

FINAL STATUS SURVEY REPORT FOR SUBAREA M

for

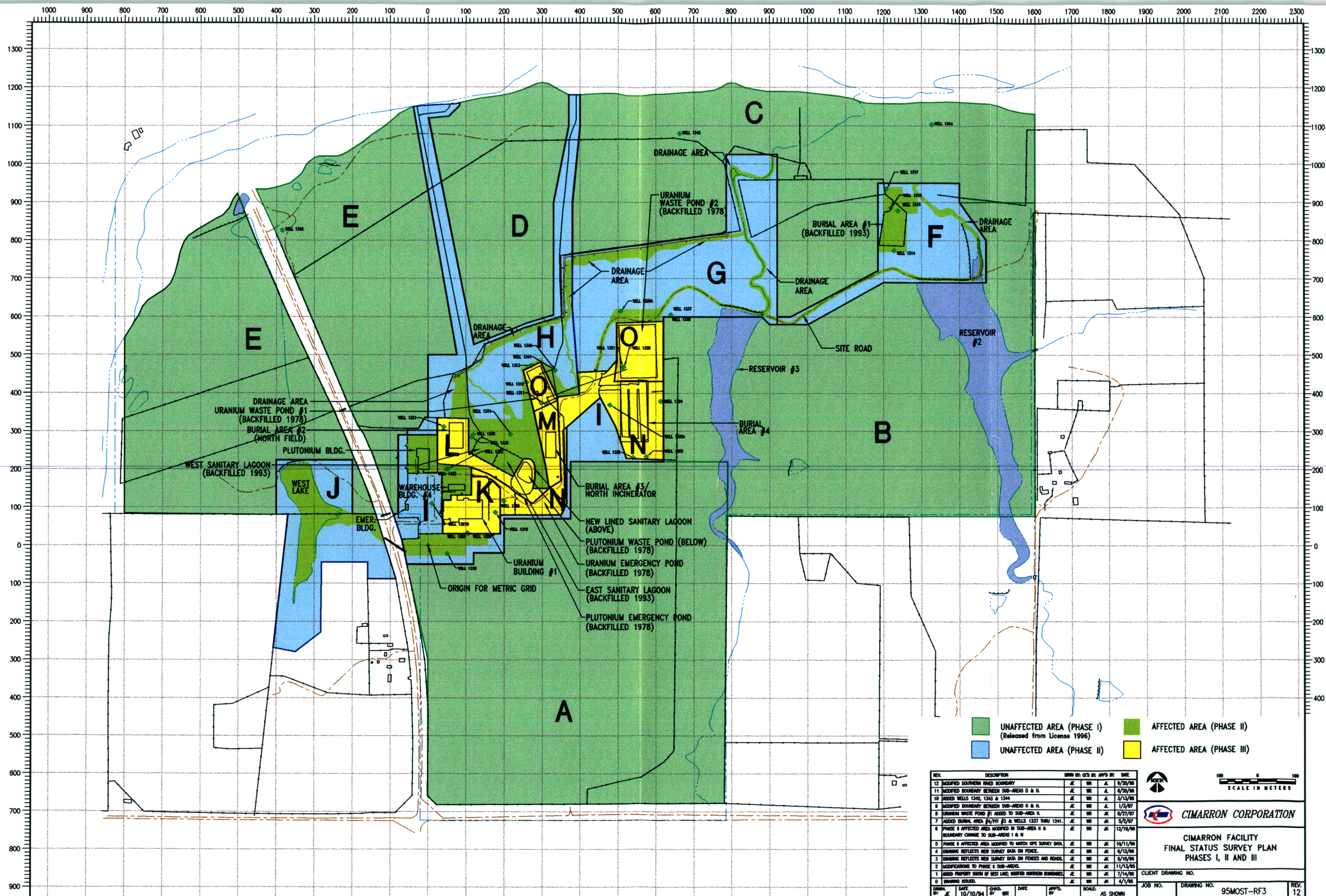
**Cimarron Corporation's Former
Nuclear Fuel Fabrication Facility
Crescent, Oklahoma**

License Number: SNM-928



Prepared for:


**Cimarron Corporation
Oklahoma City, Oklahoma**

December 1998



REV.	DESCRIPTION	BY	CHKD.	DATE
12	MODIFIED SOUTHERN FENCE BOUNDARY	JE	WR	8/20/96
11	MODIFIED BOUNDARY BETWEEN SUB-AREAS D & H	JE	WR	8/20/96
10	ADDED WELLS 1342, 1343 & 1344	JE	WR	3/13/96
9	MODIFIED BOUNDARY BETWEEN SUB-AREAS G & H	JE	WR	1/2/96
8	URANIUM WASTE POND #1 ADDED TO SUB-AREA G	JE	WR	8/21/97
7	ADDED BURIAL AREA #4/PT #3 & WELLS 1337 THRU 1341	JE	WR	5/2/97
6	PHASE I AFFECTED AREA MODIFIED IN SUB-AREA H & BOUNDARY CHANGE TO SUB-AREAS I & H	JE	WR	12/19/96
5	PHASE I AFFECTED AREA MODIFIED TO MATCH GPS SURVEY DATA	JE	WR	10/11/96
4	DRAWING REFLECTS NEW SURVEY DATA ON FENCE	JE	WR	8/13/96
3	DRAWING REFLECTS NEW SURVEY DATA ON FENCES AND ROADS	JE	WR	5/15/96
2	MODIFICATIONS TO PHASE I SUB-AREAS	JE	WR	11/13/95
1	ADDED PROPERTY SOUTH OF WEST LAKE, MODIFIED HATCHER BOUNDARIES	JE	WR	7/14/95
0	DRAWING ISSUED	JE	WR	4/1/95


CIMARRON CORPORATION

CIMARRON FACILITY
FINAL STATUS SURVEY PLAN
PHASES I, II AND III

CLIENT DRAWING NO. _____
 JOB NO. _____ DRAWING NO. **95MOST-RF3** REV. **12**

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
5 METER X 5 METER GRID INTERSECTS

QAQC-158
REV.1

DATE: 9/28/98

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'		4' - 5'		5' - 6'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	280 E - 345 N	4560	9	8	8	2	8	1	6	2	5	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
2	280 E - 350 N	4340	8	9	8	2	5	2	11	1	5	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
3	285 E - 320 N	4130	6	7	7	1	7	2	7	1	3	1	6	1	ROCK	ROCK	ROCK	ROCK
4	285 E - 325 N	3320	6	6	4	1	8	1	6	1	8	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
5	285 E - 330 N	3830	7	7	9	1	4	1	3	1	4	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
6	285 E - 335 N	3270	7	6	8	1	5	1	5	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
7	285 E - 340 N	4260	10	8	8	1	9	2	6	1	5	1	5	1	ROCK	ROCK	ROCK	ROCK
8	285 E - 345 N	3840	8	7	6	1	6	1	9	2	8	1	8	1	ROCK	ROCK	ROCK	ROCK
9	285 E - 350 N	4130	8	7	5	2	7	2	7	1	10	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
10	285 E - 355 N	4060	7	7	9	2	10	2	5	2	10	2	7	1	ROCK	ROCK	ROCK	ROCK
11	290 E - 300 N	4230	8	9	7	2	7	2	6	2	8	2	8	1	4	1	3	1
12	290 E - 305 N	4190	7	8	6	1	6	1	9	1	8	2	6	1	5	1	5	1
13	290 E - 310 N	4200	7	9	6	1	6	1	4	1	5	1	4	1	ROCK	ROCK	ROCK	ROCK
14	290 E - 315 N	3690	8	7	10	1	4	2	4	1	2	1	8	1	ROCK	ROCK	ROCK	ROCK
15	290 E - 320 N	3170	7	6	5	1	6	1	4	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
16	290 E - 325 N	3170	8	7	9	1	12	1	5	1	7	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
17	290 E - 330 N	3510	8	7	10	2	8	2	5	1	8	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
18	290 E - 335 N	3180	7	7	10	1	11	2	6	2	10	1	6	1	ROCK	ROCK	ROCK	ROCK
19	290 E - 340 N	3390	5	6	5	1	8	1	6	1	11	2	12	2	5	1	ROCK	ROCK
20	290 E - 345 N	3230	6	6	6	1	8	1	9	1	8	2	6	1	10	1	ROCK	ROCK

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER - SN-9081 µr/hr

7

2

LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI Detector CPM
S/N - 48395 or S/N - 50057

2500

N/A

CIMARRON SOIL COUNTER 4" X 4" X 16" NaI Detector pCi/G

4 Total U

10

1.5 Th (Nat)

1

BACKGROUND NOT SUBTRACTED

PAGE 1

REVIEWED BY: W.A. Rogers

DATE: 10-12-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
5 METER X 5 METER GRID INTERSECTS

QAQC-158
REV.1

DATE: 9/28/98

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'		4' - 5'		5' - 6'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	290 E - 350 N	2990	7	7	10	1	7	1	5	2	7	1	9	1	2	1	ROCK	ROCK
2	290 E - 355 N	4020	8	8	8	2	5	2	6	1	6	2	7	2	11	1	4	1
3	295 E - 275 N	3880	10	10	6	1	5	1	6	1	5	2	4	1	4	1	ROCK	ROCK
4	295 E - 280 N	3140	7	7	7	2	7	1	5	1	8	1	10	2	4	1	ROCK	ROCK
5	295 E - 285 N	2730	7	6	6	1	8	1	7	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
6	295 E - 290 N	3270	7	7	7	1	5	2	5	2	5	1	8	1	ROCK	ROCK	ROCK	ROCK
7	295 E - 295 N	4120	8	7	11	2	9	1	9	2	8	1	6	1	ROCK	ROCK	ROCK	ROCK
8	295 E - 300 N	3640	7	7	8	2	8	1	8	1	10	1	3	1	9	1	ROCK	ROCK
9	295 E - 305 N	3280	6	6	4	2	6	1	7	1	8	1	6	1	7	1	8	1
10	295 E - 310 N	3470	7	7	5	2	9	2	7	1	8	1	5	1	5	1	6	1
11	295 E - 315 N	3400	7	6	18	2	19	1	17	1	13	1	9	1	ROCK	ROCK	ROCK	ROCK
12	295 E - 320 N	3560	7	6	6	1	6	1	6	1	8	1	8	2	9	1	11	1
13	295 E - 325 N	2820	6	6	6	1	8	1	5	1	6	2	12	2	5	1	ROCK	ROCK
14	295 E - 330 N	3210	6	7	6	2	7	1	9	1	12	1	7	1	6	1	4	1
15	295 E - 335 N	3550	7	7	7	1	6	1	6	1	3	1	6	1	7	1	9	1
16	295 E - 340 N	3430	8	8	8	2	5	2	9	1	9	2	3	1	10	1	5	2
17	295 E - 345 N	2770	7	7	9	1	8	1	9	2	6	2	7	1	5	1	8	1
18	295 E - 350 N	3410	7	7	7	1	10	2	7	2	8	2	8	1	ROCK	ROCK	ROCK	ROCK
19	295 E - 355 N	3560	8	6	7	2	7	2	6	1	6	1	9	2	9	2	5	1
20	E - N																	

