  
**AFFECTED AREA 'G' - DRAINAGE CENTERLINE**  
**Surface Soil Samples**

DATE: 4/23/98

LN #	GRID NUMBER					3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	0-6" Sample	
									Total-U	Th (Nat)
1	380	E	-	730	N	9780	10	9	19.5	1.9
2	385	E	-	745	N	9148	13	12	12.9	1.2
3	390	E	-	750	N	10316	10	10	18	2
4	395	E	-	753	N	10230	12	11	19	2
5	402	E	-	753	N	10712	10	11	21	2
6	408	E	-	754	N	10340	10	10	15	2
7	414	E	-	756	N	10576	11	11	28	2
8	420	E	-	755	N	10752	11	11	19	2
9	425	E	-	755	N	8438	12	12	8.3	0.9
10	430	E	-	757	N	10766	12	12	24	2
11	434	E	-	758	N	10758	10	11	15	2
12	440	E	-	760	N	10722	11	10	21	2
13	447	E	-	761	N	10494	11	10	18	2
14	452	E	-	760	N	10528	11	11	17	2
15	458	E	-	762	N	10936	11	10	12	2
16	462	E	-	763	N	10590	10	10	21	2
17	469	E	-	764	N	10812	10	10	12	2
18	474	E	-	765	N	10446	11	10	13	1
19	480	E	-	765	N	10628	11	10	14	1
20	486	E	-	765	N	10936	12	10	9	2

## INSTRUMENTS:

RESULTS IN: BACKGROUND MDA

LUDLUM MICRO 'R' METER - MODEL 19 S/N 111299

 $\mu$ R/hr

9

2

LUDLUM 2221, UNSHIELDED 3" X 1/2" NaI DETECTOR S/N 97264

CPM

8500

N/A

CIMMARON SOIL COUNTER 4" X 4" X 16" NaI DETECTOR

pCi/g

Total U 4

10

Th(Nat) 1.5

1

BACKGROUND NOT SUBTRACTED

PAGE 1 OF 12

REVIEWED BY:

*W. A. Rogers*

DATE: 7-28-99

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**CIMARRON FACILITY**  
**AFFECTED AREA 'G' - DRAINAGE CENTERLINE**  
**Surface Soil Samples**

DATE: 4/23/98

LN #	GRID NUMBER					3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	0-6" Sample	
									Total-U	Th (Nat)
21	491	E	-	765	N	10926	11	11	25	2
22	497	E	-	766	N	10864	11	10	15	2
23	502	E	-	766	N	11052	11	11	15	2
24	508	E	-	767	N	10790	11	10	16	2
25	513	E	-	768	N	10838	11	10	14	2
26	519	E	-	769	N	11126	12	11	13	2
27	524	E	-	770	N	11332	11	10	16	2
28	530	E	-	771	N	10954	11	10	14	1
29	535	E	-	771	N	10996	11	10	10	2
30	540	E	-	771	N	10758	11	10	9	2
31	545	E	-	772	N	11194	12	10	10	2
32	550	E	-	772	N	11012	12	11	7	2
33	555	E	-	775	N	10886	10	11	8	2
34	560	E	-	775	N	11000	11	10	10	3
35	565	E	-	775	N	11072	11	10	7	2
36	570	E	-	776	N	10736	12	11	9	2
37	575	E	-	777	N	10952	11	10	7	2
38	580	E	-	778	N	10886	10	11	6	2
39	585	E	-	779	N	10844	11	11	7	2
40	590	E	-	780	N	10898	11	10	9	2

INSTRUMENTS:RESULTS IN: BACKGROUND      MDA

LUDLUM MICRO 'R' METER - MODEL 19 S/N 111299

μR/hr

9

2

LUDLUM 2221, UNSHIELDED 3" X 1/2" NaI DETECTOR S/N 97264

CPM

8500

N/A

CIMMARON SOIL COUNTER 4" X 4" X 16" NaI DETECTOR

pCi/g

Total U	4	10
Th(Nat)	1.5	1

BACKGROUND NOT SUBTRACTED

PAGE 2 OF 12

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**AFFECTED AREA 'G' - DRAINAGE CENTERLINE**  
**Surface Soil Samples**

DATE: 4/23/98

LN #	GRID NUMBER					3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	0-6" Sample	
									Total-U	Th (Nat)
41	595	E	-	781	N	10156	10	10	12	2
42	600	E	-	782	N	10176	10	10	14	2
43	605	E	-	783	N	10532	10	11	5	2
44	610	E	-	783	N	10042	10	10	12	2
45	615	E	-	784	N	9982	10	9	8	1
46	620	E	-	785	N	9916	10	10	10	1
47	625	E	-	785	N	9664	10	9	8	1
48	630	E	-	786	N	9566	10	10	8	2
49	635	E	-	787	N	9398	11	10	9	2
50	640	E	-	788	N	9660	10	9	9	1
51	645	E	-	790	N	9108	9	9	7	2
52	650	E	-	790	N	9000	8	9	8	1
53	655	E	-	790	N	8942	9	9	9	1
54	660	E	-	791	N	8640	8	8	12	2
55	665	E	-	792	N	9328	9	10	6	2
56	670	E	-	792	N	9276	10	9	11	1
57	675	E	-	794	N	9066	9	7	6	2
58	680	E	-	795	N	8978	10	8	6	1
59	685	E	-	795	N	8762	8	8	12	1
60	690	E	-	796	N	9134	8	8	6	2

## INSTRUMENTS:

RESULTS IN: BACKGROUND MDA

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μR/hr

9

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CPM

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N/A

CIMMARON SOIL COUNTER 4" X 4" X 16" NaI DETECTOR

pCi/g

Total U

4

10

Th(Nat)

1.5

1

BACKGROUND NOT SUBTRACTED

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CIMARRON FACILITY  
AFFECTED AREA 'G' - DRAINAGE CENTERLINE  
Surface Soil Samples

DATE: 4/23/98

LN #	GRID NUMBER					3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	0-6" Sample	
									Total-U	Th (Nat)
61	695	E	-	797	N	9342	9	8	14	1
62	700	E	-	798	N	9110	10	8	7	1
63	705	E	-	799	N	8524	9	9	5	1
64	710	E	-	799	N	8800	8	8	6	2
65	715	E	-	803	N	7964	8	8	13	1
66	720	E	-	803	N	8080	7	8	9	1
67	725	E	-	803	N	7812	9	9	8	1
68	730	E	-	802	N	8186	7	9	6	1
69	735	E	-	803	N	7708	9	9	7	1
70	740	E	-	803	N	8128	7	7	10	1
71	745	E	-	805	N	7334	8	7	10	1
72	750	E	-	803	N	8556	9	8	9	1
73	755	E	-	806	N	8524	9	8	5	1
74	760	E	-	807	N	8520	8	7	5	1
75	765	E	-	808	N	7498	8	7	9	1
76	770	E	-	809	N	8028	8	8	4	1
77	775	E	-	809	N	8152	8	7	8	1
78	780	E	-	810	N	7758	7	7	7	1
79	785	E	-	811	N	7910	8	7	12	1
80	790	E	-	811	N	8010	8	8	7	1

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CPM

8500

N/A

Total U

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10

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pCi/g

Th(Nat)

1.5

1

BACKGROUND NOT SUBTRACTED

PAGE 4 OF 12

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*W. G. Rogers*

DATE: 7-28-99



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**CIMARRON FACILITY**  
**AFFECTED AREA 'G' - DRAINAGE CENTERLINE**  
**Surface Soil Samples**

DATE: 4/23/98

DATE: 7/20/00

LN #	GRID NUMBER					3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	0-6" Sample	
									Total-U	Th (Nat)
81	795	E	-	812	N	7538	8	8	6	1
82	800	E	-	812	N	6785	7	7	7	1
83	800	E	-	960	N	STANDING WATER	STANDING WATER	STANDING WATER	5	1
84	800	E	-	965	N	STANDING WATER	STANDING WATER	STANDING WATER	7	1
85	800	E	-	970	N	STANDING WATER	STANDING WATER	STANDING WATER	7	1
86	800	E	-	975	N	STANDING WATER	STANDING WATER	STANDING WATER	7	1
87	800	E	-	980	N	STANDING WATER	STANDING WATER	STANDING WATER	5	2
88	800	E	-	985	N	STANDING WATER	STANDING WATER	STANDING WATER	11	1
89	800	E	-	990	N	STANDING WATER	STANDING WATER	STANDING WATER	10	1
90	805	E	-	813	N	6768	7	7	9	1
91	805	E	-	945	N	6838	7	8	3	1
92	805	E	-	955	N	6224	8	8	4	1
93	805	E	-	960	N	STANDING WATER	STANDING WATER	STANDING WATER	8	1
94	805	E	-	965	N	STANDING WATER	STANDING WATER	STANDING WATER	3	1
95	805	E	-	970	N	STANDING WATER	STANDING WATER	STANDING WATER	7	1
96	805	E	-	975	N	STANDING WATER	STANDING WATER	STANDING WATER	7	1
97	805	E	-	980	N	STANDING WATER	STANDING WATER	STANDING WATER	5	1
98	805	E	-	985	N	STANDING WATER	STANDING WATER	STANDING WATER	9	1
99	805	E	-	990	N	STANDING WATER	STANDING WATER	STANDING WATER	8	1
100	807	E	-	950	N	6888	8	8	6	1

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RESULTS IN: BACKGROUND MDA

LUDLUM MICRO 'R' METER - MODEL 19 S/N 111299

 $\mu$ R/hr

9

2

LUDLUM 2221, UNSHIELDED 3" X 1/2" NaI DETECTOR S/N 97264

CPM

8500

N/A

Total U

4

10

CIMMARON SOIL COUNTER 4" X 4" X 16" NaI DETECTOR

pCi/g

Th(Nat)

1.5

1

BACKGROUND NOT SUBTRACTED

PAGE 5 OF 12

REVIEWED BY:

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**Surface Soil Samples**

DATE: 4/23/98

LN #	GRID NUMBER					3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	0-6" Sample	
									Total-U	Th (Nat)
101	809	E	-	940	N	6714	8	7	6	1
102	810	E	-	814	N	6008	6	7	3	1
103	810	E	-	935	N	7264	7	7	6	1
104	810	E	-	970	N	STANDING WATER	STANDING WATER	STANDING WATER	9	1
105	810	E	-	975	N	STANDING WATER	STANDING WATER	STANDING WATER	6	2
106	810	E	-	980	N	STANDING WATER	STANDING WATER	STANDING WATER	6	1
107	810	E	-	985	N	STANDING WATER	STANDING WATER	STANDING WATER	10	1
108	810	E	-	990	N	STANDING WATER	STANDING WATER	STANDING WATER	7	1
109	811	E	-	930	N	7634	8	7	10	1
110	812	E	-	920	N	7480	8	8	5	1
111	812	E	-	925	N	7264	8	9	6	1
112	815	E	-	814	N	6022	6	6	6	1
113	815	E	-	915	N	7472	7	7	6	1
114	815	E	-	975	N	STANDING WATER	STANDING WATER	STANDING WATER	5	1
115	815	E	-	980	N	STANDING WATER	STANDING WATER	STANDING WATER	9	1
116	815	E	-	985	N	STANDING WATER	STANDING WATER	STANDING WATER	11	1
117	816	E	-	910	N	7682	9	9	5	1
118	817	E	-	905	N	7450	8	8	4	1
119	818	E	-	900	N	7620	7	7	7	1
120	819	E	-	895	N	6800	8	8	6	1

## INSTRUMENTS:

RESULTS IN: BACKGROUND

MDA

LUDLUM MICRO 'R' METER - MODEL 19 S/N 111299

 $\mu$ R/hr

9

2

LUDLUM 2221, UNSHIELDED 3" X 1/2" NaI DETECTOR S/N 97264

CPM

8500

N/A

CIMMARON SOIL COUNTER 4" X 4" X 16" NaI DETECTOR

pCi/g

Total U	4	10
Th(Nat)	1.5	1

BACKGROUND NOT SUBTRACTED

PAGE 6 OF 12

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**AFFECTED AREA 'G' - DRAINAGE CENTERLINE**  
**Surface Soil Samples**

DATE: 4/23/98

LN #	GRID NUMBER					3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	0-6" Sample	
									Total-U	Th (Nat)
121	820	E	-	680	N	3220*	9	10	4.7	0.7
122	820	E	-	815	N	6252	7	6	7	1
123	820	E	-	975	N	7840	8	8	4	1
124	820	E	-	980	N	9602	9	8	4	2
125	821	E	-	675	N	2840*	9	10	3.6	0.8
126	821	E	-	685	N	2790*	10	10	3	0.7
127	821	E	-	890	N	7226	7	8	4	1
128	822	E	-	670	N	3240*	9	9	4	0.7
129	822	E	-	885	N	6422	7	8	2	1
130	823	E	-	880	N	6364	8	7	5	1
131	825	E	-	690	N	2410*	8	9	6.2	0.6
132	825	E	-	815	N	5978	7	6	4	1
133	825	E	-	875	N	7294	8	8	7	1
134	825	E	-	975	N	8038	9	8	7	1
135	826	E	-	662	N	2930*	7	8	6.5	0.7
136	827	E	-	865	N	6944	7	7	4	1
137	827	E	-	870	N	6694	8	8	6	1
138	828	E	-	860	N	6654	7	7	8	1
139	830	E	-	687	N	3110*	9	9	3.8	0.9
140	830	E	-	817	N	6666	6	6	7	1

## INSTRUMENTS:

RESULTS IN: BACKGROUND

MDA

LUDLUM MICRO 'R' METER - MODEL 19 S/N 111299

 $\mu$ R/hr

9

2

\*LUDLUM 2221, SHIELDED 3" X 1/2" NaI DETECTOR S/N 48395

CPM

2560

N/A

LUDLUM 2221, UNSHIELDED 3" X 1/2" NaI DETECTOR S/N 97264

CPM

8500

N/A

CIMMARON SOIL COUNTER 4" X 4" X 16" NaI DETECTOR

pCi/g

Total U

4

10

Th(Nat)

1.5

1

BACKGROUND NOT SUBTRACTED

PAGE 7 OF 12

REVIEWED BY:

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**CIMARRON FACILITY**  
**AFFECTED AREA 'G' - DRAINAGE CENTERLINE**  
**Surface Soil Samples**

DATE: 4/23/98

LN #	GRID NUMBER					3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	0-6" Sample	
									Total-U	Th (Nat)
141	830	E	-	855	N	6496	7	8	6	1
142	830	E	-	974	N	8734	9	8	5	1
143	831	E	-	850	N	6196	7	7	9	1
144	833	E	-	845	N	STANDING WATER	STANDING WATER	STANDING WATER	7	1
145	834	E	-	830	N	STANDING WATER	STANDING WATER	STANDING WATER	8	1
146	834	E	-	840	N	STANDING WATER	STANDING WATER	STANDING WATER	4	1
147	835	E	-	688	N	2830*	8	9	3.5	0.7
148	835	E	-	835	N	STANDING WATER	STANDING WATER	STANDING WATER	5	1
149	835	E	-	973	N	9160	9	9	10	1
150	836	E	-	820	N	STANDING WATER	STANDING WATER	STANDING WATER	8	1
151	836	E	-	825	N	5680	6	6	5	1
152	837	E	-	815	N	STANDING WATER	STANDING WATER	STANDING WATER	5	1
153	838	E	-	810	N	STANDING WATER	STANDING WATER	STANDING WATER	10	1
154	839	E	-	805	N	STANDING WATER	STANDING WATER	STANDING WATER	4	1
155	840	E	-	687	N	2700*	8	9	2.7	0.6
156	840	E	-	971	N	9054	10	9	7	1
157	842	E	-	800	N	STANDING WATER	STANDING WATER	STANDING WATER	11	1
158	845	E	-	687	N	3360*	9	10	4.6	0.9
159	845	E	-	971	N	9926	10	10	4	2
160	848	E	-	795	N	STANDING WATER	STANDING WATER	STANDING WATER	5	1

## INSTRUMENTS:

RESULTS IN: BACKGROUND

MDA

LUDLUM MICRO 'R' METER - MODEL 19 S/N 111299

μR/hr

9

2

\*LUDLUM 2221, SHIELDED 3" X 1/2" NaI DETECTOR S/N 48395

CPM

2560

N/A

LUDLUM 2221, UNSHIELDED 3" X 1/2" NaI DETECTOR S/N 97264

CPM

8500

N/A

CIMMARON SOIL COUNTER 4" X 4" X 16" NaI DETECTOR

pCi/g

Total U

4

10

Th(Nat)