INSTRUMENTS: RESULTS IN
LUDLUM MICRO 'R' METER - SN-9081 $\mu\text{r/hr}$

BACKGROUND MDA
7 2

LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI Detector CPM
S/N - 48395 or S/N - 50057

2500 N/A

CIMARRON SOIL COUNTER 4" X 4" X 16" NaI Detector pCi/G

4 Total U 10
1.5 Th (Nat) 1

BACKGROUND NOT SUBTRACTED

PAGE 2

REVIEWED BY: W.A. Rogers DATE: 10-12-98

CIMARRON CORPORATION
 CIMARRON FACILITY
 PHASE III, SUB-AREA "M"
 POST REMEDIATION SOIL SAMPLES
 5 METER X 5 METER GRID INTERSECTS

QAQC-158
 REV.1

DATE: 9/28/98

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'		4' - 5'		5' - 6'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	300 E - 255 N	3390	8	8	7	2	5	1	5	2	3	1	8	1	5	1	ROCK	ROCK
2	300 E - 260 N	3420	7	7	13	2	9	2	6	1	4	2	11	2	15	1	ROCK	ROCK
3	300 E - 265 N	3400	7	7	12	2	5	2	12	2	13	2	7	1	5	1	8	1
4	300 E - 270 N	2840	7	7	5	2	6	2	5	1	5	2	7	1	6	1	6	1
5	300 E - 275 N	2860	6	6	4	1	6	1	6	1	8	1	10	1	5	1	6	1
6	300 E - 280 N	2370	6	6	6	1	8	1	6	2	9	1	6	1	ROCK	ROCK	ROCK	ROCK
7	300 E - 285 N	2790	8	7	7	2	9	1	9	2	8	1	6	1	10	1	ROCK	ROCK
8	300 E - 290 N	2920	7	7	5	2	11	1	6	1	11	1	10	1	7	1	ROCK	ROCK
9	300 E - 295 N	3620	6	7	8	2	6	1	12	1	6	1	8	1	5	1	12	1
10	300 E - 300 N	3240	8	7	6	1	8	2	4	1	8	1	8	1	5	1	8	1
11	300 E - 305 N	3150	7	8	7	2	4	2	8	1	8	2	9	2	10	2	9	1
12	300 E - 310 N	3330	7	6	8	2	10	2	7	1	7	2	8	2	6	1	7	2
13	300 E - 315 N	3470	7	7	7	1	9	1	9	1	9	1	14	1	7	2	9	1
14	300 E - 320 N	3100	7	6	11	2	7	2	9	1	6	1	8	1	8	1	ROCK	ROCK
15	300 E - 325 N	3050	7	6	11	1	16	2	5	1	6	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
16	300 E - 330 N	3110	7	7	8	1	9	1	6	1	8	1	6	1	7	1	ROCK	ROCK
17	300 E - 335 N	3490	6	6	10	1	4	1	7	2	5	1	6	1	6	1	ROCK	ROCK
18	300 E - 340 N	3090	6	5	6	1	7	1	4	2	7	1	10	1	7	1	8	1
19	300 E - 345 N	3320	8	6	7	2	5	1	6	1	7	1	7	1	8	2	7	1
20	300 E - 350 N	3800	7	7	5	1	10	2	10	2	8	2	6	1	6	1	7	2

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER - SN-9081 µr/hr

7

2

LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI Detector CPM
 S/N - 48395 or S/N - 50057

2500

N/A

CIMARRON SOIL COUNTER 4" X 4" X 16" NaI Detector pCi/G

4 Total U
1.5 Th (Nat)

10
1

BACKGROUND NOT SUBTRACTED

PAGE 3

REVIEWED BY: W. A. Rogers

DATE: 10-12-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
5 METER X 5 METER GRID INTERSECTS

QAQC-158
REV.1

DATE: 9/28/98

LN #	GRID NUMBER	3" DETEC C.P.M.	MICRO R' SURF	MICRO R' 1 meter	pCi/g													
					0 - 6"		6" - 1'		1' - 2'		2' - 3'		3' - 4'		4' - 5'		5' - 6'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	300 E - 355 N	3910	7	7	6	1	12	2	6	2	6	2	6	2	9	2	5	2
2	300 E - 360 N	2990	9	8	11	1	7	2	6	1	7	1	5	2	13	1	7	2
3	305 E - 230 N	2820	7	7	8	1	7	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
4	305 E - 235 N	2790	8	8	6	1	6	1	6	1	7	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
5	305 E - 240 N	3070	7	7	14	1	4	1	7	1	4	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
6	305 E - 245 N	2940	8	7	5	2	5	2	8	1	6	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
7	305 E - 250 N	2780	8	7	4	2	6	1	4	1	5	1	4	1	ROCK	ROCK	ROCK	ROCK
8	305 E - 255 N	2950	7	8	5	2	4	2	5	1	9	1	6	1	ROCK	ROCK	ROCK	ROCK
9	305 E - 260 N	3010	7	6	6	2	9	2	7	2	9	1	13	2	10	1	6	1
10	305 E - 265 N	3270	7	6	8	1	9	1	8	2	5	2	9	1	8	2	9	1
11	305 E - 270 N	3100	6	5	10	2	7	1	5	1	14	2	8	2	7	1	6	1
12	305 E - 275 N	2940	7	7	4	2	8	1	7	2	6	1	4	1	ROCK	ROCK	ROCK	ROCK
13	305 E - 280 N	2760	6	7	9	1	13	1	6	1	12	1	6	2	6	1	ROCK	ROCK
14	305 E - 285 N	3070	8	7	12	2	6	1	9	2	5	2	5	1	ROCK	ROCK	ROCK	ROCK
15	305 E - 290 N	2680	7	7	5	1	9	1	6	1	8	2	8	1	5	1	ROCK	ROCK
16	305 E - 295 N	3370	6	7	4	1	8	1	7	1	7	1	8	1	6	1	6	1
17	305 E - 300 N	3470	6	7	13	2	6	1	5	1	6	2	10	1	4	1	18	1
18	305 E - 305 N	3440	8	6	6	1	8	2	4	2	8	2	6	2	4	2	10	2
19	305 E - 310 N	3070	7	6	5	1	4	2	6	1	9	1	8	1	6	1	9	1
20	305 E - 315 N	2910	6	8	8	1	8	1	4	1	5	1	10	1	10	1	7	1

INSTRUMENTS:	RESULTS IN	BACKGROUND	MDA
LUDLUM MICRO 'R' METER - SN-9081	µr/hr	7	2
LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI Detector S/N - 48395 or S/N - 50057	CPM	2500	N/A
CIMARRON SOIL COUNTER 4" X 4" X 16" NaI Detector	pCi/G	4 Total U 1.5 Th (Nat)	10 1

BACKGROUND NOT SUBTRACTED

PAGE 4

REVIEWED BY: W.A. Rogers DATE: 10-12-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
5 METER X 5 METER GRID INTERSECTS

QAQC-158
REV.1

DATE: 9/28/98

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'		4' - 5'		5' - 6'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	305 E - 320 N	3160	7	6	8	2	12	1	9	1	10	1	14	1	6	1	8	1
2	305 E - 325 N	3240	7	6	11	1	10	1	10	1	9	1	11	1	5	1	ROCK	ROCK
3	305 E - 330 N	3150	6	6	13	2	8	1	10	1	11	1	11	2	8	1	ROCK	ROCK
4	305 E - 335 N	3020	7	6	7	2	8	1	8	1	8	1	7	1	8	1	9	2
5	305 E - 340 N	3040	7	7	7	1	7	1	11	1	10	1	10	1	8	1	ROCK	ROCK
6	305 E - 345 N	3710	8	8	9	2	8	1	7	2	5	2	5	2	6	1	9	1
7	305 E - 350 N	3420	8	7	7	1	4	2	7	2	7	2	8	2	9	2	6	2
8	305 E - 355 N	4270	7	8	3	1	7	2	7	2	7	2	10	1	8	2	6	2
9	305 E - 360 N	3250	8	7	8	1	10	1	8	1	5	2	4	2	11	2	9	2
10	310 E - 205 N	2650	6	7	6	1	7	1	6	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
11	310 E - 210 N	3460	8	7	4	2	6	1	7	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
12	310 E - 215 N	3200	7	7	7	1	3	2	6	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
13	310 E - 220 N	3320	7	8	7	2	6	2	4	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
14	310 E - 225 N	2800	7	7	6	1	10	1	11	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
15	310 E - 230 N	2480	7	7	10	1	9	1	7	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
16	310 E - 235 N	2590	7	7	11	2	9	1	12	1	5	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
17	310 E - 240 N	2440	8	7	4	1	7	1	10	1	6	1	5	1	ROCK	ROCK	ROCK	ROCK
18	310 E - 245 N	2840	7	7	9	2	6	1	4	1	6	1	5	1	6	1	ROCK	ROCK
19	310 E - 250 N	2890	7	7	6	2	6	1	8	1	3	1	9	1	5	1	ROCK	ROCK
20	310 E - 255 N	2610	8	8	6	2	9	1	7	2	9	1	8	1	ROCK	ROCK	ROCK	ROCK

INSTRUMENTS:

LUDLUM MICRO 'R' METER - SN-9081 μr/hr

LUDLUM 2220, LEAD SHIELDED 3" X 1 1/2" NaI Detector CPM
S/N - 48395 or S/N - 50057

CIMARRON SOIL COUNTER 4" X 4" X 16" NaI Detector pCi/G

RESULTS IN

BACKGROUND

MDA

7

2

2500

N/A

4 Total U

10

1.5 Th (Nat)

1

BACKGROUND NOT SUBTRACTED

REVIEWED BY: W.A. Rogers

DATE: 10-12-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
5 METER X 5 METER GRID INTERSECTS