1.5

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LN #	GRID NUMBER					3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	0-6" Sample	
									Total-U	Th (Nat)
161	850	E	-	687	N	3080*	9	9	4.9	0.8
162	850	E	-	795	N	STANDING WATER	STANDING WATER	STANDING WATER	4	1
163	850	E	-	969	N	8814	10	10	8	1
164	855	E	-	688	N	3230*	9	10	4.7	0.9
165	855	E	-	790	N	STANDING WATER	STANDING WATER	STANDING WATER	5	1
166	855	E	-	969	N	8858	10	10	11	1
167	857	E	-	785	N	STANDING WATER	STANDING WATER	STANDING WATER	7	1
168	860	E	-	689	N	3390*	10	10	5.9	0.7
169	860	E	-	780	N	STANDING WATER	STANDING WATER	STANDING WATER	8	1
170	860	E	-	965	N	8664	10	9	7	1
171	863	E	-	775	N	STANDING WATER	STANDING WATER	STANDING WATER	6	1
172	865	E	-	770	N	STANDING WATER	STANDING WATER	STANDING WATER	7	1
173	865	E	-	963	N	9206	9	9	6	1
174	867	E	-	690	N	STANDING WATER	STANDING WATER	STANDING WATER	5	1
175	867	E	-	765	N	STANDING WATER	STANDING WATER	STANDING WATER	5	1
176	869	E	-	685	N	STANDING WATER	STANDING WATER	STANDING WATER	5	1
177	870	E	-	680	N	STANDING WATER	STANDING WATER	STANDING WATER	5	1
178	870	E	-	962	N	9234	9	8	5	1
179	871	E	-	760	N	STANDING WATER	STANDING WATER	STANDING WATER	6	1
180	872	E	-	690	N	STANDING WATER	STANDING WATER	STANDING WATER	4	1

## INSTRUMENTS:

RESULTS IN: BACKGROUND MDA

LUDLUM MICRO 'R' METER - MODEL 19 S/N 111299

μR/hr

9

2

\*LUDLUM 2221, SHIELDED 3" X 1/2" NaI DETECTOR S/N 48395

CPM

2560

N/A

LUDLUM 2221, UNSHIELDED 3" X 1/2" NaI DETECTOR S/N 97264

CPM

8500

N/A

CIMMARON SOIL COUNTER 4" X 4" X 16" NaI DETECTOR

pCi/g

Total U	4	10
Th(Nat)	1.5	1

BACKGROUND NOT SUBTRACTED

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**Surface Soil Samples**

DATE: 4/23/98

LN #	GRID NUMBER					3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	0-6" Sample	
									Total-U	Th (Nat)
181	873	E	-	755	N	STANDING WATER	STANDING WATER	STANDING WATER	8	1
182	875	E	-	962	N	9122	10	10	6	1
183	877	E	-	691	N	STANDING WATER	STANDING WATER	STANDING WATER	9	1
184	877	E	-	750	N	STANDING WATER	STANDING WATER	STANDING WATER	7	1
185	880	E	-	605	N	5198	5	5	6	1
186	880	E	-	963	N	9328	10	10	8	1
187	881	E	-	745	N	STANDING WATER	STANDING WATER	STANDING WATER	5	1
188	882	E	-	670	N	4780	5	6	10	1
189	882	E	-	693	N	STANDING WATER	STANDING WATER	STANDING WATER	6	1
190	883	E	-	610	N	5130	6	6	8	1
191	883	E	-	740	N	STANDING WATER	STANDING WATER	STANDING WATER	10	1
192	884	E	-	665	N	5478	6	6	6	1
193	885	E	-	696	N	STANDING WATER	STANDING WATER	STANDING WATER	4	1
194	885	E	-	735	N	STANDING WATER	STANDING WATER	STANDING WATER	5	1
195	885	E	-	964	N	9116	10	10	6	1
196	886	E	-	660	N	5032	7	7	7	1
197	886	E	-	730	N	STANDING WATER	STANDING WATER	STANDING WATER	4	1
198	888	E	-	615	N	6132	8	7	4	1
199	888	E	-	655	N	5712	7	7	5	1
200	890	E	-	700	N	STANDING WATER	STANDING WATER	STANDING WATER	6	1

## INSTRUMENTS:

RESULTS IN: BACKGROUND MDA

LUDLUM MICRO 'R' METER - MODEL 19 S/N 111299

μR/hr 9 2

LUDLUM 2221, UNSHIELDED 3" X 1/2" NaI DETECTOR S/N 97264

CPM 8500 N/A

CIMARRON SOIL COUNTER 4" X 4" X 16" NaI DETECTOR

Total U	4	10
Th(Nat)	1.5	1

BACKGROUND NOT SUBTRACTED

PAGE 10 OF 12

REVIEWED BY:

*W.A. Rogers*

DATE: 7-28-99



**CIMARRON FACILITY**  
**AFFECTED AREA 'G' - DRAINAGE CENTERLINE**  
**Surface Soil Samples**

DATE: 4/23/98

LN #	GRID NUMBER					3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	0-6" Sample	
									Total-U	Th (Nat)
201	890	E	-	966	N	9032	9	8	7	1
202	892	E	-	650	N	7386	10	7	5	2
203	893	E	-	618	N	6518	8	8	7	1
204	893	E	-	706	N	STANDING WATER	STANDING WATER	STANDING WATER	7	1
205	895	E	-	621	N	6812	8	7	8	1
206	895	E	-	625	N	8506	9	9	7	1
207	895	E	-	712	N	STANDING WATER	STANDING WATER	STANDING WATER	6	1
208	895	E	-	969	N	9914	10	9	8	1
209	897	E	-	645	N	9214	10	9	6	2
210	898	E	-	630	N	7982	8	8	7	1
211	898	E	-	635	N	5302	7	7	4	1
212	898	E	-	640	N	8140	9	9	6	2
213	898	E	-	718	N	STANDING WATER	STANDING WATER	STANDING WATER	7	1
214	900	E	-	725	N	STANDING WATER	STANDING WATER	STANDING WATER	7	1
215	900	E	-	974	N	9178	10	9	8	1
216	905	E	-	980	N	8808	10	10	9	1
217	906	E	-	985	N	9420	10	8	6	1
218	908	E	-	990	N	5740	5	7	9	1
219	909	E	-	995	N	8772	9	9	6	1
220	909	E	-	1020	N	9110	10	10	5	1

## INSTRUMENTS:

RESULTS IN: BACKGROUND

MDA

LUDLUM MICRO 'R' METER - MODEL 19 S/N 111299

μR/hr

9

2

LUDLUM 2221, UNSHIELDED 3" X 1/2" NaI DETECTOR S/N 97264

CPM

8500

N/A

CIMMARON SOIL COUNTER 4" X 4" X 16" NaI DETECTOR

pCi/g

Total U	4	10
Th(Nat)	1.5	1

BACKGROUND NOT SUBTRACTED

PAGE 11 OF 12

REVIEWED BY:

*W. G. Rogers*

DATE: 7-28-99



**CIMARRON FACILITY**  
**AFFECTED AREA 'G' - DRAINAGE CENTERLINE**  
**Surface Soil Samples**

DATE: 4/23/98

LN #	GRID NUMBER					3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	0-6" Sample	
									Total-U	Th (Nat)
221	909	E	-	1025	N	9902	11	9	4	1
222	910	E	-	1000	N	9600	11	9	8	2
223	910	E	-	1005	N	9214	9	10	4	1
224	910	E	-	1010	N	9624	10	11	7	2
225	910	E	-	1015	N	9602	10	10	8	2
226		E	-		N					
227		E	-		N					
228		E	-		N					
229		E	-		N					
230		E	-		N					
231		E	-		N					
232		E	-		N					
233		E	-		N					
234		E	-		N					
235		E	-		N					
236		E	-		N					
237		E	-		N					
238		E	-		N					
239		E	-		N					
240		E	-		N					

## INSTRUMENTS:

RESULTS IN: BACKGROUND MDA

LUDLUM MICRO 'R' METER - MODEL 19 S/N 111299

μR/hr

9

2

LUDLUM 2221, UNSHIELDED 3" X 1/2" NaI DETECTOR S/N 97264

CPM

8500

N/A

CIMMARON SOIL COUNTER 4" X 4" X 16" NaI DETECTOR

pCi/g

Total U	4	10
Th(Nat)	1.5	1

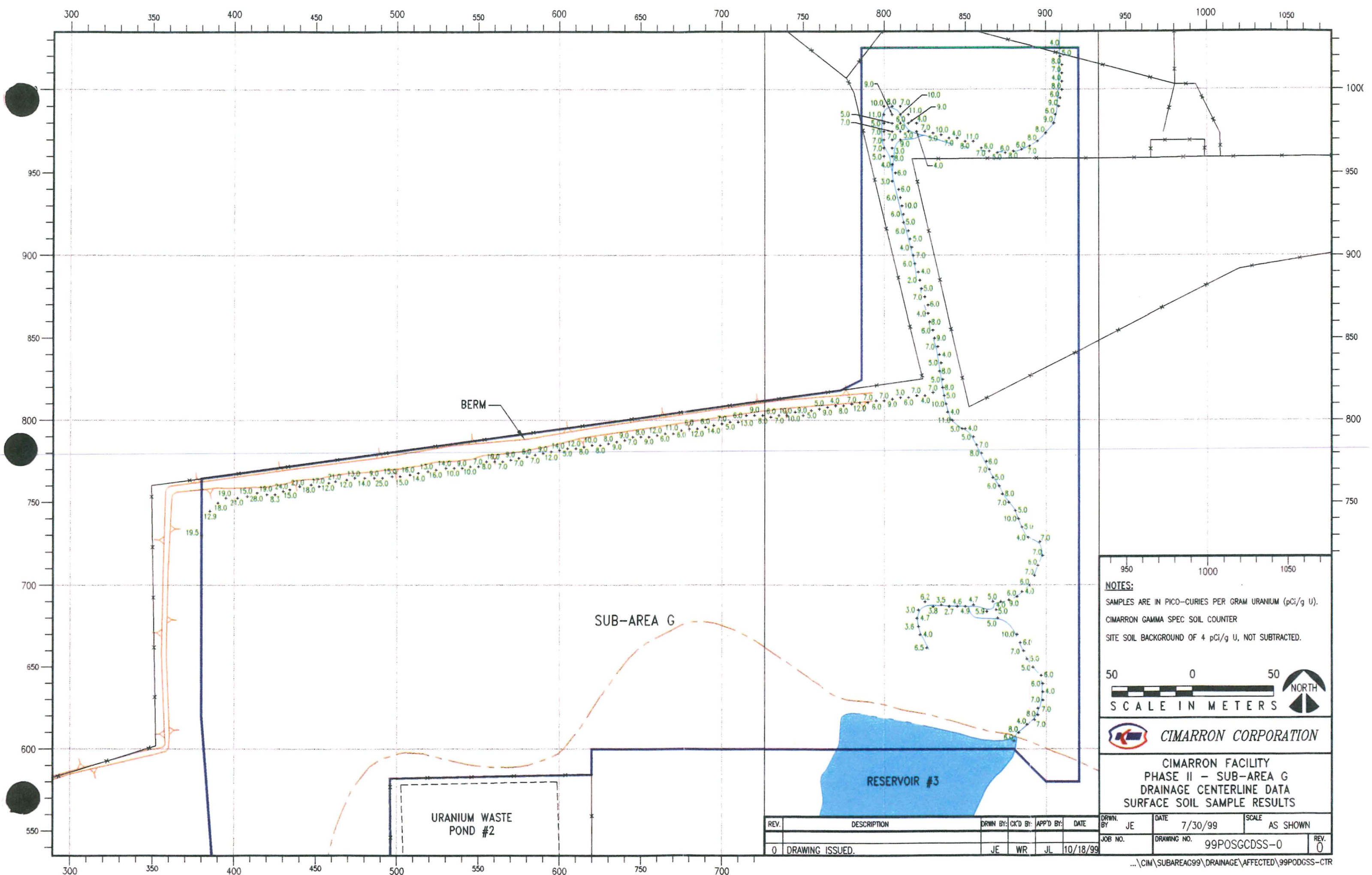
BACKGROUND NOT SUBTRACTED

PAGE 12 OF 12

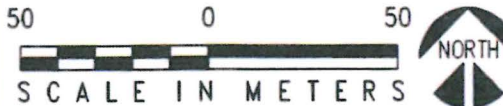
REVIEWED BY:

*W.A. Rogers*

DATE: 7-28-99



**NOTES:**  
SAMPLES ARE IN PICO-CURIES PER GRAM URANIUM (pCi/g U).  
CIMARRON GAMMA SPEC SOIL COUNTER  
SITE SOIL BACKGROUND OF 4 pCi/g U, NOT SUBTRACTED.

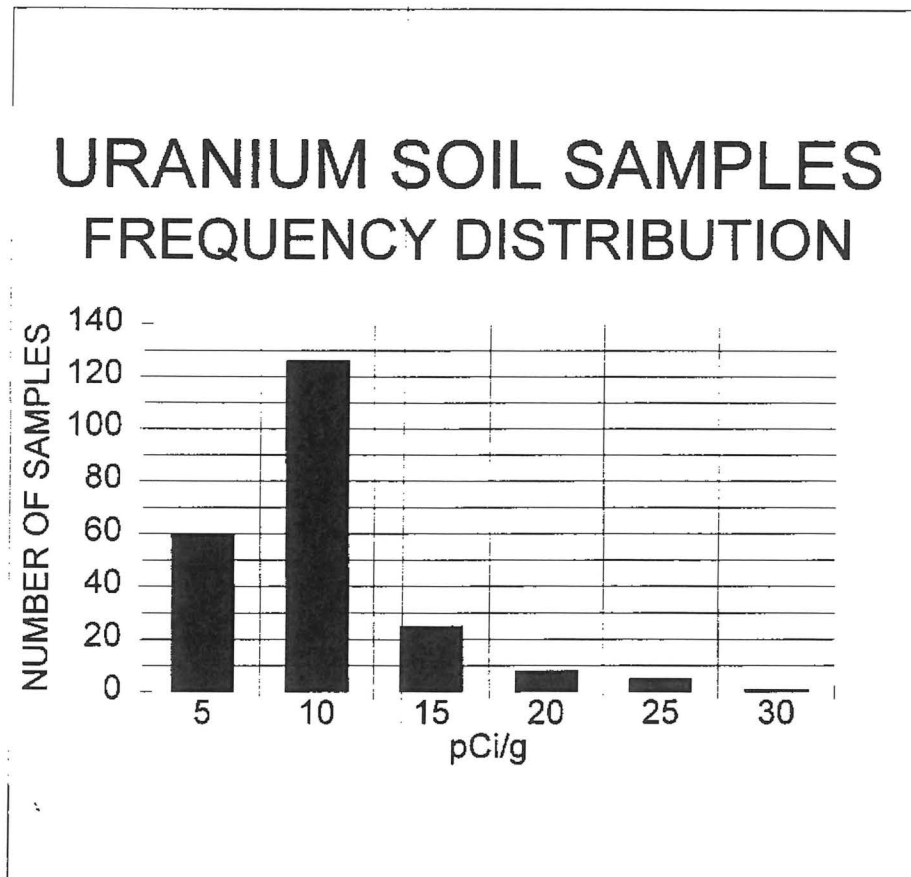


CIMARRON FACILITY  
PHASE II - SUB-AREA G  
DRAINAGE CENTERLINE DATA  
SURFACE SOIL SAMPLE RESULTS

REV.	DESCRIPTION	DRWN BY:	CK'D BY:	APP'D BY:	DATE	DRWN BY:	DATE	SCALE
0	DRAWING ISSUED.	JE	WR	JL	10/18/99	JE	7/30/99	AS SHOWN
						JOB NO.	DRAWING NO.	REV.
							99POSGCDSS-0	0

**PHASE II, SUB-AREA "G" - SURFACE  
AFFECTED DRAINAGE CENTERLINE  
CIMARRON SOIL COUNTER  
TOTAL URANIUM SOIL SAMPLE RESULTS  
SITE BACKGROUND OF 4 pCi/g NOT SUBTRACTED**

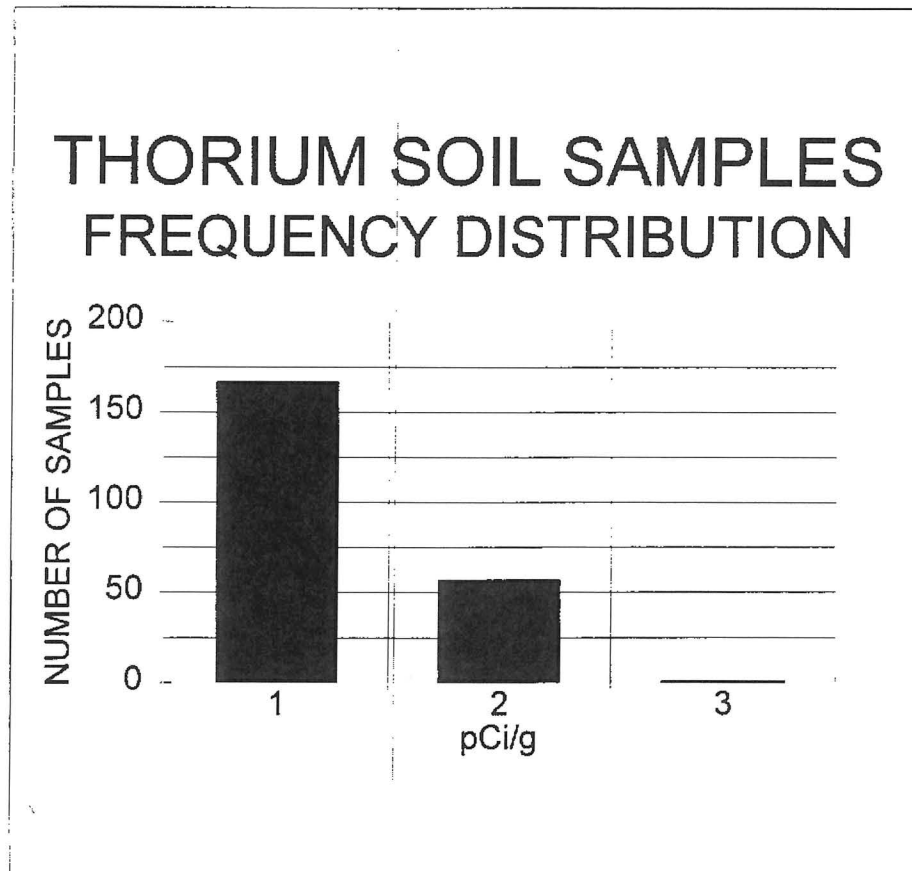
**JULY 26,1999**



NUMBER OF SAMPLES	225
AVERAGE SAMPLE	8
MINIMUM SAMPLE	2
MAXIMUM SAMPLE	28
STANDARD DEVIATION	4.2

**PHASE II, SUB-AREA "G" - SURFACE  
AFFECTED DRAINAGE CENTERLINE  
CIMARRON SOIL COUNTER  
TOTAL THORIUM SOIL SAMPLE RESULTS  
SITE BACKGROUND OF 1.5 pCi/g NOT SUBTRACTED**

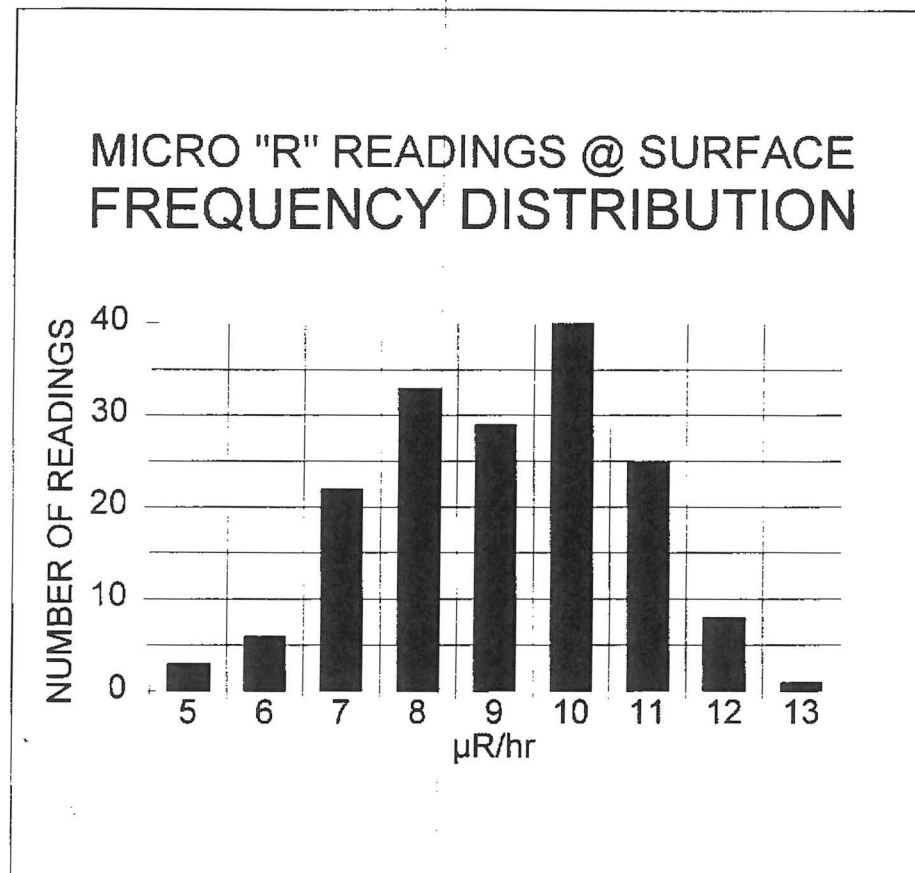
**JULY 26, 1999**



NUMBER OF SAMPLES	225
AVERAGE SAMPLE	1.2
MINIMUM SAMPLE	0.6
MAXIMUM SAMPLE	3
STANDARD DEVIATION	0.5

**PHASE II, SUB-AREA "G" - SURFACE  
AFFECTED DRAINAGE CENTERLINE  
MICRO-R METER READINGS AT SURFACE  
LUDLUM MODEL 19, S/N 111299  
RESULTS IN  $\mu\text{R/hr}$**

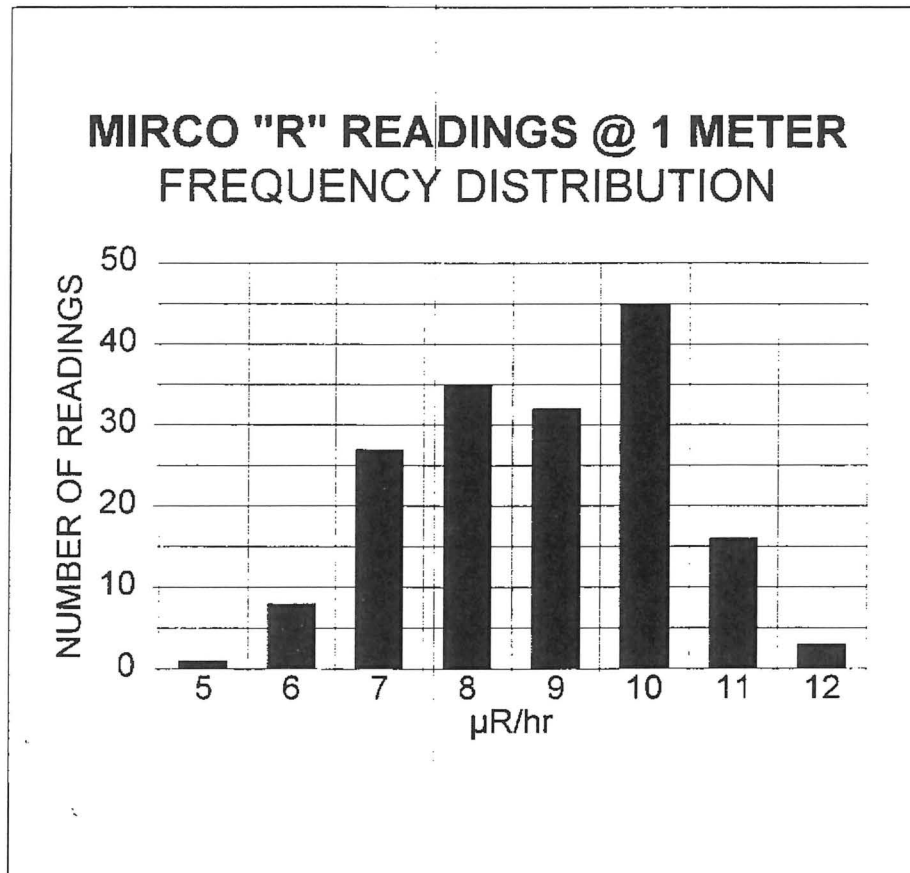
**JULY 26, 1999**



NUMBER OF SAMPLES	167
AVERAGE SAMPLE	9
MINIMUM SAMPLE	5
MAXIMUM SAMPLE	13
STANDARD DEVIATION	2

**PHASE II, SUB-AREA "G" - SURFACE  
AFFECTED DRAINAGE CENTERLINE  
MICRO-R METER READINGS AT 1 METER ABOVE SURFACE  
LUDLUM MODEL 19, S/N 111299  
RESULTS IN  $\mu\text{R/hr}$**

**JULY 26, 1999**

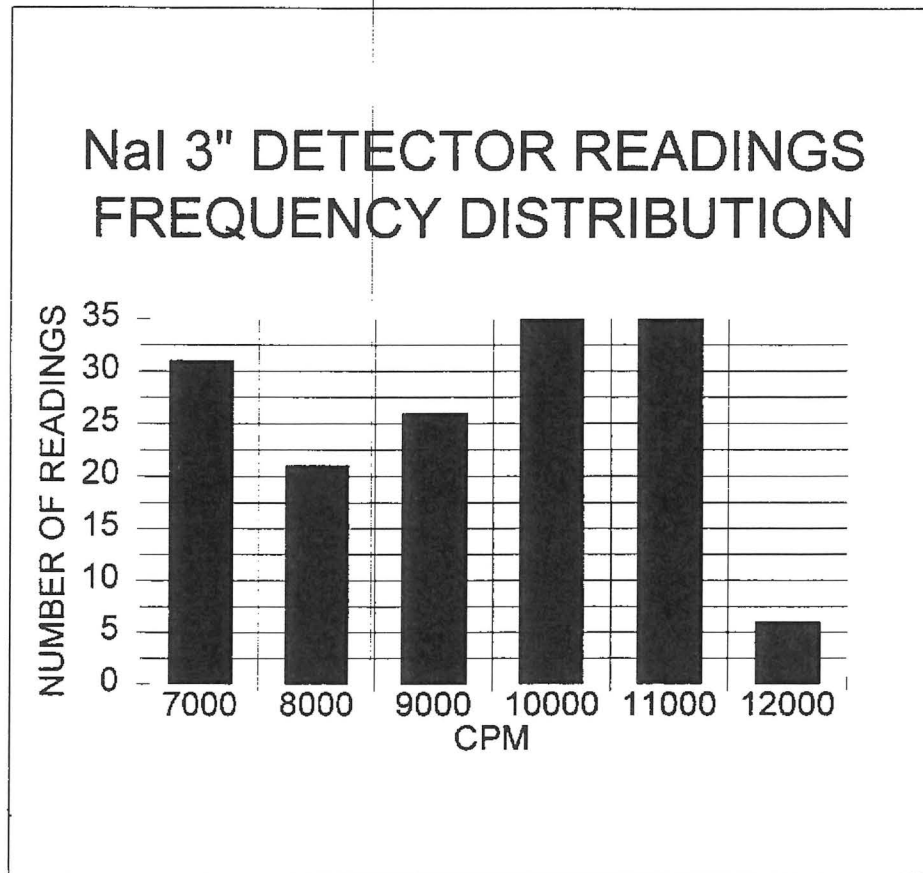


NUMBER OF SAMPLES	167
AVERAGE SAMPLE	9
MINIMUM SAMPLE	5
MAXIMUM SAMPLE	12
STANDARD DEVIATION	1



**PHASE II, SUB-AREA "G" - SURFACE  
AFFECTED DRAINAGE CENTERLINE  
GROSS GAMMA READINGS IN CPM  
LUDLUM MODEL 2221, UNSHIELDED, S/N 97264  
BACKGROUND AVERAGES: 8000**

**JULY 26, 1999**



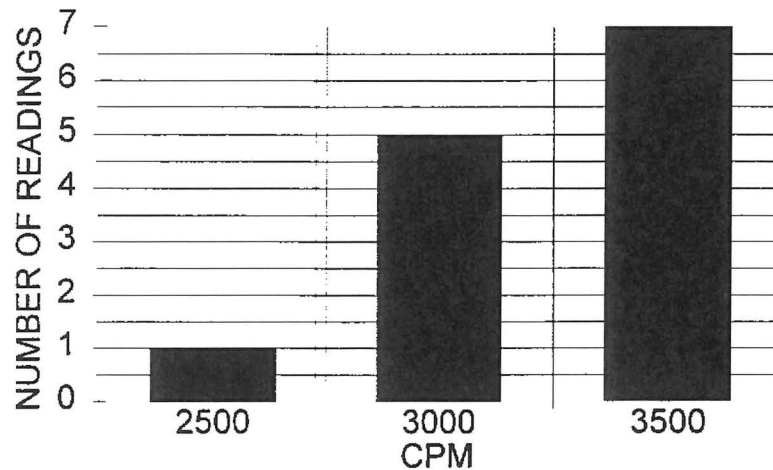
<b>NUMBER OF SAMPLES</b>	<b>154</b>
<b>AVERAGE SAMPLE</b>	<b>8711</b>
<b>MINIMUM SAMPLE</b>	<b>4780</b>
<b>MAXIMUM SAMPLE</b>	<b>11332</b>
<b>STANDARD DEVIATION</b>	<b>1684</b>



**PHASE II, SUB-AREA "G" - SURFACE  
AFFECTED DRAINAGE CENTERLINE  
GROSS GAMMA READINGS IN CPM  
LUDLUM MODEL 2221, SHIELDED, S/N 48396  
BACKGROUND AVERAGES: 2560**

**JULY 28, 1999**

**NaI 3" DETECTION READINGS  
FRQUENCY DISTRIBUTION**



NUMBER OF SAMPLES	13
AVERAGE SAMPLE	3010
MINIMUM SAMPLE	2410
MAXIMUM SAMPLE	3390
STANDARD DEVIATION	277

**CIMARRON CORPORATION - CIMARRON FACILITY**  
**TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE**  
**AFFECTED AREA "G" DRAINAGE CENTERLINE - SURFACE**

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) <sup>2</sup>
1	2	-6.0	36.5
2	2.7	-5.3	28.6
3	3	-5.0	25.4
4	3	-5.0	25.4
5	3	-5.0	25.4
6	3	-5.0	25.4
7	3.5	-4.5	20.6
8	3.6	-4.4	19.7
9	3.8	-4.2	18.0
10	4	-4.0	16.4
11	4	-4.0	16.4
12	4	-4.0	16.4
13	4	-4.0	16.4
14	4	-4.0	16.4
15	4	-4.0	16.4
16	4	-4.0	16.4
17	4	-4.0	16.4
18	4	-4.0	16.4
19	4	-4.0	16.4
20	4	-4.0	16.4
21	4	-4.0	16.4
22	4	-4.0	16.4
23	4	-4.0	16.4
24	4	-4.0	16.4
25	4	-4.0	16.4
26	4	-4.0	16.4
27	4	-4.0	16.4
28	4	-4.0	16.4
29	4	-4.0	16.4
30	4.6	-3.4	11.9
31	4.7	-3.3	11.2
32	4.7	-3.3	11.2
33	4.9	-3.1	9.9
34	5	-3.0	9.3
35	5	-3.0	9.3
36	5	-3.0	9.3
37	5	-3.0	9.3
38	5	-3.0	9.3
39	5	-3.0	9.3
40	5	-3.0	9.3
41	5	-3.0	9.3
42	5	-3.0	9.3
43	5	-3.0	9.3
44	5	-3.0	9.3
45	5	-3.0	9.3
46	5	-3.0	9.3
47	5	-3.0	9.3
48	5	-3.0	9.3
49	5	-3.0	9.3
50	5	-3.0	9.3
	294.6		245.2
	368.0		34.9
	497.2		267.7
	438.5		2640.5
	0.0		0.0
	0.0		0.0
	0.0		0.0
	1809.8		3942.1
	Sum(n)		Sum(n-N) <sup>2</sup>

No. of Samples (x) : **225**

COUNT TIME: 5 MINUTES

Sample Mean (N) = Sum(n) ÷ (x)

Sample Mean (N) : **8.04**

Standard Deviation (Sd) = SQRT [(n-N)<sup>2</sup> ÷ (x - 1)]

Standard Deviation: **4.20**

2 Std Deviations: **8.39**

Degree of Freedom(df) = (x) - 1 Data listed on Table B-1

(df) = **1.655**

Area's Average Level (A<sub>μ</sub>) = (N) + (df) x [(Sd)/SQRT(x)]

(A<sub>μ</sub>) = **8.51**

GUIDELINE VALUE: **30**

Acceptable Level: **34.0**

pCi/gU TOTAL U

pCi/gU TOTAL U

pCi/gU TOTAL U

TABLE B - 1

Factors for Comparison of Survey Data with Guidelines					
(df)	95%	97.5%	(df)	95%	97.5%
1	6.314	12.706	19	1.729	2.093
2	2.92	4.303	20	1.725	2.086
3	2.353	3.182	21	1.721	2.08
4	2.132	2.776	22	1.717	2.074
5	2.015	2.571	23	1.714	2.069
6	1.943	2.447	24	1.711	2.064
7	1.895	2.365	25	1.708	2.06
8	1.86	2.306	26	1.706	2.056
9	1.833	2.262	27	1.703	2.052
10	1.812	2.228	28	1.701	2.048
11	1.796	2.201	29	1.699	2.045
12	1.782	2.179	30	1.697	2.042
13	1.771	2.16	40	1.684	2.021
14	1.761	2.145	60	1.671	2
15	1.753	2.131	120	1.658	1.98
16	1.746	2.12	400	1.649	1.966
17	1.74	2.11	Infinite	1.645	1.96
18	1.734	2.101			

For values of Degrees of Freedom not listed:

Interpolate between the listed values.