QAQC-158
REV.1

DATE: 9/28/98

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'		4' - 5'		5' - 6'			
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	310 E - 260 N	3150	6	6	9	2	5	1	6	1	5	2	8	1	7	2	4	1		
2	310 E - 265 N	2920	6	6	7	1	8	1	6	1	8	1	6	1	17	1	12	1		
3	310 E - 270 N	3460	7	7	6	2	7	2	11	2	7	1	6	1	7	2	3	1		
4	310 E - 275 N	3080	7	7	6	2	8	1	6	2	9	1	7	1	7	2	4	2		
5	310 E - 280 N	2940	7	7	7	1	27	1	7	2	7	1	8	1	7	1	7	1		
6	310 E - 285 N	2630	8	7	12	1	6	1	7	1	12	1	5	1	4	1	ROCK	ROCK		
7	310 E - 290 N	2700	7	8	9	1	4	1	8	1	5	1	5	1	4	1	7	1		
8	310 E - 295 N	2830	7	6	8	1	7	1	6	1	7	2	9	1	7	1	11	2		
9	310 E - 300 N	3310	6	7	5	2	6	2	8	2	9	2	9	2	16	1	8	2		
10	310 E - 305 N	3480	7	7	9	2	10	2	6	2	5	1	9	1	15	2	12	1		
11	310 E - 310 N	3690	7	7	6	1	7	1	6	1	8	1	7	1	19	1	8	1		
12	310 E - 315 N	3450	7	7	8	1	5	1	6	1	10	1	8	1	4	1	5	1		
13	310 E - 320 N	3430	8	8	5	1	5	1	7	1	4	1	3	1	6	1	5	1		
14	310 E - 325 N	3210	6	6	7	1	4	1	3	1	7	1	4	1	6	1	ROCK	ROCK		
15	310 E - 330 N	4040	7	6	7	1	5	2	8	1	6	1	6	1	6	1	5	1		
16	310 E - 335 N	4350	7	8	9	2	6	2	7	1	6	2	8	1	10	1	9	1		
17	310 E - 340 N	4340	7	7	5	2	14	1	9	1	8	1	7	1	6	1	ROCK	ROCK		
18	310 E - 345 N	4380	8	7	7	2	8	1	9	2	5	1	6	1	5	1	ROCK	ROCK		
19	310 E - 350 N	4710	8	9	5	1	6	2	5	2	13	1	12	1	12	1	4	2		
20	310 E - 355 N	4530	9	8	9	2	8	1	10	2	7	2	6	2	7	2	5	2		

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER - SN-9081

µr/hr

7

2

LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI Detector
S/N - 48395 or S/N - 50057

CPM

2500

N/A

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

pCi/G

4 Total U
1.5 Th (Nat)

10
1

BACKGROUND NOT SUBTRACTED

REVIEWED BY:

W. A. Boyer

DATE:

10-12-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
5 METER X 5 METER GRID INTERSECTS

QAQC-158
REV.1

DATE: 9/28/98

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'		4' - 5'		5' - 6'			
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	310 E - 360 N	3330	8	7	8	1	12	1	5	2	8	2	9	1	8	2	14	2		
2	310 E - 365 N	3420	7	7	12	2	10	2	5	2	8	2	12	2	6	2	5	2		
3	315 E - 170 N	4350	8	7	19	1	18	2	8	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
4	315 E - 175 N	3840	8	7	7	2	9	2	9	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
5	315 E - 180 N	3660	7	6	9	2	8	2	7	2	10	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
6	315 E - 185 N	3310	7	6	11	2	4	1	10	2	11	2	7	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
7	315 E - 190 N	3630	7	7	1	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
8	315 E - 195 N	3210	8	7	7	1	8	1	9	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
9	315 E - 200 N	2800	7	7	5	1	10	1	5	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
10	315 E - 205 N	3410	7	6	23	1	5	1	5	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
11	315 E - 210 N	3400	7	7	5	1	5	1	7	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
12	315 E - 215 N	3850	7	7	11	1	8	1	9	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
13	315 E - 220 N	3460	7	7	8	1	10	1	7	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
14	315 E - 225 N	2680	7	7	7	2	10	1	7	1	6	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
15	315 E - 230 N	2780	7	7	8	1	5	1	8	1	9	1	6	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
16	315 E - 235 N	2730	7	7	18	1	10	1	27	2	15	1	9	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
17	315 E - 240 N	3120	7	7	37	1	38	1	18	1	11	1	8	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
18	315 E - 245 N	3040	7	7	16	1	12	2	6	1	6	1	6	2	5	1	ROCK	ROCK	ROCK	ROCK
19	315 E - 250 N	3010	7	7	15	1	18	1	19	2	6	1	10	1	7	2	ROCK	ROCK	ROCK	ROCK
20	315 E - 255 N	2860	7	7	7	1	10	1	10	2	9	1	11	1	11	1	8	1		

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER - SN-9081 µr/hr

7

2

LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI Detector CPM
S/N - 48395 or S/N - 50057

2500

N/A

CIMARRON SOIL COUNTER 4" 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:

10-12-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
5 METER X 5 METER GRID INTERSECTS

QAQC-158
REV.1

DATE: 9/28/98

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'		4' - 5'		5' - 6'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	315 E - 260 N	2820	6	6	8	1	8	1	10	2	12	2	5	1	12	2	11	2
2	315 E - 265 N	2970	6	7	13	1	35	2	11	1	7	2	7	1	10	1	7	1
3	315 E - 270 N	2870	6	7	10	2	8	2	14	2	9	2	12	1	7	1	ROCK	ROCK
4	315 E - 275 N	2910	7	5	7	2	6	1	12	1	14	3	10	2	10	2	11	2
5	315 E - 280 N	3210	6	6	11	2	13	1	12	2	7	2	8	1	6	1	9	1
6	315 E - 285 N	2660	7	7	6	1	5	2	9	2	21	1	11	1	ROCK	ROCK	ROCK	ROCK
7	315 E - 290 N	2960	6	6	8	2	4	2	7	1	6	2	7	1	5	1	5	1
8	315 E - 295 N	3290	7	8	7	2	7	1	9	1	7	2	4	1	6	1	6	1
9	315 E - 300 N	3490	6	6	7	2	5	1	5	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
10	315 E - 305 N	3350	7	7	7	1	9	2	9	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
11	315 E - 310 N	3440	8	7	8	1	8	2	6	1	8	1	8	1	9	1	8	1
12	315 E - 315 N	4580	8	8	12	2	6	2	8	1	6	2	7	1	8	1	ROCK	ROCK
13	315 E - 320 N	3910	9	7	12	2	12	1	4	1	9	1	8	1	9	1	5	1
14	315 E - 325 N	4330	7	7	11	2	14	2	17	1	8	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
15	315 E - 330 N	3910	8	9	13	2	10	1	14	2	11	2	6	1	8	2	ROCK	ROCK
16	315 E - 335 N	3770	7	6	8	2	6	3	6	2	9	1	6	1	6	1	11	1
17	315 E - 340 N	3610	8	8	7	1	5	1	10	1	6	1	8	1	4	1	ROCK	ROCK
18	315 E - 345 N	4580	7	9	7	2	12	1	8	2	7	2	10	1	5	2	6	1
19	315 E - 350 N	4980	9	8	8	2	6	1	8	1	8	2	6	2	6	2	5	2
20	315 E - 355 N	4190	8	9	6	2	5	2	5	2	8	2	10	2	5	2	11	2

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER - SN-9081 µr/hr

7

2

LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI Detector CPM
S/N - 48395 or S/N - 50057

2500

N/A

CIMARRON SOIL COUNTER 4" X 4" X 16" NaI Detector pCi/G

4 Total U
1.5 Th (Nat)

10
1

BACKGROUND NOT SUBTRACTED

REVIEWED BY: W. A. Rogers

DATE: 10-12-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
5 METER X 5 METER GRID INTERSECTS

QAQC-158
REV.1

DATE: 9/28/98

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'		4' - 5'		5' - 6'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	315 E - 360 N	3430	8	8	13	2	6	2	11	2	8	2	4	2	6	2	4	2
2	315 E - 365 N	3390	8	9	5	2	7	2	7	2	6	2	8	1	6	2	8	2
3	320 E - 155 N	3700	8	7	6	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
4	320 E - 160 N	3350	6	7	9	1	7	2	14	1	13	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
5	320 E - 165 N	4010	6	7	8	2	5	2	9	1	3	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
6	320 E - 170 N	3580	7	7	9	2	8	2	8	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
7	320 E - 175 N	4050	6	7	6	2	2	1	9	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
8	320 E - 180 N	3780	8	7	13	1	6	1	7	1	7	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
9	320 E - 185 N	3550	8	8	4	2	8	2	11	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
10	320 E - 190 N	2670	7	7	5	1	8	2	5	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
11	320 E - 195 N	3170	8	7	8	1	5	1	6	1	5	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
12	320 E - 200 N	2910	7	7	7	1	8	1	7	2	9	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
13	320 E - 205 N	3810	7	7	8	1	5	1	6	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
14	320 E - 210 N	3050	7	7	12	1	11	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
15	320 E - 215 N	3210	7	7	5	1	6	1	6	1	7	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
16	320 E - 220 N	3170	7	7	10	1	5	1	5	2	6	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
17	320 E - 225 N	2900	8	7	5	2	10	1	5	1	7	1	8	1	ROCK	ROCK	ROCK	ROCK
18	320 E - 230 N	2550	7	7	6	1	6	1	8	1	8	1	8	1	ROCK	ROCK	ROCK	ROCK
19	320 E - 235 N	3000	8	7	8	1	7	1	7	1	7	1	7	1	ROCK	ROCK	ROCK	ROCK
20	320 E - 240 N	3700	8	7	5	1	10	1	11	1	10	1	10	1	8	1	6	1

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER - SN-9081

µr/hr

7

2

LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI Detector
S/N - 48395 or S/N - 50057

CPM

2500

N/A

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

pCi/G

4 Total U
1.5 Th (Nat)

10
1

BACKGROUND NOT SUBTRACTED

REVIEWED BY: *W. A. Pogue*

DATE: 10-12-88

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
5 METER X 5 METER GRID INTERSECTS

QAQC-158
REV.1

DATE: 9/28/98

LN #	GRID NUMBER	3" DETEC C.P.M.	MICRO R' SURF	MICRO R' 1 meter	pCi/g													
					0 - 6"		6" - 1'		1' - 2'		2' - 3'		3' - 4'		4' - 5'		5' - 6'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	320 E - 245 N	2770	7	7	13	1	8	1	5	2	7	2	6	1	ROCK	ROCK	ROCK	ROCK
2	320 E - 250 N	2920	7	7	9	2	9	1	10	1	14	1	7	1	11	1	ROCK	ROCK
3	320 E - 255 N	3240	8	8	8	2	21	1	15	1	9	2	4	2	8	1	12	2
4	320 E - 260 N	3120	6	6	13	2	7	2	9	2	6	1	15	2	14	2	11	2
5	320 E - 265 N	3260	6	6	9	1	5	2	47	2	9	1	13	1	11	2	8	1
6	320 E - 270 N	2770	6	7	6	2	6	2	16	2	11	2	7	1	5	1	5	1
7	320 E - 275 N	2920	7	6	8	2	8	1	15	2	11	1	5	1	8	1	8	1
8	320 E - 280 N	2700	6	7	11	1	10	1	7	1	8	1	8	1	7	2	6	1
9	320 E - 285 N	2950	8	7	10	1	10	2	8	2	7	1	5	1	6	1	13	1
10	320 E - 290 n	2830	7	6	9	1	7	1	7	2	10	2	8	1	7	1	5	1
11	320 E - 295 N	3250	6	7	5	2	6	2	7	2	10	2	6	1	5	1	5	1
12	320 E - 300 N	3630	7	7	7	2	7	1	7	1	6	2	3	1	6	1	4	1
13	320 E - 305 N	3090	6	7	8	2	2	2	6	2	6	2	7	1	6	1	ROCK	ROCK
14	320 E - 310 N	3240	6	7	10	1	9	2	6	1	10	1	6	1	5	1	5	1
15	320 E - 315 N	4610	9	10	5	2	2	2	7	1	9	1	5	1	7	1	5	1
16	320 E - 320 N	5790	8	9	7	2	9	2	6	1	6	1	9	1	5	1	ROCK	ROCK
17	320 E - 325 N	3010	9	8	4	2	4	1	8	2	4	1	6	1	6	1	9	1
18	320 E - 330 N	3840	6	6	8	1	9	2	9	2	8	1	6	2	6	1	8	2
19	320 E - 335 N	3840	6	8	5	1	9	2	12	2	5	2	8	2	8	2	9	2
20	320 E - 340 N	4040	7	7	8	1	9	1	9	2	8	1	9	2	7	2	8	1

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER - SN-9081 µr/hr

7

2

LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI Detector CPM
S/N - 48395 or S/N - 50057

2500

N/A

CIMARRON SOIL COUNTER 4" X 4" X 16" NaI Detector pCi/G

4 Total U
1.5 Th (Nat)

10
1

BACKGROUND NOT SUBTRACTED

REVIEWED BY: *W. C. Rogers*

DATE: 10-12-98

CIMARRON CORPORATION
 CIMARRON FACILITY
 PHASE III, SUB-AREA "M"
 POST REMEDIATION SOIL SAMPLES
 5 METER X 5 METER GRID INTERSECTS

QAQC-158
 REV.1

DATE: 9/28/98

DATE: 3/26/00

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'		4' - 5'		5' - 6'		
								Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	
1	320	E	-	345	N	3020	8	8	5	1	8	2	5	1	10	2	8	2	6	1	4	2
2	320	E	-	350	N	3450	8	7	8	1	6	1	13	1	10	1	13	3	9	2	7	2
3	320	E	-	355	N	3970	8	9	9	1	7	1	9	1	14	1	7	1	6	2	7	2
4	320	E	-	360	N	3820	8	8	5	2	9	2	5	2	4	2	10	1	8	2	12	2
5	320	E	-	365	N	4110	9	9	6	1	8	1	6	2	6	1	7	2	8	2	7	2
6	320	E	-	370	N	4190	9	8	8	2	6	2	5	2	8	2	9	2	12	1	8	2
7	325	E	-	155	N	3630	7	8	10	1	6	1	8	1	6	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
8	325	E	-	160	N	3040	6	6	9	1	10	1	6	2	8	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
9	325	E	-	165	N	3310	7	6	5	1	8	1	7	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
10	325	E	-	170	N	3600	8	7	6	1	7	1	7	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
11	325	E	-	175	N	3420	8	7	7	1	2	1	8	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
12	325	E	-	180	N	3080	7	6	7	1	8	1	5	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
13	325	E	-	185	N	3300	7	6	9	2	6	1	10	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
14	325	E	-	190	N	3840	7	7	9	1	6	1	5	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
15	325	E	-	195	N	3290	8	7	10	2	12	1	7	1	6	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
16	325	E	-	200	N	3090	7	7	7	1	9	1	8	1	9	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
17	325	E	-	205	N	4990	10	8	7	1	8	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
18	325	E	-	210	N	3360	7	7	5	1	6	2	4	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
19	325	E	-	215	N	3580	7	7	7	1	7	1	4	1	7	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
20	325	E	-	220	N	3320	7	7	7	2	6	1	9	2	8	2	7	1	ROCK	ROCK	ROCK	ROCK

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER - SN-9081 µr/hr

7

2

LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI Detector CPM
S/N - 48395 or S/N - 50057

2500

N/A

CIMARRON SOIL COUNTER 4" X 4" X 16" NaI Detector pCi/G

4 Total U 10

1.5 Th (Nat) 1

BACKGROUND NOT SUBTRACTED

REVIEWED BY: W-G. Boyer

DATE: 10-12-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
5 METER X 5 METER GRID INTERSECTS

QAQC-158
REV.1

DATE: 9/28/98

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'		4' - 5'		5' - 6'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	325 E - 225 N	2960	7	7	9	1	5	2	6	2	7	1	7	2	ROCK	ROCK	ROCK	ROCK
2	325 E - 230 N	2800	8	7	5	1	5	2	6	1	5	2	7	2	ROCK	ROCK	ROCK	ROCK
3	325 E - 235 N	2740	7	7	5	1	5	2	5	1	7	1	5	1	6	1	ROCK	ROCK
4	325 E - 240 N	2740	8	7	7	2	6	1	8	1	6	1	11	1	6	1	7	2
5	325 E - 245 N	2920	8	7	14	1	10	2	11	2	7	2	7	2	8	2	10	2
6	325 E - 250 N	2840	7	7	8	2	8	1	7	2	14	2	7	2	13	2	7	2
7	325 E - 255 N	2930	8	7	13	1	7	2	9	2	10	2	8	2	8	2	10	2
8	325 E - 260 N	2840	6	6	10	2	6	2	7	2	10	2	11	2	12	2	7	2
9	325 E - 265 N	2870	7	6	10	1	15	1	17	2	11	1	21	1	14	1	15	1
10	325 E - 270 N	2770	7	7	8	1	4	2	5	1	6	2	4	1	9	1	7	2
11	325 E - 275 N	2920	7	6	8	2	7	2	7	2	6	1	7	1	5	1	7	1
12	325 E - 280 N	2860	7	6	9	2	11	2	8	2	8	2	7	1	4	2	ROCK	ROCK
13	325 E - 285 N	2780	7	6	5	1	6	1	6	2	6	2	9	2	7	1	6	2
14	325 E - 290 N	3250	7	7	7	1	7	2	4	2	5	1	6	2	5	2	ROCK	ROCK
15	325 E - 295 N	3570	6	6	6	1	11	1	6	1	8	2	8	1	9	2	8	2
16	325 E - 300 N	3400	7	7	6	1	13	1	8	1	5	2	5	2	6	1	6	2
17	325 E - 305 N	3150	8	7	6	2	13	1	9	2	8	1	4	1	9	1	7	1
18	325 E - 310 N	3730	7	8	10	2	9	2	6	1	8	2	7	1	8	2	6	2
19	325 E - 315 N	4410	7	8	9	2	7	2	5	1	6	2	6	2	7	1	4	1
20	325 E - 320 N	4420	8	8	6	2	8	2	9	1	6	1	5	2	5	1	6	1

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER - SN-9081 µr/hr

7

2

LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI Detector CPM
S/N - 48395 or S/N - 50057

2500

N/A

CIMARRON SOIL COUNTER 4" X 4" X 16" NaI Detector pCi/G

4 Total U
1.5 Th (Nat)

10
1

BACKGROUND NOT SUBTRACTED

REVIEWED BY: *W.A. Rogers*

DATE: 10-12-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
5 METER X 5 METER GRID INTERSECTS

QAQC-158
REV.1

DATE: 9/28/98

LN #	GRID NUMBER	3" DETEC C.P.M.	MICRO R' SURF	MICRO R' 1 meter	pCi/g															
					0 - 6"		6" - 1'		1' - 2'		2' - 3'		3' - 4'		4' - 5'		5' - 6'			
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	325 E - 325 N	3740	7	6	5	2	6	1	7	2	5	1	6	1	7	2	6	1		
2	325 E - 330 N	3460	7	7	5	1	5	2	6	2	8	2	5	2	11	1	7	1		
3	325 E - 335 N	3490	8	8	5	1	8	1	7	2	8	1	8	2	8	2	6	1		
4	325 E - 340 N	3780	8	8	8	2	4	2	5	1	8	2	8	2	7	2	7	2		
5	325 E - 345 N	3990	7	6	6	2	7	1	6	1	11	2	10	2	7	2	12	2		
6	325 E - 350 N	3710	7	6	6	2	17	2	8	2	7	2	6	1	4	2	10	2		
7	325 E - 355 N	4280	8	10	8	2	7	2	9	2	9	1	5	2	6	2	9	2		
8	325 E - 360 N	3600	10	9	7	2	7	2	9	1	6	2	8	2	8	2	6	2		
9	325 E - 365 N	4120	8	9	9	2	13	1	4	2	6	2	31	2	11	2	6	2		
10	325 E - 370 N	3520	8	9	11	2	8	2	4	2	8	2	9	2	1	2	7	2		
11	330 E - 160 N	3570	8	7	5	2	9	1	12	1	6	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK		
12	330 E - 165 N	3530	8	8	8	1	8	1	7	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK		
13	330 E - 170 N	3480	7	6	8	2	9	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK		
14	330 E - 175 N	3680	8	7	5	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK		
15	330 E - 180 N	3120	7	7	11	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK		
16	330 E - 185 N	3230	7	7	9	2	15	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK		
17	330 E - 190 N	3060	7	7	5	2	7	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK		
18	330 E - 195 N	3610	7	7	9	1	6	1	5	1	10	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK		
19	330 E - 200 N	3730	7	7	5	1	8	1	4	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK		
20	330 E - 205 N	2760	7	6	5	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK		

INSTRUMENTS:		RESULTS IN	
LUDLUM MICRO 'R' METER - SN-9081		$\mu\text{r/hr}$	
LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI Detector S/N - 48395 or S/N - 50057		CPM	
CIMARRON SOIL COUNTER 4" X 4" X 16" NaI Detector		pCi/G	

BACKGROUND		MDA	
7		2	
2500		N/A	
4	Total U	10	
1.5	Th (Nat)	1	

BACKGROUND NOT SUBTRACTED

REVIEWED BY: W. a. Royce DATE: 10-12-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
5 METER X 5 METER GRID INTERSECTS

QAQC-158
REV.1

DATE: 9/28/98

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'		4' - 5'		5' - 6'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	330 E - 210 N	3050	6	6	7	1	7	1	6	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
2	330 E - 215 N	3260	7	7	6	1	8	1	6	2	7	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
3	330 E - 220 N	3010	7	7	7	2	5	2	4	2	9	2	6	1	ROCK	ROCK	ROCK	ROCK
4	330 E - 225 N	3230	7	7	6	2	9	1	5	2	6	2	11	2	6	1	ROCK	ROCK
5	330 E - 230 N	2760	7	7	7	2	5	1	7	1	7	2	6	1	5	1	ROCK	ROCK
6	330 E - 235 N	2700	7	7	10	1	7	1	8	1	4	2	7	1	8	2	ROCK	ROCK
7	330 E - 240 N	2570	7	7	26	2	21	2	11	1	6	2	17	1	8	2	8	1
8	330 E - 245 N	3280	7	7	18	1	20	1	27	2	24	2	26	1	14	2	ROCK	ROCK
9	330 E - 250 N	2660	7	7	6	2	16	1	15	2	5	2	8	2	8	2	12	1
10	330 E - 255 N	2790	7	7	10	1	10	2	9	2	39	1	29	2	14	2	16	1
11	330 E - 260 N	2810	6	6	13	2	14	2	9	1	12	1	11	1	5	2	12	2
12	330 E - 265 N	3110	7	6	16	1	20	1	9	1	17	2	12	2	7	1	11	1
13	330 E - 270 N	3100	6	7	12	2	8	2	15	1	12	1	7	2	7	1	ROCK	ROCK
14	330 E - 275 N	2910	7	7	9	1	8	1	9	2	9	2	7	1	7	1	ROCK	ROCK
15	330 E - 280 N	2920	6	6	6	1	4	2	9	1	5	1	4	2	6	1	ROCK	ROCK
16	330 E - 285 N	2810	8	7	10	1	8	2	7	2	9	1	6	1	6	1	ROCK	ROCK
17	330 E - 290 N	2870	7	7	5	1	5	1	7	2	5	2	4	2	7	2	5	1
18	330 E - 295 N	3610	8	5	6	1	8	2	13	2	9	2	5	2	8	2	9	2
19	330 E - 300 N	3430	7	8	4	2	10	2	8	2	12	1	10	1	7	2	5	2
20	330 E - 305 N	3470	8	7	9	1	15	2	10	2	9	2	5	2	8	1	7	1