(df) high value(Z) **400** is (B) **1.649** 95%

(df) low value(Y) **120** is (A) **1.658** 95%

Desired value(df) (X) **224** is calculated as follow:

EXP[(Ln(B)-Ln(A)) ÷ (Z-Y)] (X-Y) + Ln(A)]

The (df) value for (X) **224** **1.655** 95%

PERFORMED BY: Lusane K. Poir

DATE: 7-28-99

REVIEWED BY: W.A. Roze

DATE: 7-28-99

**CIMARRON CORPORATION - CIMARRON FACILITY**  
**TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDEN**  
**AFFECTED AREA "G" DRAINAGE CENTERLINE - SURFACE**

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) <sup>2</sup>
51	5	-3.04	9.26
52	5	-3.04	9.26
53	5	-3.04	9.26
54	5	-3.04	9.26
55	5	-3.04	9.26
56	5	-3.04	9.26
57	5	-3.04	9.26
58	5	-3.04	9.26
59	5	-3.04	9.26
60	5	-3.04	9.26
61	5.9	-2.14	4.59
62	6	-2.04	4.18
63	6	-2.04	4.18
64	6	-2.04	4.18
65	6	-2.04	4.18
66	6	-2.04	4.18
67	6	-2.04	4.18
68	6	-2.04	4.18
69	6	-2.04	4.18
70	6	-2.04	4.18
71	6	-2.04	4.18
72	6	-2.04	4.18
73	6	-2.04	4.18
74	6	-2.04	4.18
75	6	-2.04	4.18
76	6	-2.04	4.18
77	6	-2.04	4.18
78	6	-2.04	4.18
79	6	-2.04	4.18
80	6	-2.04	4.18
81	6	-2.04	4.18
82	6	-2.04	4.18
83	6	-2.04	4.18
84	6	-2.04	4.18
85	6	-2.04	4.18
86	6	-2.04	4.18
87	6	-2.04	4.18
88	6	-2.04	4.18
89	6	-2.04	4.18
90	6	-2.04	4.18
91	6	-2.04	4.18
92	6	-2.04	4.18
93	6	-2.04	4.18
94	6	-2.04	4.18
95	6.2	-1.84	3.40
96	6.5	-1.54	2.38
97	7	-1.04	1.09
98	7	-1.04	1.09
99	7	-1.04	1.09
100	7	-1.04	1.09
	294.6		245.2
	Sum(n)		Sum(n-N) <sup>2</sup>

n = pCi/g TOTAL

Number	n	(n-N)	(n-N) <sup>2</sup>
101	7	-1.04	1.09
102	7	-1.04	1.09
103	7	-1.04	1.09
104	7	-1.04	1.09
105	7	-1.04	1.09
106	7	-1.04	1.09
107	7	-1.04	1.09
108	7	-1.04	1.09
109	7	-1.04	1.09
110	7	-1.04	1.09
111	7	-1.04	1.09
112	7	-1.04	1.09
113	7	-1.04	1.09
114	7	-1.04	1.09
115	7	-1.04	1.09
116	7	-1.04	1.09
117	7	-1.04	1.09
118	7	-1.04	1.09
119	7	-1.04	1.09
120	7	-1.04	1.09
121	7	-1.04	1.09
122	7	-1.04	1.09
123	7	-1.04	1.09
124	7	-1.04	1.09
125	7	-1.04	1.09
126	7	-1.04	1.09
127	7	-1.04	1.09
128	7	-1.04	1.09
129	7	-1.04	1.09
130	7	-1.04	1.09
131	7	-1.04	1.09
132	7	-1.04	1.09
133	8	-0.04	0.00
134	8	-0.04	0.00
135	8	-0.04	0.00
136	8	-0.04	0.00
137	8	-0.04	0.00
138	8	-0.04	0.00
139	8	-0.04	0.00
140	8	-0.04	0.00
141	8	-0.04	0.00
142	8	-0.04	0.00
143	8	-0.04	0.00
144	8	-0.04	0.00
145	8	-0.04	0.00
146	8	-0.04	0.00
147	8	-0.04	0.00
148	8	-0.04	0.00
149	8	-0.04	0.00
150	8	-0.04	0.00
	368.0		34.9
	Sum(n)		Sum(n-N) <sup>2</sup>

**CIMARRON CORPORATION - CIMARRON FACILITY**  
**TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDEN**  
**AFFECTED AREA "G" DRAINAGE CENTERLINE - SURFACE**

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) <sup>2</sup>
151	8	-0.04	0.00
152	8	-0.04	0.00
153	8	-0.04	0.00
154	8	-0.04	0.00
155	8.3	0.26	0.07
156	9	0.96	0.91
157	9	0.96	0.91
158	9	0.96	0.91
159	9	0.96	0.91
160	9	0.96	0.91
161	9	0.96	0.91
162	9	0.96	0.91
163	9	0.96	0.91
164	9	0.96	0.91
165	9	0.96	0.91
166	9	0.96	0.91
167	9	0.96	0.91
168	9	0.96	0.91
169	9	0.96	0.91
170	9	0.96	0.91
171	9	0.96	0.91
172	9	0.96	0.91
173	9	0.96	0.91
174	10	1.96	3.83
175	10	1.96	3.83
176	10	1.96	3.83
177	10	1.96	3.83
178	10	1.96	3.83
179	10	1.96	3.83
180	10	1.96	3.83
181	10	1.96	3.83
182	10	1.96	3.83
183	10	1.96	3.83
184	10	1.96	3.83
185	10	1.96	3.83
186	10	1.96	3.83
187	11	2.96	8.74
188	11	2.96	8.74
189	11	2.96	8.74
190	11	2.96	8.74
191	11	2.96	8.74
192	12	3.96	15.65
193	12	3.96	15.65
194	12	3.96	15.65
195	12	3.96	15.65
196	12	3.96	15.65
197	12	3.96	15.65
198	12	3.96	15.65
199	12.9	4.86	23.59
200	13	4.96	24.57
	497.2		267.7
	Sum(n)		Sum(n-N) <sup>2</sup>

n = pCi/g TOTAL

Number	n	(n-N)	(n-N) <sup>2</sup>
201	13	4.96	24.57
202	13	4.96	24.57
203	14	5.96	35.48
204	14	5.96	35.48
205	14	5.96	35.48
206	14	5.96	35.48
207	14	5.96	35.48
208	15	6.96	48.39
209	15	6.96	48.39
210	15	6.96	48.39
211	15	6.96	48.39
212	16	7.96	63.31
213	16	7.96	63.31
214	17	8.96	80.22
215	18	9.96	99.13
216	18	9.96	99.13
217	19	10.96	120.04
218	19	10.96	120.04
219	19.5	11.46	131.25
220	21	12.96	167.87
221	21	12.96	167.87
222	21	12.96	167.87
223	24	15.96	254.61
224	25	16.96	287.52
225	28	19.96	398.26
226		0.00	0.00
227		0.00	0.00
228		0.00	0.00
229		0.00	0.00
230		0.00	0.00
231		0.00	0.00
232		0.00	0.00
233		0.00	0.00
234		0.00	0.00
235		0.00	0.00
236		0.00	0.00
237		0.00	0.00
238		0.00	0.00
239		0.00	0.00
240		0.00	0.00
241		0.00	0.00
242		0.00	0.00
243		0.00	0.00
244		0.00	0.00
245		0.00	0.00
246		0.00	0.00
247		0.00	0.00
248		0.00	0.00
249		0.00	0.00
250		0.00	0.00
	438.5		2640.5
	Sum(n)		Sum(n-N) <sup>2</sup>

**CIMARRON CORPORATION - CIMARRON FACILITY**  
**TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE**  
**AFFECTED AREA "G" DRAINAGE CENTERLINE - SURFACE**

n = pCi/g Th (NAT)

Number	n	(n-N)	(n-N) <sup>2</sup>
1	0.6	-0.6	0.4
2	0.6	-0.6	0.4
3	0.7	-0.5	0.3
4	0.7	-0.5	0.3
5	0.7	-0.5	0.3
6	0.7	-0.5	0.3
7	0.7	-0.5	0.3
8	0.7	-0.5	0.3
9	0.8	-0.4	0.2
10	0.8	-0.4	0.2
11	0.9	-0.3	0.1
12	0.9	-0.3	0.1
13	0.9	-0.3	0.1
14	0.9	-0.3	0.1
15	1	-0.2	0.1
16	1	-0.2	0.1
17	1	-0.2	0.1
18	1	-0.2	0.1
19	1	-0.2	0.1
20	1	-0.2	0.1
21	1	-0.2	0.1
22	1	-0.2	0.1
23	1	-0.2	0.1
24	1	-0.2	0.1
25	1	-0.2	0.1
26	1	-0.2	0.1
27	1	-0.2	0.1
28	1	-0.2	0.1
29	1	-0.2	0.1
30	1	-0.2	0.1
31	1	-0.2	0.1
32	1	-0.2	0.1
33	1	-0.2	0.1
34	1	-0.2	0.1
35	1	-0.2	0.1
36	1	-0.2	0.1
37	1	-0.2	0.1
38	1	-0.2	0.1
39	1	-0.2	0.1
40	1	-0.2	0.1
41	1	-0.2	0.1
42	1	-0.2	0.1
43	1	-0.2	0.1
44	1	-0.2	0.1
45	1	-0.2	0.1
46	1	-0.2	0.1
47	1	-0.2	0.1
48	1	-0.2	0.1
49	1	-0.2	0.1
50	1	-0.2	0.1
	50.0		3.0
	50.0		3.0
	82.1		19.2
	51.0		16.8
	0.0		0.0
	0.0		0.0
	0.0		0.0
	279.7		47.5
	Sum(n)		Sum(n-N) <sup>2</sup>

No. of Samples (x) : **225**

COUNT TIME: 5 MINUTES

Sample Mean (N) = Sum(n) + (x)

Sample Mean (N) : **1.24**

Standard Deviation (Sd) = SQRT [(n-N)<sup>2</sup> + (x - 1)]

Standard Deviation: **0.46**

2 Std Deviations: **0.92**

Degree of Freedom(df) = (x) - 1 Data listed on Table B-1

(df) = **1.655**

Area's Average Level (Ap) = (N) + (df) x [(Sd)/SQRT(x)]

(Ap) = **1.29** pCi/gTh (NAT)

GUIDELINE VALUE: **10** pCi/gTh (NAT)

Acceptable Level: **4.0** pCi/gTh (NAT)

TABLE B - 1

Factors for Comparison of Survey Data with Guidelines					
(df)	95%	97.5%	(df)	95%	97.5%
1	6.314	12.706	19	1.729	2.093
2	2.92	4.303	20	1.725	2.086
3	2.353	3.182	21	1.721	2.08
4	2.132	2.776	22	1.717	2.074
5	2.015	2.571	23	1.714	2.069
6	1.943	2.447	24	1.711	2.064
7	1.895	2.365	25	1.708	2.06
8	1.86	2.306	26	1.706	2.056
9	1.833	2.262	27	1.703	2.052
10	1.812	2.228	28	1.701	2.048
11	1.796	2.201	29	1.699	2.045
12	1.782	2.179	30	1.697	2.042
13	1.771	2.16	40	1.684	2.021
14	1.761	2.145	60	1.671	2
15	1.753	2.131	120	1.658	1.98
16	1.746	2.12	400	1.649	1.966
17	1.74	2.11	Infinite	1.645	1.96
18	1.734	2.101			

For values of Degrees of Freedom not listed:

Interpolate between the listed values.

(df) high value(Z)	400	is (B)	1.649	95%
(df) low value(Y)	120	is (A)	1.658	95%

Desired value(df) (X) **224** is calculated as follow:

EXP[(Ln(B)-Ln(A)) + (Z-Y) (X-Y) + Ln(A)]

The (df) value for (X) **224** **1.655** **95%**

PERFORMED BY: Susan H. Kojin

DATE: 7-28-99

REVIEWED BY: W. A. Rogers

DATE: 7-28-99



**CIMARRON CORPORATION - CIMARRON FACILITY**  
**TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDEN**  
**AFFECTED AREA "G" DRAINAGE CENTERLINE - SURFACE**

n = pCi/g Th (NAT)

Number	n	(n-N)	(n-N) <sup>2</sup>
51	1	-0.24	0.06
52	1	-0.24	0.06
53	1	-0.24	0.06
54	1	-0.24	0.06
55	1	-0.24	0.06
56	1	-0.24	0.06
57	1	-0.24	0.06
58	1	-0.24	0.06
59	1	-0.24	0.06
60	1	-0.24	0.06
61	1	-0.24	0.06
62	1	-0.24	0.06
63	1	-0.24	0.06
64	1	-0.24	0.06
65	1	-0.24	0.06
66	1	-0.24	0.06
67	1	-0.24	0.06
68	1	-0.24	0.06
69	1	-0.24	0.06
70	1	-0.24	0.06
71	1	-0.24	0.06
72	1	-0.24	0.06
73	1	-0.24	0.06
74	1	-0.24	0.06
75	1	-0.24	0.06
76	1	-0.24	0.06
77	1	-0.24	0.06
78	1	-0.24	0.06
79	1	-0.24	0.06
80	1	-0.24	0.06
81	1	-0.24	0.06
82	1	-0.24	0.06
83	1	-0.24	0.06
84	1	-0.24	0.06
85	1	-0.24	0.06
86	1	-0.24	0.06
87	1	-0.24	0.06
88	1	-0.24	0.06
89	1	-0.24	0.06
90	1	-0.24	0.06
91	1	-0.24	0.06
92	1	-0.24	0.06
93	1	-0.24	0.06
94	1	-0.24	0.06
95	1	-0.24	0.06
96	1	-0.24	0.06
97	1	-0.24	0.06
98	1	-0.24	0.06
99	1	-0.24	0.06
100	1	-0.24	0.06
	50.0		3.0
	Sum(n)		Sum(n-N) <sup>2</sup>

n = pCi/g Th (NAT)

Number	n	(n-N)	(n-N) <sup>2</sup>
101	1	-0.24	0.06
102	1	-0.24	0.06
103	1	-0.24	0.06
104	1	-0.24	0.06
105	1	-0.24	0.06
106	1	-0.24	0.06
107	1	-0.24	0.06
108	1	-0.24	0.06
109	1	-0.24	0.06
110	1	-0.24	0.06
111	1	-0.24	0.06
112	1	-0.24	0.06
113	1	-0.24	0.06
114	1	-0.24	0.06
115	1	-0.24	0.06
116	1	-0.24	0.06
117	1	-0.24	0.06
118	1	-0.24	0.06
119	1	-0.24	0.06
120	1	-0.24	0.06
121	1	-0.24	0.06
122	1	-0.24	0.06
123	1	-0.24	0.06
124	1	-0.24	0.06
125	1	-0.24	0.06
126	1	-0.24	0.06
127	1	-0.24	0.06
128	1	-0.24	0.06
129	1	-0.24	0.06
130	1	-0.24	0.06
131	1	-0.24	0.06
132	1	-0.24	0.06
133	1	-0.24	0.06
134	1	-0.24	0.06
135	1	-0.24	0.06
136	1	-0.24	0.06
137	1	-0.24	0.06
138	1	-0.24	0.06
139	1	-0.24	0.06
140	1	-0.24	0.06
141	1	-0.24	0.06
142	1	-0.24	0.06
143	1	-0.24	0.06
144	1	-0.24	0.06
145	1	-0.24	0.06
146	1	-0.24	0.06
147	1	-0.24	0.06
148	1	-0.24	0.06
149	1	-0.24	0.06
150	1	-0.24	0.06
	50.0		3.0
	Sum(n)		Sum(n-N) <sup>2</sup>