INSTRUMENTS: RESULTS IN
LUDLUM MICRO 'R' METER - SN-9081 $\mu\text{r/hr}$

BACKGROUND MDA
7 2

LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI Detector CPM
S/N - 48395 or S/N - 50057

2500 N/A

CIMARRON SOIL COUNTER 4" 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: 10-12-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
5 METER X 5 METER GRID INTERSECTS

QAQC-158
REV.1

DATE: 9/28/98

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'		4' - 5'		5' - 6'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	330 E - 310 N	3260	7	6	8	1	11	2	9	2	9	2	6	2	8	1	7	1
2	330 E - 315 N	3040	6	7	6	1	6	1	9	1	8	1	4	2	4	1	4	1
3	330 E - 320 N	3490	8	6	11	2	10	1	8	1	5	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
4	330 E - 325 N	4240	9	7	6	2	9	1	8	1	10	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
5	330 E - 330 N	4190	7	7	8	1	7	2	5	1	10	2	12	2	10	2	5	2
6	330 E - 335 N	3600	8	8	7	2	12	1	5	1	6	1	11	2	7	1	6	2
7	330 E - 340 N	3600	8	8	12	1	7	1	4	1	9	1	4	1	5	1	9	2
8	330 E - 345 N	4160	9	7	8	1	7	1	5	1	6	1	4	2	8	2	10	1
9	330 E - 350 N	4100	6	6	6	2	6	2	5	1	6	2	7	1	8	2	7	2
10	330 E - 355 N	4410	8	9	8	2	5	1	6	1	7	1	7	1	6	1	6	2
11	330 E - 360 N	3650	9	9	10	2	6	1	7	2	5	2	8	2	7	2	9	2
12	330 E - 365 N	3790	8	9	7	2	9	1	8	2	6	2	8	2	9	2	10	2
13	330 E - 370 N	3640	7	8	10	2	5	2	10	2	8	2	7	2	10	2	8	2
14	330 E - 375 N	5210	12	12	7	2	6	2	4	1	6	2	7	2	6	2	6	2
15	335 E - 165 N	3690	6	8	7	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
16	335 E - 170 N	3670	6	6	5	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
17	335 E - 175 N	3330	7	6	7	1	10	1	6	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
18	335 E - 180 N	2850	7	7	9	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
19	335 E - 185 N	3560	7	7	4	1	9	2	6	1	10	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
20	335 E - 190 N	3270	7	7	7	1	8	1	9	3	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK

INSTRUMENTS: RESULTS IN
LUDLUM MICRO 'R' METER - SN-9081 $\mu\text{r/hr}$

LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI Detector CPM
S/N - 48395 or S/N - 50057

CIMARRON SOIL COUNTER 4" X 4" X 16" NaI Detector pCi/G

BACKGROUND MDA
7 2

2500 N/A

4 Total U 10
1.5 Th (Nat) 1

BACKGROUND NOT SUBTRACTED

REVIEWED BY: *W.A. Rogers*

DATE: 10-12-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
5 METER X 5 METER GRID INTERSECTS

QAQC-158
REV.1

DATE: 9/28/98

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'		4' - 5'		5' - 6'			
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	335 E - 195 N	3700	7	7	4	1	13	1	4	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
2	335 E - 200 N	3180	8	8	8	1	7	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
3	335 E - 205 N	2710	5	5	6	1	3	1	4	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
4	335 E - 210 N	2950	7	7	5	1	4	1	4	2	6	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
5	335 E - 215 N	3180	7	7	5	2	6	1	5	1	8	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
6	335 E - 220 N	3640	8	7	8	2	9	1	6	1	8	1	8	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
7	335 E - 225 N	2810	7	7	11	1	7	1	9	2	5	2	4	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
8	335 E - 230 N	2900	8	8	7	1	7	2	5	2	7	2	6	2	9	1	ROCK	ROCK	ROCK	ROCK
9	335 E - 235 N	2870	7	7	6	2	7	1	5	2	7	1	4	2	7	1	ROCK	ROCK	ROCK	ROCK
10	335 E - 240 N	2680	7	7	8	1	7	2	9	1	5	1	10	2	5	2	ROCK	ROCK	ROCK	ROCK
11	335 E - 245 N	2630	7	7	6	1	4	2	8	2	6	1	8	2	6	2	10	1		
12	335 E - 250 N	2700	7	8	12	1	5	2	13	1	11	2	16	1	8	1	ROCK	ROCK		
13	335 E - 255 N	3020	7	7	9	2	11	1	8	1	17	2	15	1	10	1	10	1		
14	335 E - 260 N	2980	7	7	14	2	25	1	33	2	26	2	22	1	13	2	10	1		
15	335 E - 265 N	3160	6	6	12	2	22	2	11	1	19	1	10	1	14	1	ROCK	ROCK		
16	335 E - 270 N	3450	7	6	34	1	21	2	24	1	15	2	14	1	24	1	10	1		
17	335 E - 275 N	2990	6	6	6	1	7	1	8	2	6	1	8	2	5	1	ROCK	ROCK		
18	335 E - 280 N	2990	6	6	7	2	10	1	7	1	6	2	5	1	6	2	ROCK	ROCK		
19	335 E - 285 N	2940	8	8	5	2	5	2	8	2	7	2	6	1	4	1	ROCK	ROCK		
20	335 E - 290 N	2790	7	7	12	2	7	2	7	2	6	1	8	1	4	1	ROCK	ROCK		

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER - SN-9081 µr/hr

7

2

LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI Detector CPM
S/N - 48395 or S/N - 50057

2500

N/A

CIMARRON SOIL COUNTER 4" 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:

10-12-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
5 METER X 5 METER GRID INTERSECTS

QAQC-158
REV.1

DATE: 9/28/98

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'		4' - 5'		5' - 6'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	335 E - 295 N	3380	7	8	16	2	4	2	10	1	7	2	5	2	5	2	7	1
2	335 E - 300 N	3670	6	7	6	1	8	1	11	1	7	2	6	2	11	2	8	1
3	335 E - 305 N	3150	7	6	8	1	11	1	5	2	7	2	6	2	13	2	6	2
4	335 E - 310 N	3330	8	7	8	1	10	2	3	1	10	1	8	2	7	2	7	2
5	335 E - 315 N	3940	7	7	6	1	8	1	8	1	6	1	5	2	6	1	ROCK	ROCK
6	335 E - 320 N	3570	6	6	8	1	6	2	8	1	7	1	9	1	6	1	8	1
7	335 E - 325 N	4010	7	6	5	2	8	1	6	1	3	1	5	2	6	1	4	2
8	335 E - 330 N	3880	8	9	9	1	2	2	10	1	5	1	7	1	8	1	7	1
9	335 E - 335 N	3860	8	7	6	2	4	2	5	1	8	1	12	1	8	1	3	1
10	335 E - 340 N	3910	8	8	5	1	9	1	6	1	3	1	10	1	8	1	10	1
11	335 E - 345 N	3780	8	7	5	1	7	1	7	1	7	1	9	1	9	2	10	2
12	335 E - 350 N	4190	8	7	6	1	10	2	4	1	9	2	7	1	10	2	7	2
13	335 E - 355 N	4410	8	7	7	2	8	1	7	2	7	2	6	2	9	2	6	2
14	335 E - 360 N	3300	8	7	8	1	10	1	7	1	7	2	6	2	5	2	8	2
15	335 E - 365 N	3880	8	9	16	2	7	2	5	2	6	2	9	2	7	2	7	2
16	335 E - 370 N	3220	7	7	10	1	7	2	6	2	11	2	11	2	8	2	12	2
17	335 E - 375 N	3650	10	10	6	1	10	1	7	2	9	2	11	2	9	2	7	2
18																		
19																		
20																		

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER - SN-9081 µr/hr

7

2

LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI Detector CPM
S/N - 48395 or S/N - 50057

2500

N/A

CIMARRON SOIL COUNTER 4" X 4" X 16" NaI Detector pCi/G

4 Total U
1.5 Th (Nat)

10
1

BACKGROUND NOT SUBTRACTED

REVIEWED BY: W.G. Rozen

DATE: 10-12-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
5 METER X 5 METER GRID INTERSECTS

QAQC-158
REV.1

DATE: 9/28/98

LN #	GRID NUMBER	3" DETEC C.P.M.	MICRO R' 1 meter	MICRO R' 1	pCi/g													
					0 - 6"		6" - 1'		1' - 2'		2' - 3'		3' - 4'		4' - 5'		5' - 6'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	340 E - 165 N	3540	8	7	8	1	8	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
2	340 E - 170 N	3300	7	6	7	2	10	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
3	340 E - 175 N	3070	6	7	9	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
4	340 E - 180 N	2870	6	7	9	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
5	340 E - 185 N	3230	7	7	7	1	6	1	5	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
6	340 E - 190 N	2900	6	6	8	1	8	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
7	340 E - 195 N	2380	6	6	11	1	11	1	8	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
8	340 E - 200 N	3340	7	7	10	1	5	1	5	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
9	340 E - 205 N	2650	6	6	9	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
10	340 E - 210 N	2900	6	6	6	1	11	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
11	340 E - 215 N	3140	7	7	7	2	5	1	5	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
12	340 E - 220 N	3680	7	7	8	1	5	1	9	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
13	340 E - 225 N	2760	7	7	6	1	6	1	6	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
14	340 E - 230 N	3180	8	7	10	1	7	1	8	2	7	1	8	2	ROCK	ROCK	ROCK	ROCK
15	340 E - 235 N	3090	7	7	5	2	7	1	6	2	5	2	8	2	ROCK	ROCK	ROCK	ROCK
16	340 E - 240 N	2860	8	7	7	1	6	1	5	1	9	1	7	2	6	1	ROCK	ROCK
17	340 E - 245 N	2580	7	7	8	2	5	2	6	1	6	1	16	1	6	1	ROCK	ROCK
18	340 E - 250 N	3180	9	8	26	1	16	1	10	2	6	1	7	1	ROCK	ROCK	ROCK	ROCK
19	340 E - 255 N	2960	7	7	9	1	7	2	9	1	10	2	10	2	8	2	ROCK	ROCK
20	340 E - 260 N	2760	6	6	22	1	8	2	6	2	8	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK

INSTRUMENTS: RESULTS IN
LUDLUM MICRO 'R' METER - SN-9081 µr/hr

BACKGROUND MDA
7 2

LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI Detector CPM
S/N - 48395 or S/N - 50057

2500 N/A

CIMARRON SOIL COUNTER 4" X 4" X 16" NaI Detector pCi/G

4 Total U 10
1.5 Th (Nat) 1

BACKGROUND NOT SUBTRACTED

REVIEWED BY: W. G. Rogers DATE: 10-12-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
5 METER X 5 METER GRID INTERSECTS

QAQC-158
REV.1

DATE: 9/28/98

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'		4' - 5'		5' - 6'	
					Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	340 E - 265 N	2660	7	7	13	1	8	1	10	1	7	1	7	1	ROCK	ROCK	ROCK	ROCK
2	340 E - 270 N	3020	7	7	33	1	6	1	9	2	10	2	7	1	6	1	ROCK	ROCK
3	340 E - 275 N	2780	7	7	6	2	8	1	5	1	14	1	5	1	4	1	5	1
4	340 E - 280 N	3150	8	8	10	2	6	1	7	1	7	1	12	2	12	2	7	2
5	340 E - 285 N	2720	7	7	14	1	6	2	10	2	5	1	5	2	7	1	ROCK	ROCK
6	340 E - 290 N	2860	7	7	13	1	14	1	7	2	6	2	7	1	9	2	7	1
7	340 E - 295 N	3580	7	5	8	1	6	2	7	1	10	2	6	1	5	1	9	1
8	340 E - 300 N	3370	6	6	6	2	9	2	5	2	7	2	8	2	5	1	7	2
9	340 E - 305 N	3720	7	8	10	1	8	1	7	1	5	1	9	1	9	1	10	1
10	340 E - 310 N	3390	8	8	11	2	8	2	5	2	8	2	8	1	8	2	6	1
11	340 E - 315 N	4550	8	8	7	2	8	2	7	1	5	1	11	2	6	2	10	1
12	340 E - 320 N	4380	7	7	6	2	8	2	6	1	6	1	7	1	7	2	8	2
13	340 E - 325 N	4300	8	7	6	2	5	1	6	2	7	1	9	1	ROCK	ROCK	ROCK	ROCK
14	340 E - 330 N	3070	7	7	11	1	7	2	11	1	8	1	4	1	9	1	8	2
15	340 E - 335 N	3390	7	7	8	1	10	1	4	2	9	1	14	1	6	1	5	1
16	340 E - 340 N	3650	8	6	7	2	6	2	9	1	7	2	11	1	11	2	15	2
17	340 E - 345 N	4270	8	8	6	1	7	1	7	2	6	2	14	1	4	2	4	1
18	340 E - 350 N	4190	10	9	11	1	5	2	9	1	7	1	8	2	14	1	11	2
19	340 E - 355 N	4370	8	8	6	2	10	2	8	2	8	2	14	1	11	2	6	2
20	340 E - 360 N	4630	13	12	11	1	16	1	7	1	6	2	6	2	10	2	4	2

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER - SN-9081 µr/hr

7

2

LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI Detector CPM
S/N - 48395 or S/N - 50057

2500

N/A

CIMARRON SOIL COUNTER 4" X 4" X 16" NaI Detector pCi/G

4 Total U
1.5 Th (Nat)

10
1

BACKGROUND NOT SUBTRACTED

REVIEWED BY: W.A. Rogers

DATE: 10-12-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
5 METER X 5 METER GRID INTERSECTS

QAQC-158
REV.1

DATE: 9/28/98

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'		4' - 5'		5' - 6'	
							Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	340	E	- 365 N	3560	8	9	9	2	9	2	9	2	10	2	9	2	6	2	6	2
2	340	E	- 370 N	3040	8	7	5	2	11	2	8	2	25	2	6	2	8	1	7	2
3	340	E	- 375 N	4140	13	12	22	2	7	1	7	2	10	1	8	2	9	2	8	2
4	340	E	- 380 N	4490	11	11	11	1	6	1	7	2	7	2	6	2	5	2	7	2
5	345	E	- 170 N	2590	6	6	6	2	9	1	8	2	5	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
6	345	E	- 175 N	4260	8	9	9	1	7	1	4	1	4	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
7	345	E	- 180 N	3340	7	7	10	1	16	2	10	1	10	1	8	1	14	1	ROCK	ROCK
8	345	E	- 185 N	3710	7	7	7	1	8	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
9	345	E	- 190 N	3530	7	7	10	1	11	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
10	345	E	- 195 N	2660	7	7	9	1	11	1	9	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
11	345	E	- 200 N	3500	8	7	9	1	6	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
12	345	E	- 205 N	3070	6	7	6	1	5	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
13	345	E	- 210 N	3220	7	6	4	1	5	1	7	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
14	345	E	- 215 N	3510	6	6	7	2	8	1	7	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
15	345	E	- 220 N	3530	7	7	8	1	7	1	1	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
16	345	E	- 225 N	3200	7	7	5	1	4	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
17	345	E	- 230 N	2660	7	7	9	1	8	1	4	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
18	345	E	- 235 N	3110	7	7	10	2	6	2	5	1	7	2	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
19	345	E	- 240 N	3110	9	8	5	1	5	1	11	1	7	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
20	345	E	- 245 N	2940	7	7	6	1	5	2	6	2	6	2	6	2	ROCK	ROCK	ROCK	ROCK

INSTRUMENTS: RESULTS IN

LUDLUM MICRO 'R' METER - SN-9081 µr/hr

LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI Detector CPM

S/N - 48395 or S/N - 50057

CIMARRON SOIL COUNTER 4" X 4" X 16" NaI Detector pCi/G

BACKGROUND MDA

7 2

2500 N/A

4 Total U 10

1.5 Th (Nat) 1

BACKGROUND NOT SUBTRACTED

REVIEWED BY: W. A. Payne

DATE: 10-12-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
5 METER X 5 METER GRID INTERSECTS

QAQC-158
REV.1

DATE: 9/28/98

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'		4' - 5'		5' - 6'	
							Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)	Total-U	Th (Nat)
1	345	E	- 250 N	2710	7	7	6	1	10	1	7	1	8	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
2	345	E	- 255 N	2810	7	7	7	2	6	1	6	1	5	1	6	2	5	1	9	1
3	345	E	- 260 N	2920	7	6	10	1	9	2	9	1	6	2	8	1	8	1	ROCK	ROCK
4	345	E	- 265 N	3050	7	7	9	1	9	2	6	1	10	1	5	1	7	2	ROCK	ROCK
5	345	E	- 270 N	3140	7	7	7	2	10	2	6	2	6	2	6	2	6	1	6	1
6	345	E	- 275 N	3030	7	8	7	1	9	2	6	2	4	2	4	1	6	1	7	1
7	345	E	- 280 N	2910	6	6	14	2	11	2	13	2	7	2	9	2	8	2	9	2
8	345	E	- 285 N	2550	7	6	8	1	11	1	6	1	9	1	6	1	7	1	4	1
9	350	E	- 170 N	3230	7	7	7	1	4	1	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK	ROCK
10		E	- N																	
11		E	- N																	
12		E	- N																	
13		E	- N																	
14		E	- N																	
15		E	- N																	
16		E	- N																	
17		E	- N																	
18		E	- N																	
19		E	- N																	

INSTRUMENTS:

RESULTS IN

BACKGROUND

MDA

LUDLUM MICRO 'R' METER - SN-9081 µr/hr

7 2

LUDLUM 2220, LEAD SHIELDED 3" X 1/2" NaI Detector CPM
S/N - 48395 or S/N - 50057

2500 N/A

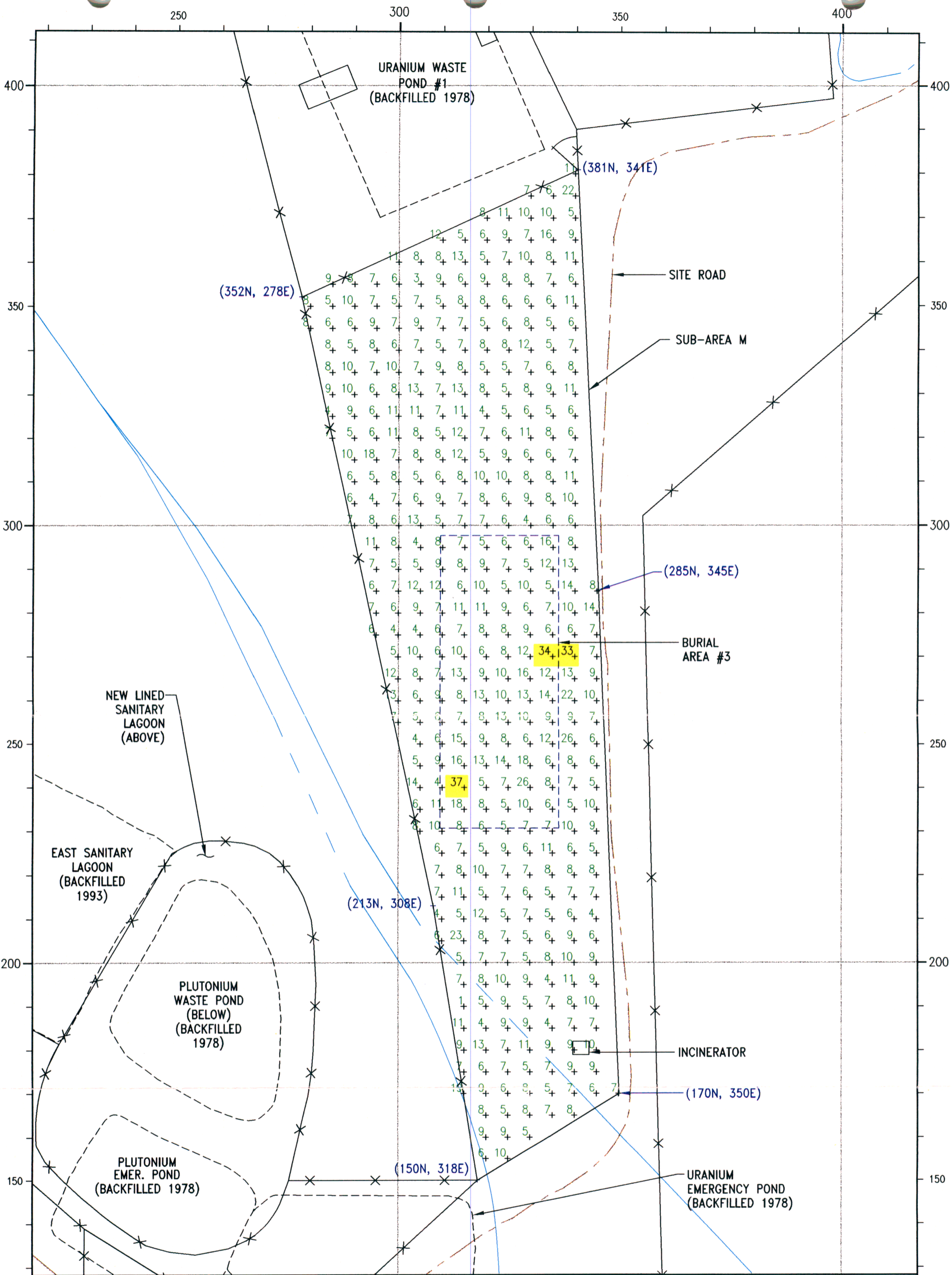
CIMARRON SOIL COUNTER 4" X 4" X 16" NaI Detector pCi/G

4 Total U 10
1.5 Th (Nat) 1

BACKGROUND NOT SUBTRACTED

REVIEWED BY: *W. C. Rogers*

DATE: *10-12-98*



NOTES

URANIUM (pCi/g U).