**CIMARRON CORPORATION - CIMARRON FACILITY**  
**TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDEN**  
**AFFECTED AREA "G" DRAINAGE CENTERLINE - SURFACE**

n = pCi/g Th (NAT)

Number	n	(n-N)	(n-N) <sup>2</sup>
151	1	-0.24	0.06
152	1	-0.24	0.06
153	1	-0.24	0.06
154	1	-0.24	0.06
155	1	-0.24	0.06
156	1	-0.24	0.06
157	1	-0.24	0.06
158	1	-0.24	0.06
159	1	-0.24	0.06
160	1	-0.24	0.06
161	1	-0.24	0.06
162	1	-0.24	0.06
163	1	-0.24	0.06
164	1	-0.24	0.06
165	1	-0.24	0.06
166	1	-0.24	0.06
167	1	-0.24	0.06
168	1.2	-0.04	0.00
169	1.9	0.66	0.43
170	2	0.76	0.57
171	2	0.76	0.57
172	2	0.76	0.57
173	2	0.76	0.57
174	2	0.76	0.57
175	2	0.76	0.57
176	2	0.76	0.57
177	2	0.76	0.57
178	2	0.76	0.57
179	2	0.76	0.57
180	2	0.76	0.57
181	2	0.76	0.57
182	2	0.76	0.57
183	2	0.76	0.57
184	2	0.76	0.57
185	2	0.76	0.57
186	2	0.76	0.57
187	2	0.76	0.57
188	2	0.76	0.57
189	2	0.76	0.57
190	2	0.76	0.57
191	2	0.76	0.57
192	2	0.76	0.57
193	2	0.76	0.57
194	2	0.76	0.57
195	2	0.76	0.57
196	2	0.76	0.57
197	2	0.76	0.57
198	2	0.76	0.57
199	2	0.76	0.57
200	2	0.76	0.57
	82.1		19.2
	Sum(n)		Sum(n-N) <sup>2</sup>

n = pCi/g Th (NAT)

Number	n	(n-N)	(n-N) <sup>2</sup>
201	2	0.76	0.57
202	2	0.76	0.57
203	2	0.76	0.57
204	2	0.76	0.57
205	2	0.76	0.57
206	2	0.76	0.57
207	2	0.76	0.57
208	2	0.76	0.57
209	2	0.76	0.57
210	2	0.76	0.57
211	2	0.76	0.57
212	2	0.76	0.57
213	2	0.76	0.57
214	2	0.76	0.57
215	2	0.76	0.57
216	2	0.76	0.57
217	2	0.76	0.57
218	2	0.76	0.57
219	2	0.76	0.57
220	2	0.76	0.57
221	2	0.76	0.57
222	2	0.76	0.57
223	2	0.76	0.57
224	2	0.76	0.57
225	3	1.76	3.09
226		0.00	0.00
227		0.00	0.00
228		0.00	0.00
229		0.00	0.00
230		0.00	0.00
231		0.00	0.00
232		0.00	0.00
233		0.00	0.00
234		0.00	0.00
235		0.00	0.00
236		0.00	0.00
237		0.00	0.00
238		0.00	0.00
239		0.00	0.00
240		0.00	0.00
241		0.00	0.00
242		0.00	0.00
243		0.00	0.00
244		0.00	0.00
245		0.00	0.00
246		0.00	0.00
247		0.00	0.00
248		0.00	0.00
249		0.00	0.00
250		0.00	0.00
	51.0		16.8
	Sum(n)		Sum(n-N) <sup>2</sup>



CIMARRON CORPORATION  
CIMARRON FACILITY  
Sub-Area "G" Affected Drainage  
Depth Soil Samples

QAQC-158  
REV.1

LN #	GRID NUMBER				3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g									
								0 - 6"		6" - 1'		1' - 2'		2' - 3'		3' - 4'	
								Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	380	E	-	N	660	7014	11	12	5.6	1.1	9.1	1	10	0.8			
2	380	E	-	N	735	4920	15	15	12.3	1.2	13.2	1.4	6.9	0.5			
3	385	E	-	N	735	9184	9	9	16.6	2.2	13.4	1.5	9.6	0.8	9.3	0.8	7.5
4	385	E	-	N	735	10180	10	10	12.6	0.8	5.6	0.8	16.6	2.2			
5	385	E	-	N	740	10472	11	10	11.1	1.6	8.9	1.3	9.2	1			
6	389	E	-	N	735	8726	10	9	17.3	1.4	9.5	1.6	8.3	0.8	8.2	1	7.1
7	390	E	-	N	680	7528	12	13	7.4	1.3	7.2	1.4	8.4	1.3			
8	390	E	-	N	730	8538	9	9	13	1.8	9.2	1.5	8.5	0.9	9.7	0.9	6.6
9	390	E	-	N	734	9628	10	9	14.8	1.6	12.9	1.5	8.8	0.9	10.9	0.7	6.8
10	390	E	-	N	735	10630	12	11	15.7	2	6.8	1.3	9.1	1.1			
11	390	E	-	N	740	10454	10	10	12.5	1.3	14.8	1.5	9.4	0.9	7.1	0.6	7.5
12	390	E	-	N	745	10562	11	11	8.3	1.2	10.7	1.5	7	1.1			
13	391	E	-	N	735	9504	10	9	15.6	1.4	13.2	1.5	8.5	0.9	9.6	1.4	7.4
14	395	E	-	N	690	8530	13	14	14.4	1.2	7.7	1.2	7.9	1.3			
15	395	E	-	N	735	8880	9	9	14.1	2.2	11	2.2	8.6	1	11	1.1	7.6
16	395	E	-	N	740	10910	11	11	10.7	1.4	9	1.2	8.8	1.1			
17	400	E	-	N	700	8398	13	15	13.2	1.1	8.2	1.4	6.4	1.3			
18	402	E	-	N	753	10434	10	12	21	2	15	1	10	1	9	1	11
19	405	E	-	N	710	8626	14	15	9.4	1.4	11.3	1.2	7.7	1.2			
20	405	E	-	N	740	10244	11	10	8	2	8	1	5	1	6	1	7

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER - 111299

µr/hr

9

2

LUDLUM 2220, LEAD UNSHIELDED 3" X 1/2" NaI DETECTOR - 97264

CPM

8000

N/A

4 Total U

10

CIMMARON SOIL COUNTER X" X 4" X 16" NaI DETECTOR

pCi/G

1.5 Th (Nat)

1

BACKGROUND NOT SUBTRACTED

REVIEWED BY:

*W. A. Rogers*

DATE:

9-13-99

FILE: GASD

PAGE 1

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CIMARRON CORPORATION  
CIMARRON FACILITY  
Sub-Area "G" Affected Drainage  
Depth Soil Samples

QAQC-158  
REV.1

LN #	GRID NUMBER				3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g										
								0 - 6"		6" - 1'		1' - 2'		2' - 3'		3' - 4'		
								Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	
21	405	E	-	N	745	10438	11	11	14	1	9	1	7	1	4	1	4	1
22	405	E	-	N	750	10780	11	10	15	2	8	1	7	1	6	1	10	1
23	405	E	-	N	755	10842	11	11	11	2	6	1	6	1	8	1	5	1
24	408	E	-	N	748	10080	10	11	9	2	7	1	13	1	13	1	8	1
25	410	E	-	N	720	8252	14	14	11.7	1.2	9.4	1.1	9.1	0.7				
26	410	E	-	N	740	10560	12	10	15	2	15	2	3	1	5	1	8	1
27	410	E	-	N	745	10506	11	11	21	2	8	2	6	1	7	1	12	1
28	410	E	-	N	750	10826	11	10	17	2	8	2	9	1	6	1	7	1
29	410	E	-	N	755	10496	11	11	12	2	7	1	7	1	6	1	8	1
30	412	E	-	N	743	10200	11	11	12	2	8	2	9	2	11	1	11	1
31	413	E	-	N	747	10200	11	11	7	2	17	2	7	1	6	1	6	1
32	414	E	-	N	756	10144	10	10	13	2	14	1	11	1	8	1	5	1
33	415	E	-	N	730	7996	14	14	11.2	1.3	8.7	1	4.6	0.7				
34	415	E	-	N	740	11108	11	10	17	2	15	2	11	1	6	1	11	1
35	415	E	-	N	745	10542	10	10	11	2	20	2	7	1	8	1	5	1
36	415	E	-	N	750	10846	10	10	6	1	11	1	7	1	8	1	7	1
37	415	E	-	N	755	10806	11	10	10	1	9	1	5	1	5	1	5	1
38	420	E	-	N	750	11130	10	10	15	1	10	1	8	1	4	1	8	1
39	420	E	-	N	755	10914	11	10	17	2	11	1	16	1	5	1	10	1
40	425	E	-	N	670	8184	13	14	11.1	1.1	11.9	1.4	6.2	1	9	1	10	1

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER - 111299

µr/hr

9

2

LUDLUM 2220, LEAD UNSHIELDED 3" X 1/2" NaI DETECTOR - 97264

CPM

8000

N/A

CIMMARON SOIL COUNTER X" X 4" X 16" NaI DETECTOR

pCi/G

4 Total U

10

1.5 Th (Nat)

1

BACKGROUND NOT SUBTRACTED

REVIEWED BY: W.A. Rogers

DATE: 9-13-99

FILE: GASD

PAGE 2

CIMARRON CORPORATION  
CIMARRON FACILITY  
Sub-Area "G" Affected Drainage  
Depth Soil Samples

QAQC-158  
REV.1

LN #	GRID NUMBER				3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g										
								0 - 6"		6" - 1'		1' - 2'		2' - 3'		3' - 4'		
								Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	
41	425	E	-	N	755	10282	10	9	19	2	10	1	6	1	9	1	10	1
42	430	E	-	N	680	8402	13	14	11	1.5	5.6	1.6	6.9	1.3				
43	430	E	-	N	757	10914	10	11	16	2	15	2	9	1	11	1	13	1
44	435	E	-	N	680	11264	11	11	11.1	2	10.6	1.9	11.4	1.7				
45	435	E	-	N	695	8768	13	15	12.3	1.2	8.7	1.4	8.2	1.4				
46	440	E	-	N	675	10502	11	10	8.8	1.2	8	1.1	8	1.3				
47	440	E	-	N	680	10780	11	11	13.7	1.1	14.3	1.6	10.1	1.3	9.4	0.8	7.7	0.9
48	440	E	-	N	685	11048	11	11	9.3	1.9	9.6	1.9	7	1.8				
49	440	E	-	N	700	8480	13	14	8.6	1.3	8.1	1.4	8.7	1				
50	440	E	-	N	760	10354	10	10	18	2	9	1	10	1	6	1	6	1
51	445	E	-	N	680	10672	11	11	7.9	1.6	7.7	1.2	8.8	1				
52	445	E	-	N	710	8634	15	13	9.3	1.4	7.2	1.5	5.6	1				
53	450	E	-	N	720	8132	14	13	9.6	1.1	7.9	1.1	9.5	1				
54	455	E	-	N	680	8608	14	13	9.2	1.4	7.4	1.4	6.2	1.5				
55	455	E	-	N	730	8074	13	13	9.9	1.2	9.6	1.1	5.2	0.9				
56	462	E	-	N	763	10514	12	11	14	2	10	2	9	1	13	1	12	1
57	465	E	-	N	660	7980	15	12	7.7	1.2	9.1	0.9	6.8	0.7				
58	470	E	-	N	670	8094	12	14	10.7	0.7	7.9	1	7.8	1.2				
59	475	E	-	N	680	8834	13	14	10.9	1.5	7	1.4	8.4	1.4				
60	480	E	-	N	690	8796	14	14	7.6	1.5	9.6	1.4	6.4	1.5				

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER - 111299

µr/hr

9

2

LUDLUM 2220, LEAD UNSHIELDED 3" X 1/2" NaI DETECTOR - 97264

CPM

8000

N/A

CIMMARON SOIL COUNTER X" X 4" X 16" NaI DETECTOR

pCi/G

4 Total U

10

1.5 Th (Nat)

1

BACKGROUND NOT SUBTRACTED

REVIEWED BY: W.A. Poyen

DATE: 9-13-99

FILE: GASD

PAGE 3

CIMARRON CORPORATION  
CIMARRON FACILITY  
Sub-Area "G" Affected Drainage  
Depth Soil Samples

QAQC-158  
REV.1

LN #	GRID NUMBER				3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g										
								0 - 6"		6" - 1'		1' - 2'		2' - 3'		3' - 4'		
								Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	
61	484	E	-	N	760	10920	11	10	13	1	14	2	6	1	6	1	13	1
62	485	E	-	N	675	10678	10	11	7.8	1.8	6.9	1.5	10.3	1.1				
63	485	E	-	N	700	8632	15	13	7	1.5	5.8	1.8	7.7	1.3				
64	485	E	-	N	700	10954	12	12	9.9	1.7	9	1.7	8.5	1.7				
65	485	E	-	N	750	10624	12	11	8.1	0.8	6.6	0.8	5.7	0.8				
66	490	E	-	N	670	10400	10	10	9.4	1.8	7.3	1.5	7.7	1.4				
67	490	E	-	N	675	9530	9	9	12.1	1.1	7.5	1.5	8.6	1.6	8.5	1.3	9.4	1.2
68	490	E	-	N	680	10610	11	11	9.9	1.7	5.7	1.3	8.4	1.3				
69	490	E	-	N	695	10634	12	11	4.7	2	7.6	1.6	10.7	2.2				
70	490	E	-	N	705	11330	12	11	8.8	1.8	9	1.7	7.5	1.7				
71	490	E	-	N	710	8532	14	13	11.4	1.3	5.2	1.4	6.3	0.9				
72	490	E	-	N	745	10698	11	11	6.5	1.5	9.2	1.2	7.5	0.9				
73	490	E	-	N	750	10374	10	10	16.6	1.8	13.2	1.3	8	0.6	8.3	0.6	6.6	0.4
74	490	E	-	N	755	10406	11	11	10.8	1.2	7.3	0.8	9.4	0.6				
75	491	E	-	N	765	10976	11	10	11	2	16	2	7	2	8	1	8	1
76	495	E	-	N	675	10720	12	11	7.6	1.9	7.9	1.7	8.8	1.2				
77	495	E	-	N	700	11146	11	11	7.8	1.9	7.7	1.5	8.1	1.6				
78	495	E	-	N	720	8282	13	13	11.8	1.2	8.3	1.2	6.6	1				
79	495	E	-	N	750	10694	12	10	10.2	1.9	9.8	1.3	7	0.9				
80	497	E	-	N	765	11092	10	12	15	2	16	1	10	1	7	1	8	1

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER - 111299

µr/hr

9

2

LUDLUM 2220, LEAD UNSHIELDED 3" X 1/2" NaI DETECTOR - 97264

CPM

8000

N/A

CIMMARON SOIL COUNTER X" X 4" X 16" NaI DETECTOR

pCi/G

4 Total U

10

1.5 Th (Nat)

1

BACKGROUND NOT SUBTRACTED

REVIEWED BY: W.A. Rozen

DATE: 9-13-99

FILE: GASD

PAGE 4

CIMARRON CORPORATION  
CIMARRON FACILITY  
Sub-Area "G" Affected Drainage  
Depth Soil Samples

QAQC-158  
REV.1

LN #	GRID NUMBER				3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g									
								0 - 6"		6" - 1'		1' - 2'		2' - 3'		3' - 4'	
								Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
81	500	E	-	N	730	8266	14	13	9.6	1.4	9.8	1	6.8	1.1			
82	515	E	-	N	695	8216	15	13	8.8	1.2	4.3	1.1	6.1	1.2			
83	520	E	-	N	705	8140	14	12	9.3	1.5	5.9	1.3	8.2	0.8			
84	525	E	-	N	715	8816	14	13	9.3	1.5	8.4	1.1	6.9	1.5			
85	530	E	-	N	725	8284	14	14	8.3	1.2	4.3	1.7	7.7	1.2			
86	535	E	-	N	735	8448	13	13	8.9	1.4	6	1.2	6.9	1.5			
87	535	E	-	N	760	10958	11	10	7.9	1.7	4.8	1.3	8	0.7			
88	540	E	-	N	755	11238	12	12	11	2.4	12.8	1.4	5.8	0.8			
89	540	E	-	N	760	10264	9	9	13.2	1.9	11.9	1.7	8.8	1.4	7.5	0.7	8.9
90	540	E	-	N	765	11278	11	11	9	1.6	6.8	0.7	7.2	0.9			
91	564	E	-	N	767	10994	10	10	11	2	7	2	16	1	7	1	11
92	590	E	-	N	770	10234	10	10	13.2	2	8	1.6	8.3	0.8	6.9	0.4	8.8
93	590	E	-	N	775	10960	11	11	8.6	1.7	8.2	1	6.2	1			
94	600	E	-	N	782	10912	11	11	14	2	11	1	6	1	13	1	6
95	650	E	-	N	785	9206	9	9	9	1	7	2	8	1	9	1	10
96	700	E	-	N	798	9300	10	10	7	1	5	1	7	1	9	1	7
97	800	E	-	N	812	7258	7	8	7	1	5	1	6	1	8	1	9
98	800	E	-	N	960	STANDING WATER	-	-	5	1	8	1	11	1	8	1	9
99	812	E	-	N	920	3768*	9	11	8.7	0.8	5.4	0.9	4.6	0.9	7.1	1	8.1
100	815	E	-	N	980	STANDING WATER	-	-	9	1	8	2	7	1	6	1	9