CIMARRON GAMMA SPEC SOIL COUNTER.

SITE SOIL BACKGROUND OF APPROX. 4.0 pCi/g U, NOT SUBTRACTED.

20 0 20

SCALE IN METERS

LEGEND

6+ URANIUM, 1 - 30 pCi/g U

58+ URANIUM, 31 - 100 pCi/g U

129+ URANIUM, 101 - 300 pCi/g U

327+ URANIUM, > 300 pCi/g U

R+ HIT ROCK - NO SAMPLE

CIMARRON CORPORATION

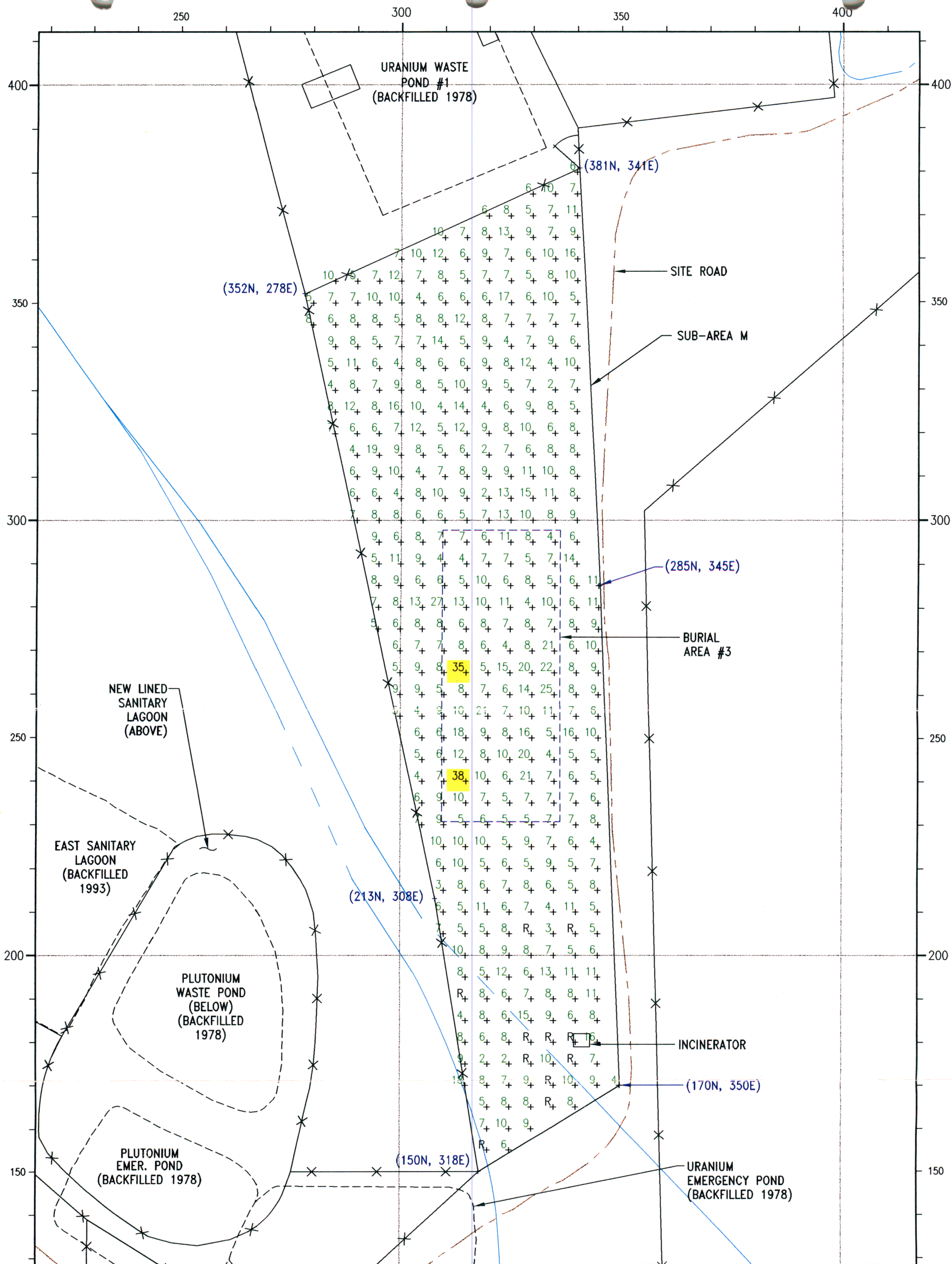
CIMARRON FACILITY

PHASE III - SUB-AREA M

POST-REMEDIATION - SOIL SAMPLE RESULTS (1998)

SOIL SAMPLE ALIQUOT: 0-6"

DRWN. BY	JE	DATE	10/19/98	SCALE	AS SHOWN
JOB NO.	DRAWING NO. 98POAMSS-0			REV.	0



NOTES

URANIUM (pCi/g U).
CIMARRON GAMMA SPEC SOIL COUNTER.
SITE SOIL BACKGROUND OF APPROX. 4.0 pCi/g U,
NOT SUBTRACTED.

20 0 20
SCALE IN METERS



LEGEND

6+ URANIUM, 1 - 30 pCi/g U
58+ URANIUM, 31 - 100 pCi/g U
129+ URANIUM, 101 - 300 pCi/g U
327+ URANIUM, > 300 pCi/g U
R+ HIT ROCK - NO SAMPLE

REV.	DESCRIPTION	DRWN BY:	CK'D BY:	APP'D BY:	DATE
0	DRAWING ISSUED.	JE	WR	JL	12/18/98

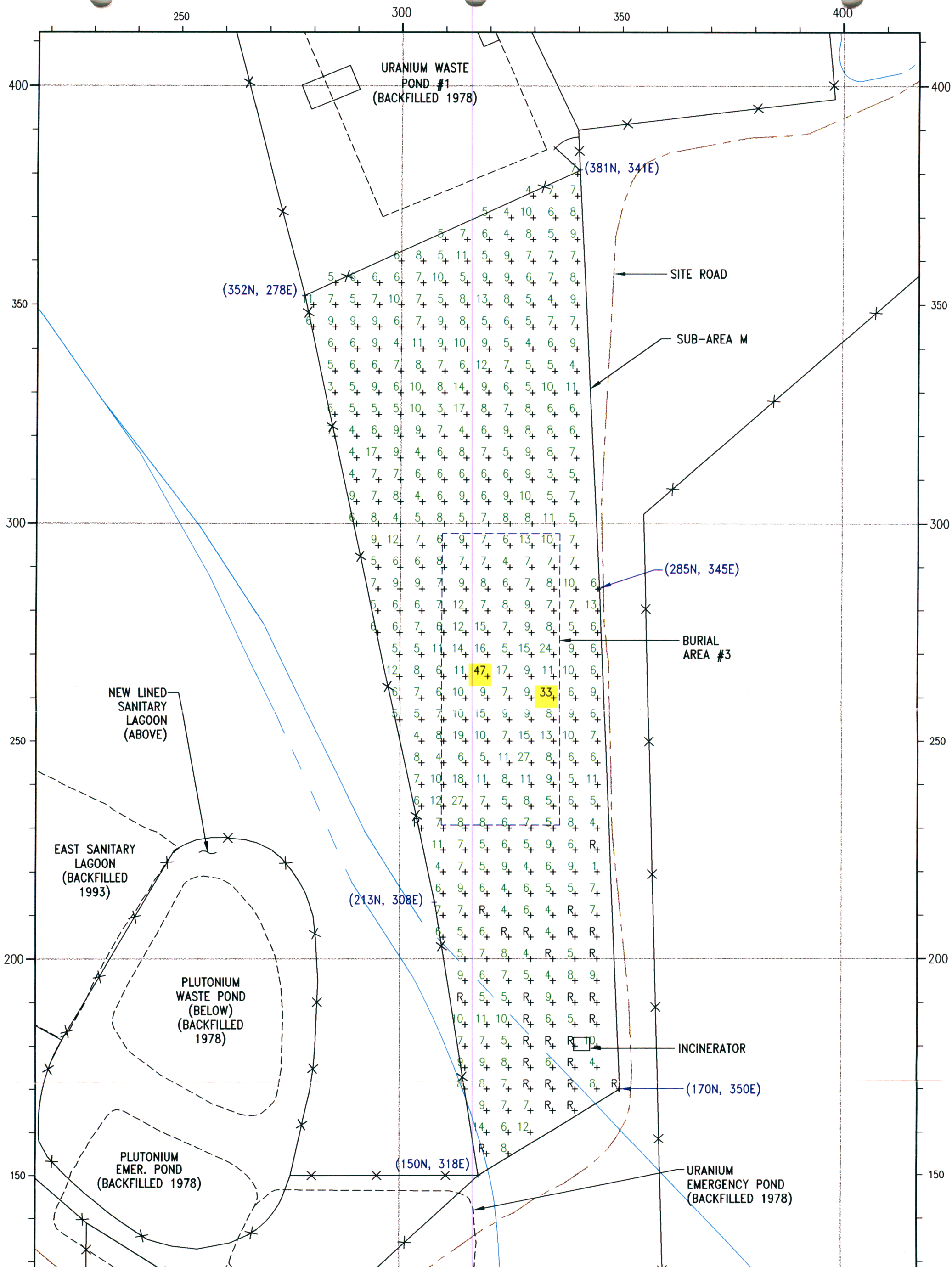


CIMARRON CORPORATION

CIMARRON FACILITY
PHASE III - SUB-AREA M
POST-REMEDIATION - SOIL SAMPLE RESULTS (1998)
SOIL SAMPLE ALIQUOT: 6"-1'

DRWN BY: JE	DATE: 10/19/98	SCALE: AS SHOWN
JOB NO.	DRAWING NO. 98POAMSS-1	REV. 0

... \CIMARRON \SUBAREAM \98POAMSS



NOTES

URANIUM (pCi/g U).
CIMARRON GAMMA SPEC SOIL COUNTER.
SITE SOIL BACKGROUND OF APPROX. 4.0 pCi/g U,
NOT SUBTRACTED.