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER - 111299

µr/hr

9

2

LUDLUM 2220, LEAD UNSHIELDED 3" X 1/2" NaI DETECTOR - 97264

CPM

8000

N/A

\*LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI DETECTOR - 48395\*

CPM

3430

N/A

4 Total U

10

1.5 Th (Nat)

1

CIMMARON SOIL COUNTER X" X 4" X 16" NaI DETECTOR

pCi/G

BACKGROUND NOT SUBTRACTED

REVIEWED BY:

*W. a. Rogers*

DATE:

*9-13-99*

FILE: GASD

PAGE 5



CIMARRON CORPORATION  
CIMARRON FACILITY  
Sub-Area "G" Affected Drainage  
Depth Soil Samples

QAQC-158  
REV.1

LN #	GRID NUMBER				3" DETECT C.P.M.	MICRO R' SURF	MICRO R' 1 METER	pCi/g										
								0 - 6"		6" - 1'		1' - 2'		2' - 3'		3' - 4'		
								Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	
101	837	E	-	N	815	STANDING	WATER	-	5	1	6	1	3	1	7	1	8	1
102	879	E	-	N	613	3110*	10	8	7.1	1	13.8	0.8	7.5	1	8	0.8	8.5	0.8
103	880	E	-	N	614	3260*	9	10	8.8	1	6.6	1	12.4	0.6	8.1	1.2	8.7	1
104	881	E	-	N	655	5510*	10	10	8.7	0.9	7.2	1	5.6	0.8	6.1	0.6		
105	884	E	-	N	620	3630*	10	10	8	1.1	10.4	1.2	8.6	0.9	9.4	0.9	8.8	0.8
106	884	E	-	N	646	3800*	9	9	6	1	5.4	1.1	9	1	6.7	0.9	5.1	0.7
107	886	E	-	N	632	2570*	10	9	7.3	1	7.6	0.9	7.1	1	6.9	0.8	9.3	0.9
108	886	E	-	N	638	2740*	10	9	6.1	1	7.3	0.9	5.9	0.8	6.5	1	6.7	1
109	888	E	-	N	626	3170*	10	10	6.5	1.1	6.2	1.1	7.9	1	8.9	1	6.9	1.2
110	898	E	-	N	640	STANDING	WATER	-	6	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
111	898	E	-	N	718	STANDING	WATER	-	5	1	3	1	6	1	ROCK	ROCK	ROCK	ROCK
112	905	E	-	N	980	STANDING	WATER	-	9	1	7	1	11	1	10	1	9	1
		E	-	N														
		E	-	N														
		E	-	N														
		E	-	N														
		E	-	N														
		E	-	N														
		E	-	N														
		E	-	N														

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER - 111299

µr/hr

9

2

LUDLUM 2220, LEAD UNSHIELDED 3" X 1/2" NaI DETECTOR - 97264

CPM

8000

N/A

\*LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI DETECTOR - 48395\*

CPM

3430

N/A

4 Total U

10

1.5 Th (Nat)

1

CIMMARON SOIL COUNTER X" X 4" X 16" NaI DETECTOR

pCi/G

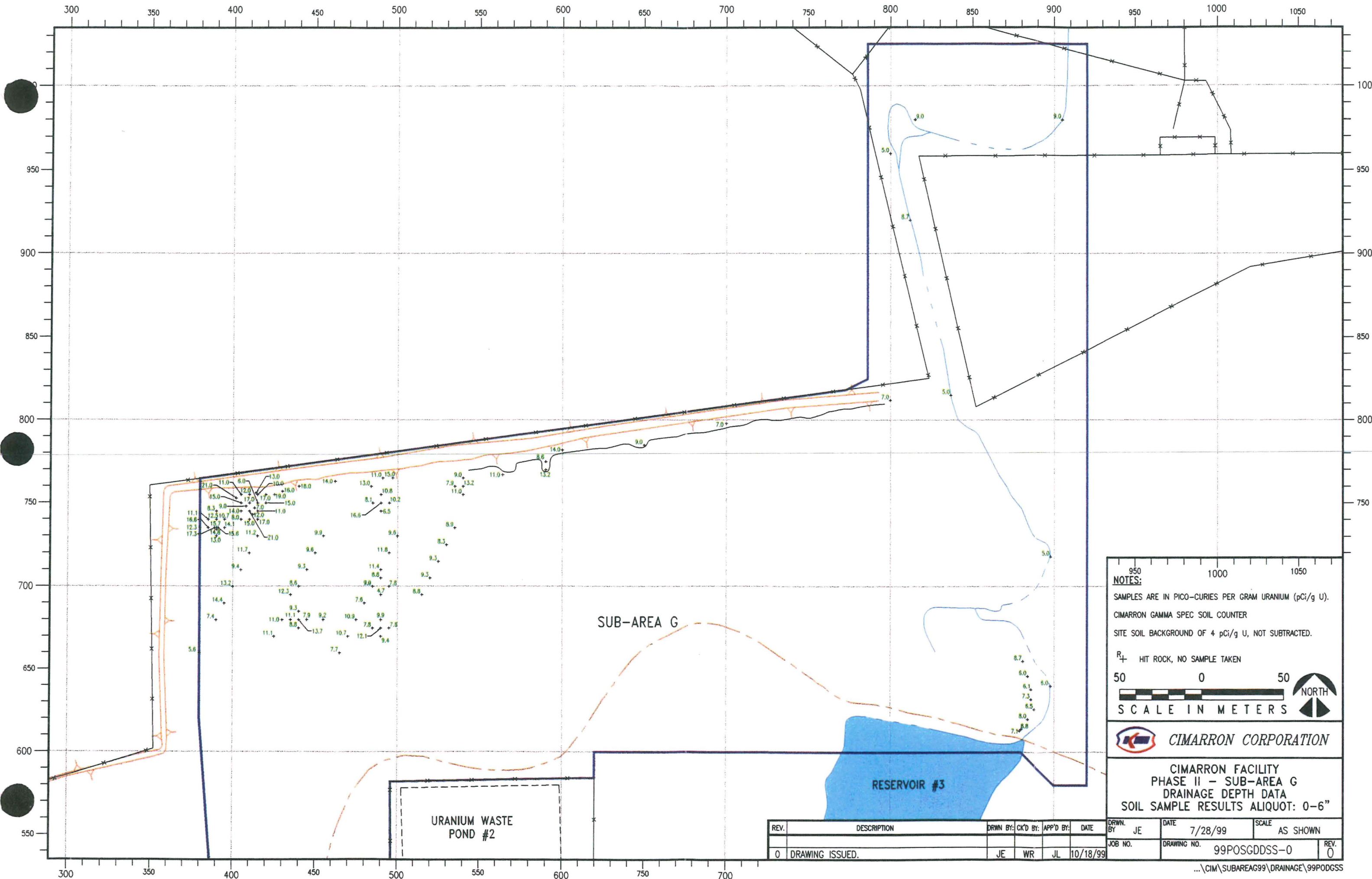
BACKGROUND NOT SUBTRACTED

REVIEWED BY: W.G. Rogers

DATE: 9-13-99

FILE: GASD

PAGE 6



**NOTES:**  
SAMPLES ARE IN PICO-CURIES PER GRAM URANIUM (pCi/g U).  
CIMARRON GAMMA SPEC SOIL COUNTER  
SITE SOIL BACKGROUND OF 4 pCi/g U, NOT SUBTRACTED.

R<sub>+</sub> HIT ROCK, NO SAMPLE TAKEN

50 0 50  
SCALE IN METERS

**CIMARRON CORPORATION**

**CIMARRON FACILITY  
PHASE II - SUB-AREA G  
DRAINAGE DEPTH DATA  
SOIL SAMPLE RESULTS ALIQUOT: 0-6"**

REV.	DESCRIPTION	DRWN BY:	CHK'D BY:	APP'D BY:	DATE
0	DRAWING ISSUED.	JE	WR	JL	10/18/99

DRWN. BY:	DATE	SCALE
JE	7/28/99	AS SHOWN
JOB NO.	DRAWING NO.	REV.
	99POSGDDSS-0	0

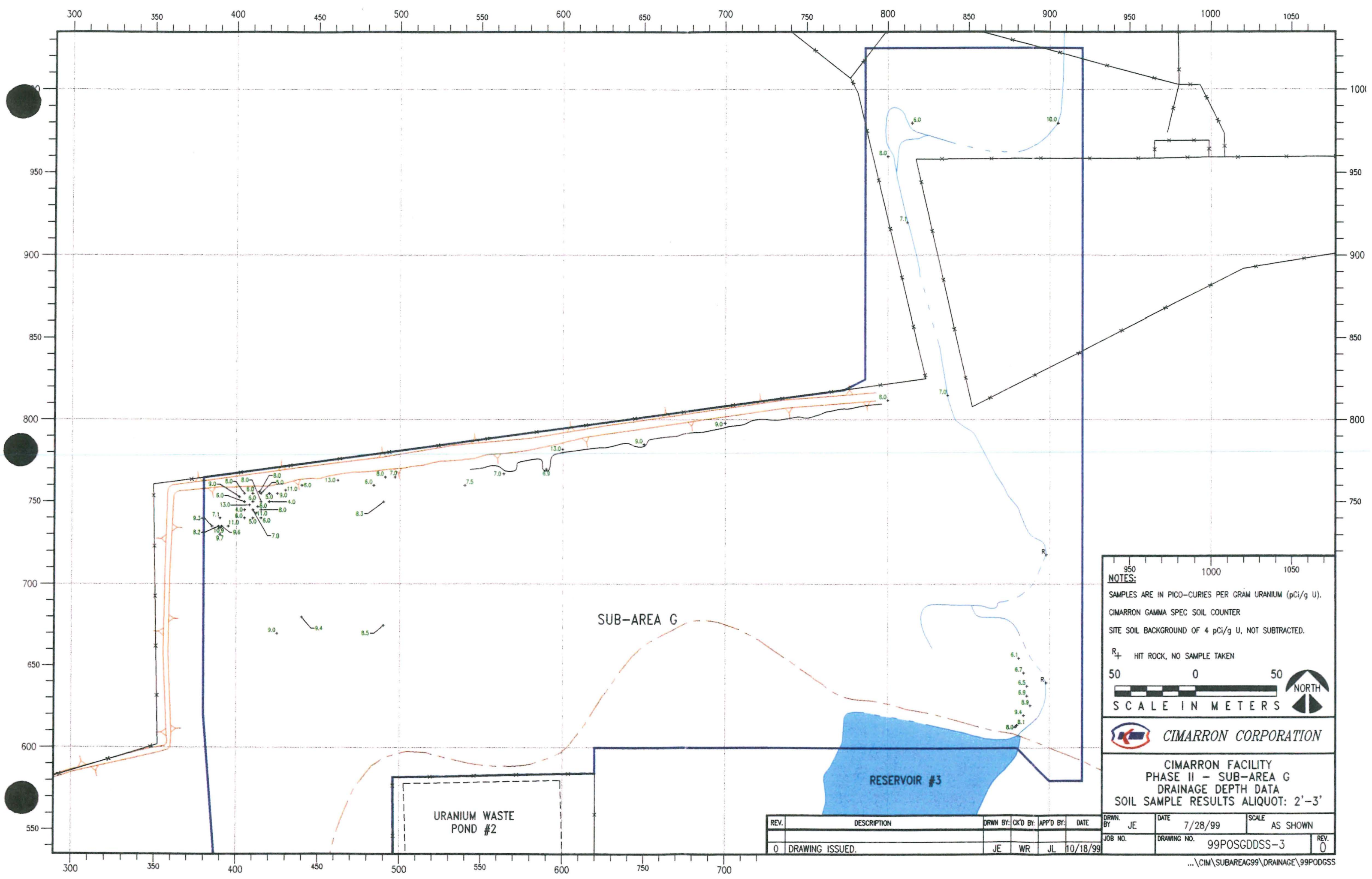












**NOTES:**  
SAMPLES ARE IN PICO-CURIES PER GRAM URANIUM (pCi/g U).  
CIMARRON GAMMA SPEC SOIL COUNTER  
SITE SOIL BACKGROUND OF 4 pCi/g U, NOT SUBTRACTED.

R<sub>+</sub> HIT ROCK, NO SAMPLE TAKEN

50 0 50  
SCALE IN METERS

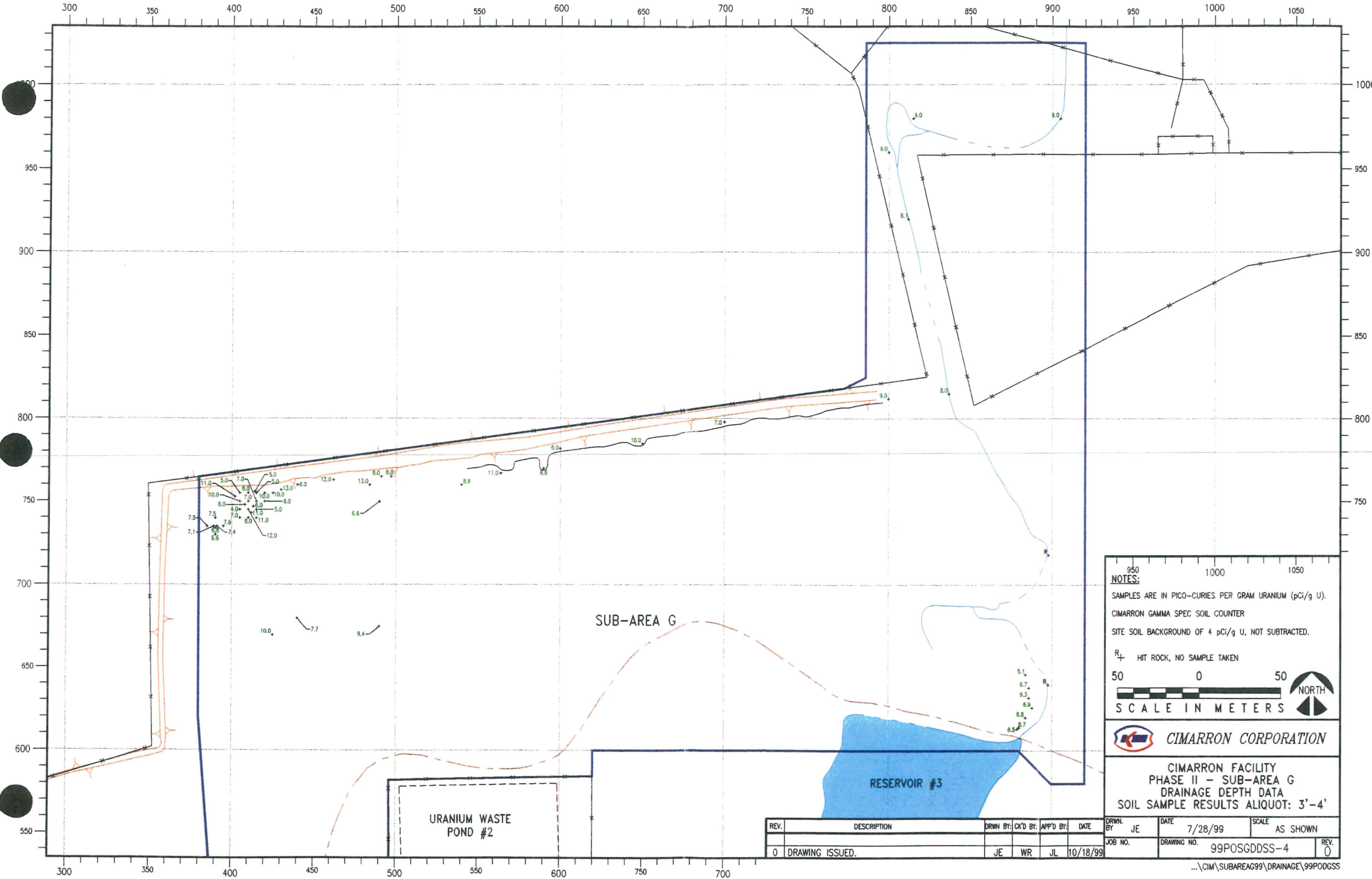
**CIMARRON CORPORATION**

**CIMARRON FACILITY  
PHASE II - SUB-AREA G  
DRAINAGE DEPTH DATA  
SOIL SAMPLE RESULTS ALIQUOT: 2'-3'**

REV.	DESCRIPTION	DRWN BY:	CK'D BY:	APP'D BY:	DATE
0	DRAWING ISSUED.	JE	WR	JL	10/18/99

DRWN. BY:	DATE	SCALE
JE	7/28/99	AS SHOWN

JOB NO.	DRAWING NO.	REV.
	99POSGDDSS-3	0



**NOTES:**  
SAMPLES ARE IN PICO-CURIES PER GRAM URANIUM (pCi/g U).  
CIMARRON GAMMA SPEC SOIL COUNTER  
SITE SOIL BACKGROUND OF 4 pCi/g U, NOT SUBTRACTED.  
R+ HIT ROCK, NO SAMPLE TAKEN

50 0 50  
SCALE IN METERS

**CIMARRON CORPORATION**

**CIMARRON FACILITY  
PHASE II - SUB-AREA G  
DRAINAGE DEPTH DATA  
SOIL SAMPLE RESULTS ALIQUOT: 3'-4'**

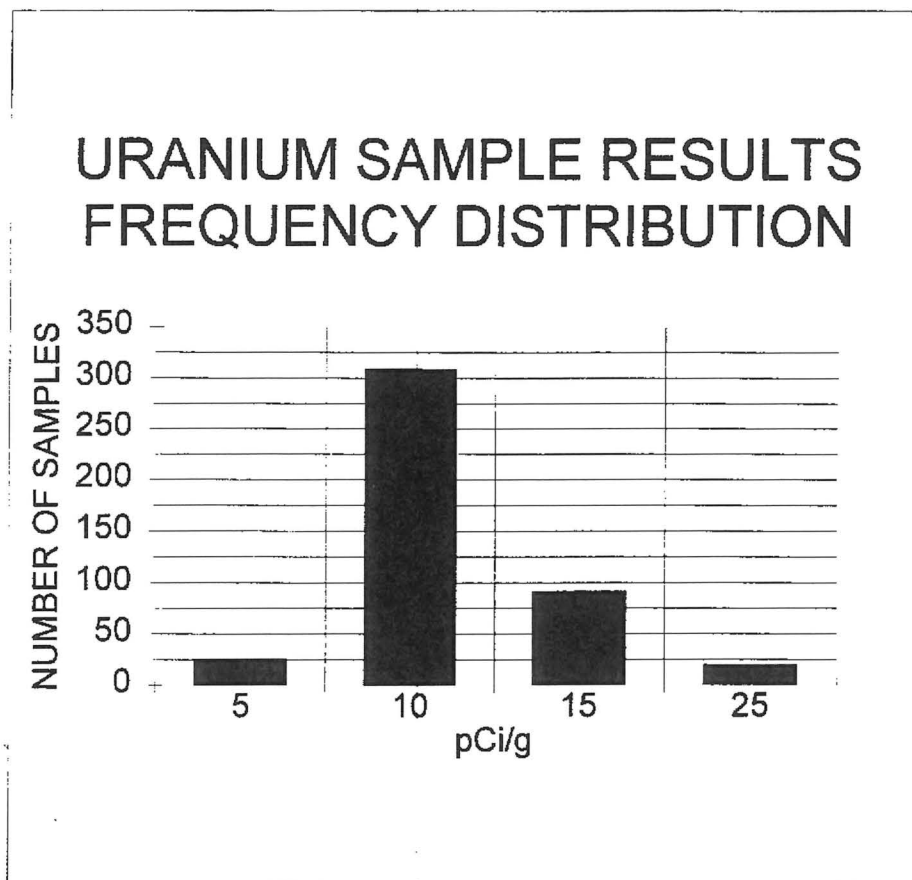
REV.	DESCRIPTION	DRWN BY:	CK'D BY:	APP'D BY:	DATE	DRWN BY:	DATE	SCALE
0	DRAWING ISSUED.	JE	WR	JL	10/18/99	JE	7/28/99	AS SHOWN

JOB NO. DRAWING NO. 99POSGDDSS-4 REV. 0



**PHASE II, SUB-AREA "G" - DEPTH - DRAINAGE  
AFFECTED AREA  
CIMARRON SOIL COUNTER  
TOTAL URANIUM SOIL SAMPLE RESULTS  
SITE BACKGROUND OF 4 pCi/g NOT SUBTRACTED**

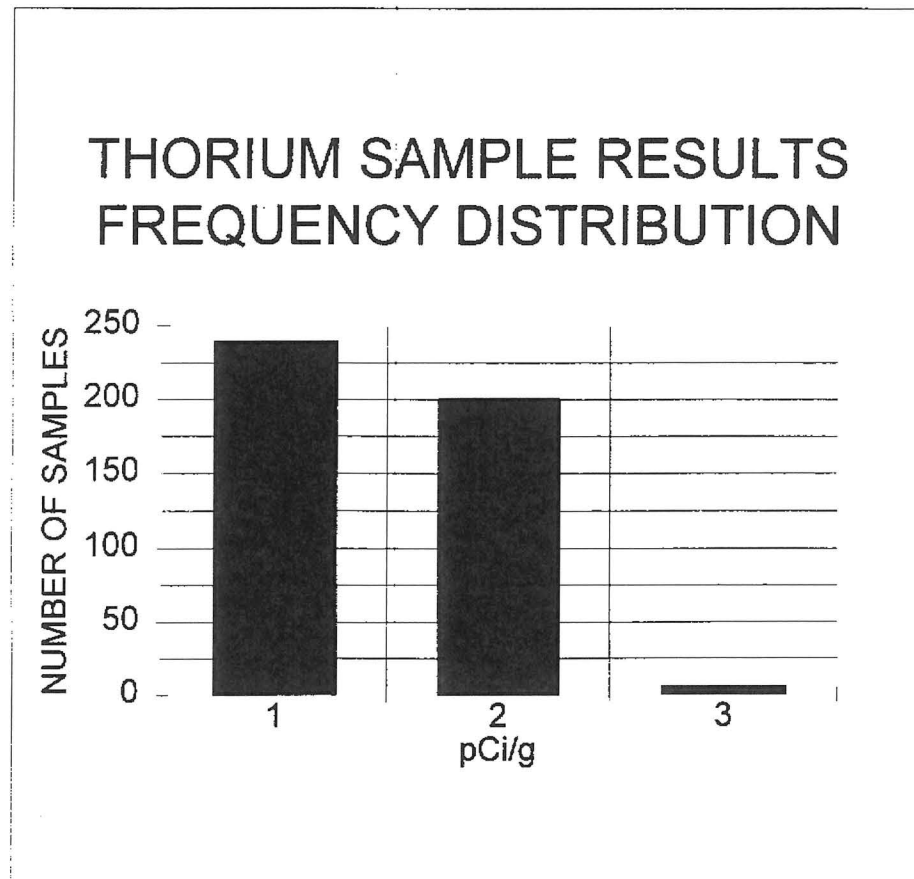
**JULY 20,1999**



NUMBER OF SAMPLES	447
AVERAGE SAMPLE	9
MINIMUM SAMPLE	3
MAXIMUM SAMPLE	21
STANDARD DEVIATION	3

PHASE II, SUB-AREA "G" - DEPTH - DRAINAGE  
AFFECTED AREA  
CIMARRON SOIL COUNTER  
TOTAL THORIUM SOIL SAMPLE RESULTS  
SITE BACKGROUND OF 1.5 pCi/g NOT SUBTRACTED

JULY 20,1999



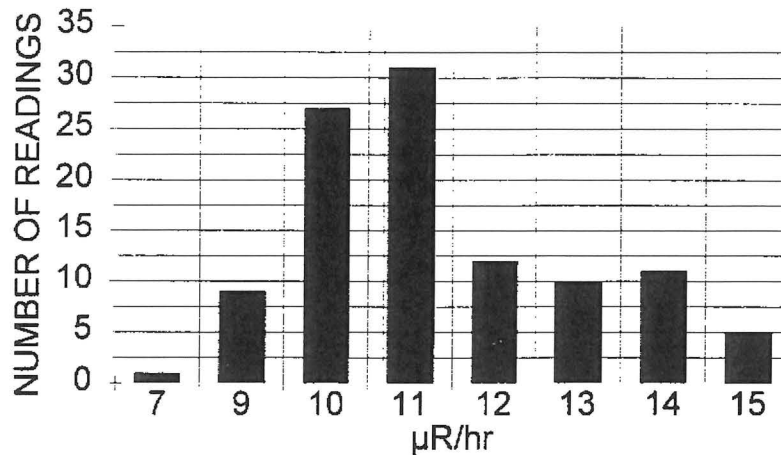
NUMBER OF SAMPLES	447
AVERAGE SAMPLE	1.2
MINIMUM SAMPLE	0.4
MAXIMUM SAMPLE	2.4
STANDARD DEVIATION	0.4



PHASE II, SUB-AREA "G" - DEPTH - DRAINAGE  
AFFECTED AREA  
MICRO-R METER READINGS AT SURFACE  
LUDLUM MODEL 19, S/N 111299  
RESULTS IN  $\mu\text{R/hr}$

JULY 20, 1999

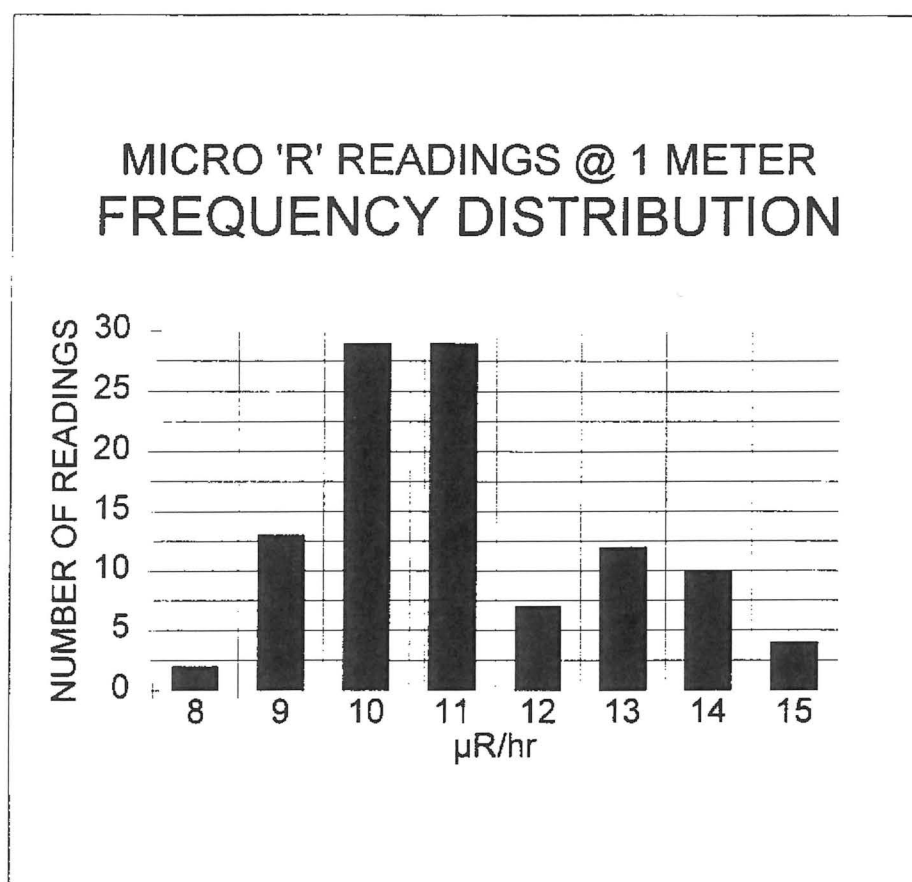
MICRO 'R' READINGS @ SURFACE  
FREQUENCY DISTRIBUTION



NUMBER OF SAMPLES	106
AVERAGE SAMPLE	11
MINIMUM SAMPLE	7
MAXIMUM SAMPLE	15
STANDARD DEVIATION	2

**PHASE II, SUB-AREA "G" - DEPTH - DRAINAGE  
AFFECTED AREA  
MICRO-R METER READINGS AT 1 METER ABOVE SURFACE  
LUDLUM MODEL 19, S/N 111299  
RESULTS IN  $\mu\text{R/hr}$**

**JULY 20, 1999**

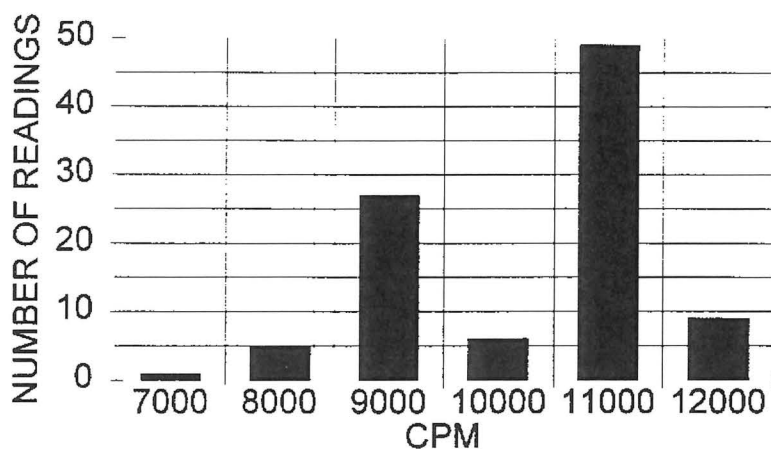


NUMBER OF SAMPLES	106
AVERAGE SAMPLE	11
MINIMUM SAMPLE	8
MAXIMUM SAMPLE	15
STANDARD DEVIATION	2

**PHASE II, SUB-AREA "G" - DEPTH - DRAINAGE  
AFFECTED AREA  
GROSS GAMMA READINGS IN CPM  
LUDLUM MODEL 221, S/N 97264  
BACKGROUND AVERAGES: 8000**

**JULY 20, 1999**

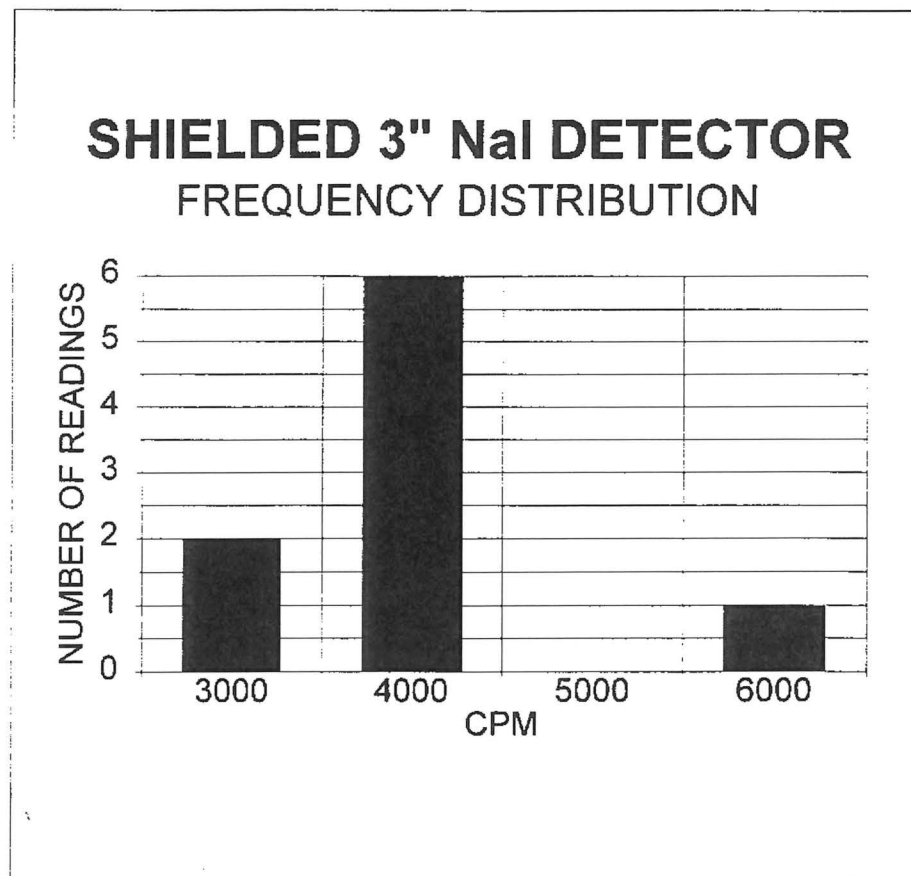
**UNSHIELDED 3" NaI DETECTOR  
FREQUENCY DISTRIBUTION**



NUMBER OF SAMPLES	97
AVERAGE SAMPLE	9766
MINIMUM SAMPLE	4920
MAXIMUM SAMPLE	11330
STANDARD DEVIATION	1251

**PHASE II, SUB-AREA "G" - DEPTH - DRAINAGE  
AFFECTED AREA  
GROSS GAMMA READINGS IN CPM  
LUDLUM MODEL 221, S/N 97264  
BACKGROUND AVERAGES: 8000**

**JULY 20, 1999**



NUMBER OF SAMPLES	9
AVERAGE SAMPLE	3506
MINIMUM SAMPLE	2570
MAXIMUM SAMPLE	5510
STANDARD DEVIATION	815

**CIMARRON CORPORATION - CIMARRON FACILITY**  
**TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE**  
**AFFECTED AREA 'G' - DEPTH - DRAINAGE**

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) <sup>2</sup>
1	3	-6.0	35.7
2	3	-6.0	35.7
3	3	-6.0	35.7
4	4	-5.0	24.8
5	4	-5.0	24.8
6	4	-5.0	24.8
7	4.3	-4.7	21.9
8	4.3	-4.7	21.9
9	4.6	-4.4	19.2
10	4.6	-4.4	19.2
11	4.7	-4.3	18.3
12	4.8	-4.2	17.5
13	5	-4.0	15.8
14	5	-4.0	15.8
15	5	-4.0	15.8
16	5	-4.0	15.8
17	5	-4.0	15.8
18	5	-4.0	15.8
19	5	-4.0	15.8
20	5	-4.0	15.8
21	5	-4.0	15.8
22	5	-4.0	15.8
23	5	-4.0	15.8
24	5	-4.0	15.8
25	5	-4.0	15.8
26	5	-4.0	15.8
27	5.1	-3.9	15.0
28	5.2	-3.8	14.3
29	5.2	-3.8	14.3
30	5.4	-3.6	12.8
31	5.4	-3.6	12.8
32	5.6	-3.4	11.4
33	5.6	-3.4	11.4
34	5.6	-3.4	11.4
35	5.6	-3.4	11.4
36	5.6	-3.4	11.4
37	5.7	-3.3	10.7
38	5.7	-3.3	10.7
39	5.8	-3.2	10.1
40	5.8	-3.2	10.1
41	5.9	-3.1	9.5
42	5.9	-3.1	9.5
43	6	-3.0	8.9
44	6	-3.0	8.9
45	6	-3.0	8.9
46	6	-3.0	8.9
47	6	-3.0	8.9
48	6	-3.0	8.9
49	6	-3.0	8.9
50	6	-3.0	8.9
	319.3		342.2
	355.7		175.1
	392.5		65.0
	419.4		21.1
	452.4		1.4
	501.6		67.4
	588.8		422.9
	727.9		2169.2
	4013		4042.9
	Sum(n)		Sum(n-N) <sup>2</sup>

No. of Samples (x) : **447**

COUNT TIME: 5 MINUTES

Sample Mean (N) = Sum(n) ÷ (x)

Sample Mean (N) : **8.98**

Standard Deviation (Sd) = SQRT [(n-N)<sup>2</sup> ÷ (x - 1)]

Standard Deviation: **3.01**

2 Std Deviations: **6.02**

Degree of Freedom(df) = (x) - 1 Data listed on Table B-1

(df) = **1.649**

Area's Average Level (Aμ) = (N) ÷ (df) x [(Sd)/SQRT(x)]

(Aμ) = **9.21** pCi/gU TOTAL U

GUIDELINE VALUE: **30** pCi/gU TOTAL U

Acceptable Level: **34.0** pCi/gU TOTAL U

TABLE B - 1

Factors for Comparison of Survey Data with Guidelines					
(df)	95%	97.5%	(df)	95%	97.5%
1	6.314	12.706	19	1.729	2.093
2	2.92	4.303	20	1.725	2.086
3	2.353	3.182	21	1.721	2.08
4	2.132	2.776	22	1.717	2.074
5	2.015	2.571	23	1.714	2.069
6	1.943	2.447	24	1.711	2.064
7	1.895	2.365	25	1.708	2.06
8	1.86	2.306	26	1.706	2.056
9	1.833	2.262	27	1.703	2.052
10	1.812	2.228	28	1.701	2.048
11	1.796	2.201	29	1.699	2.045
12	1.782	2.179	30	1.697	2.042
13	1.771	2.16	40	1.684	2.021
14	1.761	2.145	60	1.671	2
15	1.753	2.131	120	1.658	1.98
16	1.746	2.12	400	1.649	1.966
17	1.74	2.11	Infinite	1.645	1.96
18	1.734	2.101			

For values of Degrees of Freedom not listed:

Interpolate between the listed values.

(df) high value(Z)	Infinite	is (B)	1.645	95%
(df) low value(Y)	400	is (A)	1.649	95%

Desired value(df) (X) **446** is calculated as follow:

EXP[(Ln(B)-Ln(A)) ÷ (Z-Y) (X-Y) + Ln(A)]

The (df) value for (X) **446** **1.649** **95%**

PERFORMED BY: Susan F. Kojin

DATE: 7-26-99

REVIEWED BY: V. C. Rogers

DATE: 7-26-99

**CIMARRON CORPORATION - CIMARRON FACILITY**  
**TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDEN**  
**AFFECTED AREA 'G' - DEPTH - DRAINAGE**

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) <sup>2</sup>
51	6	-1.35	1.82
52	6	-1.35	1.82
53	6	-1.35	1.82
54	6	-1.35	1.82
55	6	-1.35	1.82
56	6	-1.35	1.82
57	6	-1.35	1.82
58	6	-1.35	1.82
59	6	-1.35	1.82
60	6	-1.35	1.82
61	6	-1.35	1.82
62	6	-1.35	1.82
63	6	-1.35	1.82
64	6	-1.35	1.82
65	6	-1.35	1.82
66	6	-1.35	1.82
67	6	-1.35	1.82
68	6.1	-1.25	1.56
69	6.1	-1.25	1.56
70	6.1	-1.25	1.56
71	6.2	-1.15	1.32
72	6.2	-1.15	1.32
73	6.2	-1.15	1.32
74	6.2	-1.15	1.32
75	6.3	-1.05	1.10
76	6.4	-0.95	0.90
77	6.4	-0.95	0.90
78	6.5	-0.85	0.72
79	6.5	-0.85	0.72
80	6.5	-0.85	0.72
81	6.6	-0.75	0.56
82	6.6	-0.75	0.56
83	6.6	-0.75	0.56
84	6.6	-0.75	0.56
85	6.6	-0.75	0.56
86	6.7	-0.65	0.42
87	6.7	-0.65	0.42
88	6.8	-0.55	0.30
89	6.8	-0.55	0.30
90	6.8	-0.55	0.30
91	6.8	-0.55	0.30
92	6.8	-0.55	0.30
93	6.9	-0.45	0.20
94	6.9	-0.45	0.20
95	6.9	-0.45	0.20
96	6.9	-0.45	0.20
97	6.9	-0.45	0.20
98	6.9	-0.45	0.20
99	6.9	-0.45	0.20
100	6.9	-0.45	0.20
	319.3		52.7
	Sum(n)		Sum(n-N) <sup>2</sup>

n = pCi/g TOTAL

Number	n	(n-N)	(n-N) <sup>2</sup>
101	7	-0.35	0.12
102	7	-0.35	0.12
103	7	-0.35	0.12
104	7	-0.35	0.12
105	7	-0.35	0.12
106	7	-0.35	0.12
107	7	-0.35	0.12
108	7	-0.35	0.12
109	7	-0.35	0.12
110	7	-0.35	0.12
111	7	-0.35	0.12
112	7	-0.35	0.12
113	7	-0.35	0.12
114	7	-0.35	0.12
115	7	-0.35	0.12
116	7	-0.35	0.12
117	7	-0.35	0.12
118	7	-0.35	0.12
119	7	-0.35	0.12
120	7	-0.35	0.12
121	7	-0.35	0.12
122	7	-0.35	0.12
123	7	-0.35	0.12
124	7	-0.35	0.12
125	7	-0.35	0.12
126	7	-0.35	0.12
127	7	-0.35	0.12
128	7	-0.35	0.12
129	7	-0.35	0.12
130	7	-0.35	0.12
131	7.1	-0.25	0.06
132	7.1	-0.25	0.06
133	7.1	-0.25	0.06
134	7.1	-0.25	0.06
135	7.1	-0.25	0.06
136	7.2	-0.15	0.02
137	7.2	-0.15	0.02
138	7.2	-0.15	0.02
139	7.2	-0.15	0.02
140	7.3	-0.05	0.00
141	7.3	-0.05	0.00
142	7.3	-0.05	0.00
143	7.3	-0.05	0.00
144	7.4	0.05	0.00
145	7.4	0.05	0.00
146	7.4	0.05	0.00
147	7.5	0.15	0.02
148	7.5	0.15	0.02
149	7.5	0.15	0.02
150	7.5	0.15	0.02
	355.7		4.2
	Sum(n)		Sum(n-N) <sup>2</sup>



**CIMARRON CORPORATION - CIMARRON FACILITY**  
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**AFFECTED AREA 'G' - DEPTH - DRAINAGE**

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) <sup>2</sup>
151	7.5	0.15	0.02
152	7.5	0.15	0.02
153	7.5	0.15	0.02
154	7.6	0.25	0.06
155	7.6	0.25	0.06
156	7.6	0.25	0.06
157	7.6	0.25	0.06
158	7.6	0.25	0.06
159	7.7	0.35	0.12
160	7.7	0.35	0.12
161	7.7	0.35	0.12
162	7.7	0.35	0.12
163	7.7	0.35	0.12
164	7.7	0.35	0.12
165	7.7	0.35	0.12
166	7.7	0.35	0.12
167	7.7	0.35	0.12
168	7.8	0.45	0.20
169	7.8	0.45	0.20
170	7.8	0.45	0.20
171	7.9	0.55	0.30
172	7.9	0.55	0.30
173	7.9	0.55	0.30
174	7.9	0.55	0.30
175	7.9	0.55	0.30
176	7.9	0.55	0.30
177	7.9	0.55	0.30
178	8	0.65	0.42
179	8	0.65	0.42
180	8	0.65	0.42
181	8	0.65	0.42
182	8	0.65	0.42
183	8	0.65	0.42
184	8	0.65	0.42
185	8	0.65	0.42
186	8	0.65	0.42
187	8	0.65	0.42
188	8	0.65	0.42
189	8	0.65	0.42
190	8	0.65	0.42
191	8	0.65	0.42
192	8	0.65	0.42
193	8	0.65	0.42
194	8	0.65	0.42
195	8	0.65	0.42
196	8	0.65	0.42
197	8	0.65	0.42
198	8	0.65	0.42
199	8	0.65	0.42
200	8	0.65	0.42
	392.5		14.0
	Sum(n)		Sum(n-N) <sup>2</sup>

n = pCi/g TOTAL

Number	n	(n-N)	(n-N) <sup>2</sup>
201	8	0.65	0.42
202	8	0.65	0.42
203	8	0.65	0.42
204	8	0.65	0.42
205	8	0.65	0.42
206	8	0.65	0.42
207	8	0.65	0.42
208	8	0.65	0.42
209	8.1	0.75	0.56
210	8.1	0.75	0.56
211	8.1	0.75	0.56
212	8.1	0.75	0.56
213	8.1	0.75	0.56
214	8.2	0.85	0.72
215	8.2	0.85	0.72
216	8.2	0.85	0.72
217	8.2	0.85	0.72
218	8.2	0.85	0.72
219	8.3	0.95	0.90
220	8.3	0.95	0.90
221	8.3	0.95	0.90
222	8.3	0.95	0.90
223	8.3	0.95	0.90
224	8.3	0.95	0.90
225	8.4	1.05	1.10
226	8.4	1.05	1.10
227	8.4	1.05	1.10
228	8.4	1.05	1.10
229	8.5	1.15	1.32
230	8.5	1.15	1.32
231	8.5	1.15	1.32
232	8.5	1.15	1.32
233	8.5	1.15	1.32
234	8.6	1.25	1.56
235	8.6	1.25	1.56
236	8.6	1.25	1.56
237	8.6	1.25	1.56
238	8.6	1.25	1.56
239	8.7	1.35	1.82
240	8.7	1.35	1.82
241	8.7	1.35	1.82
242	8.7	1.35	1.82
243	8.7	1.35	1.82
244	8.7	1.35	1.82
245	8.8	1.45	2.10
246	8.8	1.45	2.10
247	8.8	1.45	2.10
248	8.8	1.45	2.10
249	8.8	1.45	2.10
250	8.8	1.45	2.10
	419.4		57.7
	Sum(n)		Sum(n-N) <sup>2</sup>

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n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) <sup>2</sup>
251	8.8	1.45	2.10
252	8.8	1.45	2.10
253	8.8	1.45	2.10
254	8.8	1.45	2.10
255	8.8	1.45	2.10
256	8.9	1.55	2.40
257	8.9	1.55	2.40
258	8.9	1.55	2.40
259	8.9	1.55	2.40
260	9	1.65	2.73
261	9	1.65	2.73
262	9	1.65	2.73
263	9	1.65	2.73
264	9	1.65	2.73
265	9	1.65	2.73
266	9	1.65	2.73
267	9	1.65	2.73
268	9	1.65	2.73
269	9	1.65	2.73
270	9	1.65	2.73
271	9	1.65	2.73
272	9	1.65	2.73
273	9	1.65	2.73
274	9	1.65	2.73
275	9	1.65	2.73
276	9	1.65	2.73
277	9	1.65	2.73
278	9	1.65	2.73
279	9	1.65	2.73
280	9	1.65	2.73
281	9	1.65	2.73
282	9	1.65	2.73
283	9	1.65	2.73
284	9	1.65	2.73
285	9.1	1.75	3.07
286	9.1	1.75	3.07
287	9.1	1.75	3.07
288	9.1	1.75	3.07
289	9.2	1.85	3.43
290	9.2	1.85	3.43
291	9.2	1.85	3.43
292	9.2	1.85	3.43
293	9.3	1.95	3.81
294	9.3	1.95	3.81
295	9.3	1.95	3.81
296	9.3	1.95	3.81
297	9.3	1.95	3.81
298	9.3	1.95	3.81
299	9.4	2.05	4.21
300	9.4	2.05	4.21
	452.4		145.5
	Sum(n)		Sum(n-N) <sup>2</sup>

n = pCi/g TOTAL

Number	n	(n-N)	(n-N) <sup>2</sup>
301	9.4	2.05	4.21
302	9.4	2.05	4.21
303	9.4	2.05	4.21
304	9.4	2.05	4.21
305	9.4	2.05	4.21
306	9.4	2.05	4.21
307	9.5	2.15	4.63
308	9.5	2.15	4.63
309	9.6	2.25	5.07
310	9.6	2.25	5.07
311	9.6	2.25	5.07
312	9.6	2.25	5.07
313	9.6	2.25	5.07
314	9.6	2.25	5.07
315	9.6	2.25	5.07
316	9.7	2.35	5.53
317	9.8	2.45	6.01
318	9.8	2.45	6.01
319	9.9	2.55	6.51
320	9.9	2.55	6.51
321	9.9	2.55	6.51
322	10	2.65	7.03
323	10	2.65	7.03
324	10	2.65	7.03
325	10	2.65	7.03
326	10	2.65	7.03
327	10	2.65	7.03
328	10	2.65	7.03
329	10	2.65	7.03
330	10	2.65	7.03
331	10	2.65	7.03
332	10	2.65	7.03
333	10	2.65	7.03
334	10	2.65	7.03
335	10	2.65	7.03
336	10.1	2.75	7.57
337	10.2	2.85	8.13
338	10.3	2.95	8.71
339	10.4	3.05	9.31
340	10.6	3.25	10.57
341	10.7	3.35	11.23
342	10.7	3.35	11.23
343	10.7	3.35	11.23
344	10.7	3.35	11.23
345	10.8	3.45	11.91
346	10.9	3.55	12.61
347	10.9	3.55	12.61
348	11	3.65	13.33
349	11	3.65	13.33
350	11	3.65	13.33
	501.6		371.7
	Sum(n)		Sum(n-N) <sup>2</sup>