20 0 20
SCALE IN METERS



LEGEND

6+ URANIUM, 1 - 30 pCi/g U
58+ URANIUM, 31 - 100 pCi/g U
129+ URANIUM, 101 - 300 pCi/g U
327+ URANIUM, > 300 pCi/g U
R+ HIT ROCK - NO SAMPLE

REV.	DESCRIPTION	DRWN BY:	CKD BY:	APP'D BY:	DATE
0	DRAWING ISSUED.	JE	WR	JL	12/18/98

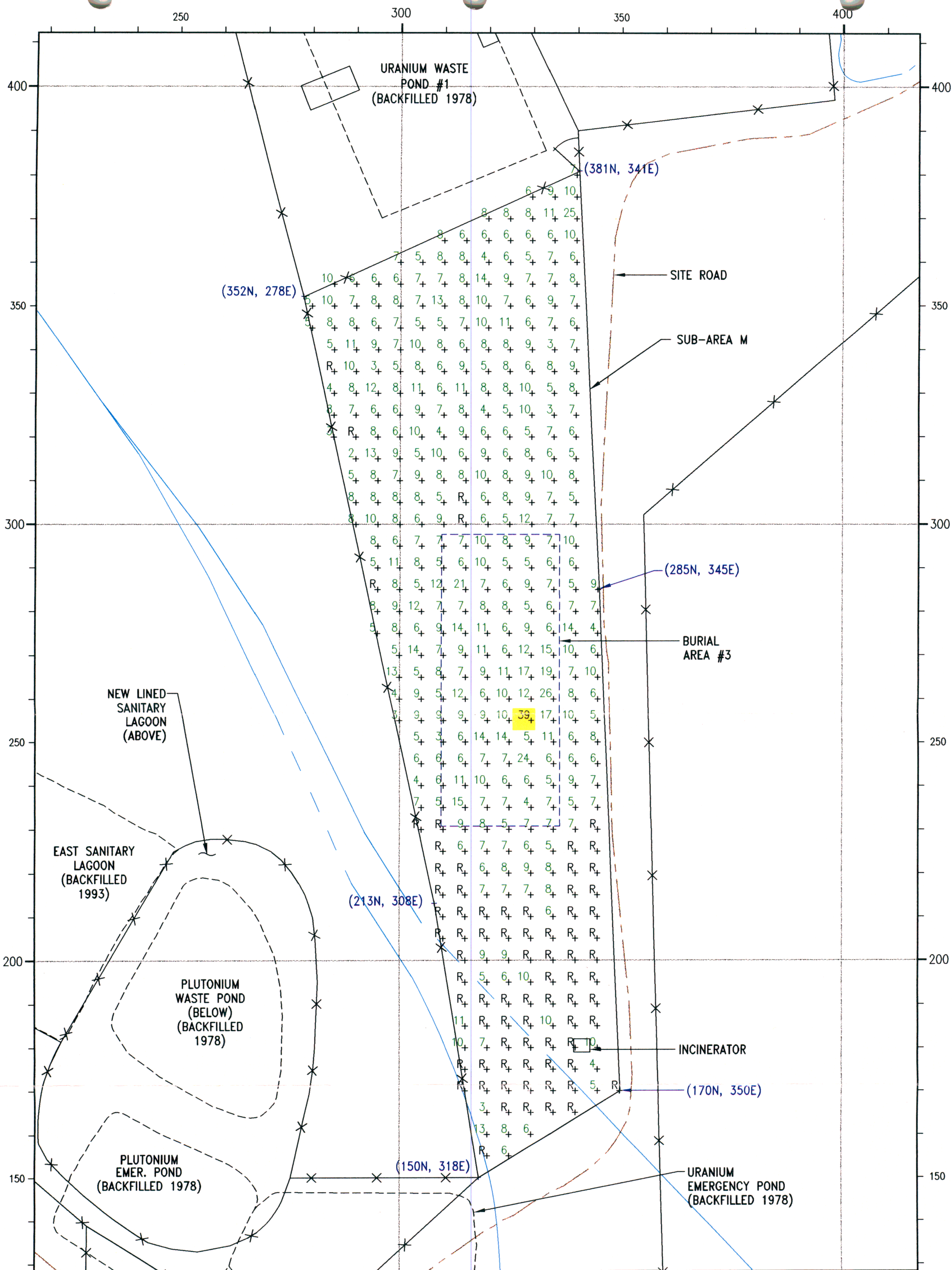


CIMARRON CORPORATION

CIMARRON FACILITY
PHASE III - SUB-AREA M
POST-REMEDIATION - SOIL SAMPLE RESULTS (1998)
SOIL SAMPLE ALIQUOT: 1'-2'

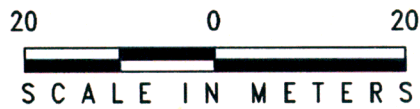
DRWN. BY: JE	DATE: 10/19/98	SCALE: AS SHOWN
JOB NO.	DRAWING NO. 98POAMSS-2	REV. 0

... \CIMARRON \SUBAREAM \98POAMSS



NOTES

URANIUM (pCi/g U).
CIMARRON GAMMA SPEC SOIL COUNTER.
SITE SOIL BACKGROUND OF APPROX. 4.0 pCi/g U,
NOT SUBTRACTED.



LEGEND

- 6+ URANIUM, 1 - 30 pCi/g U 327+ URANIUM, > 300 pCi/g U
58+ URANIUM, 31 - 100 pCi/g U R+ HIT ROCK - NO SAMPLE
129+ URANIUM, 101 - 300 pCi/g U

REV.	DESCRIPTION	DRWN BY:	CK'D BY:	APP'D BY:	DATE
0	DRAWING ISSUED.	JE	WR	JL	12/18/98

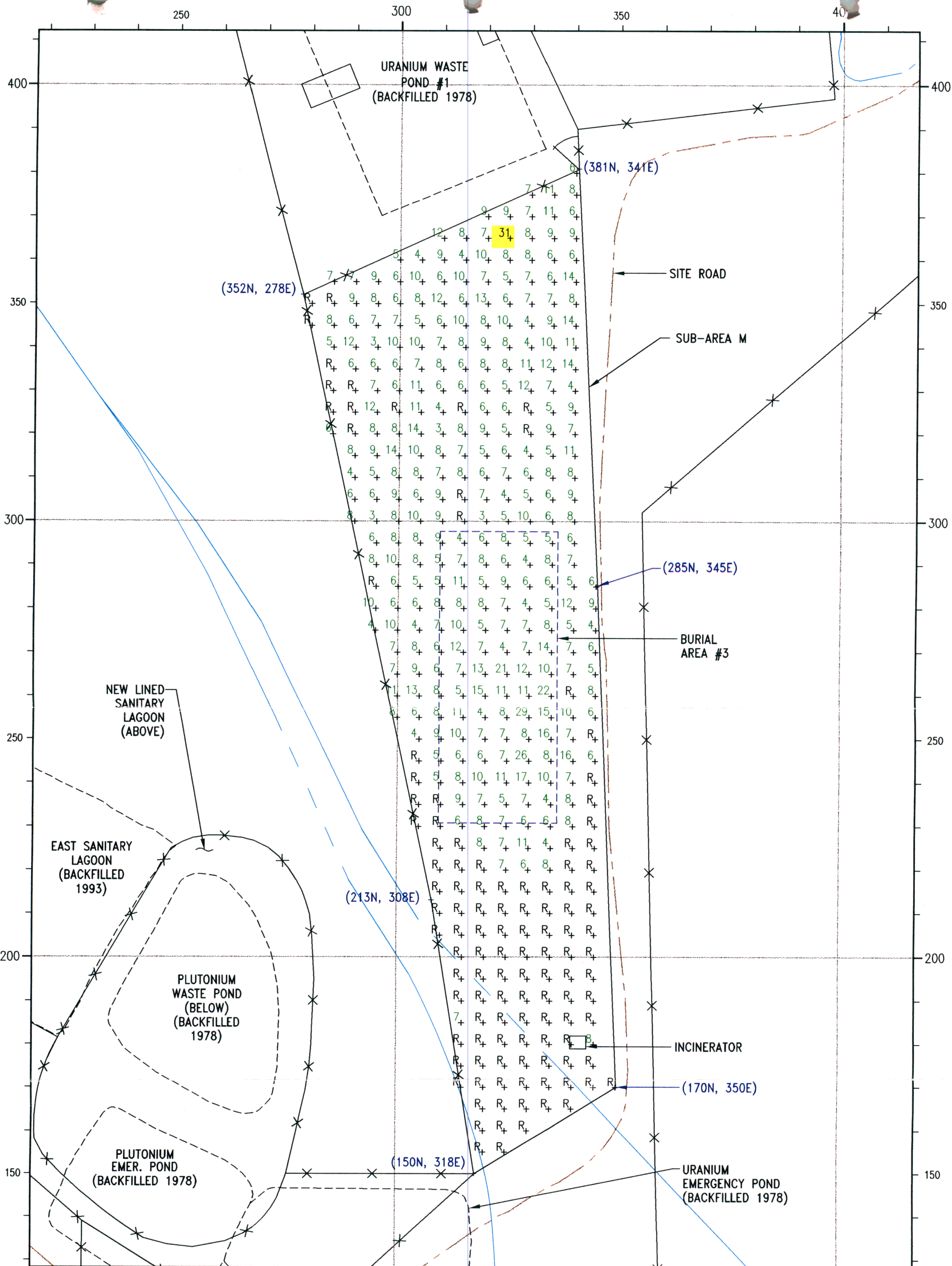


CIMARRON CORPORATION

CIMARRON FACILITY
PHASE III - SUB-AREA M
POST-REMEDIATION - SOIL SAMPLE RESULTS (1998)
SOIL SAMPLE ALIQUOT: 2'-3'

DRWN. BY: JE	DATE: 10/19/98	SCALE: AS SHOWN
JOB NO.	DRAWING NO. 98POAMSS-3	REV. 0

...\\CIMARRON\\SUBAREAM\\98POAMSS



NOTES

URANIUM (pCi/g U).
CIMARRON GAMMA SPEC SOIL COUNTER.
SITE SOIL BACKGROUND OF APPROX. 4.0 pCi/g U,
NOT SUBTRACTED.

20 0 20
SCALE IN METERS



LEGEND

6+ URANIUM, 1 - 30 pCi/g U
58+ URANIUM, 31 - 100 pCi/g U
129+ URANIUM, 101 - 300 pCi/g U
327+ URANIUM, > 300 pCi/g U
R+ HIT ROCK - NO SAMPLE

REV.	DESCRIPTION	DRWN BY:	CK'D BY:	APP'D BY:	DATE
0	DRAWING ISSUED.	JE	WR	JL	12/18/98

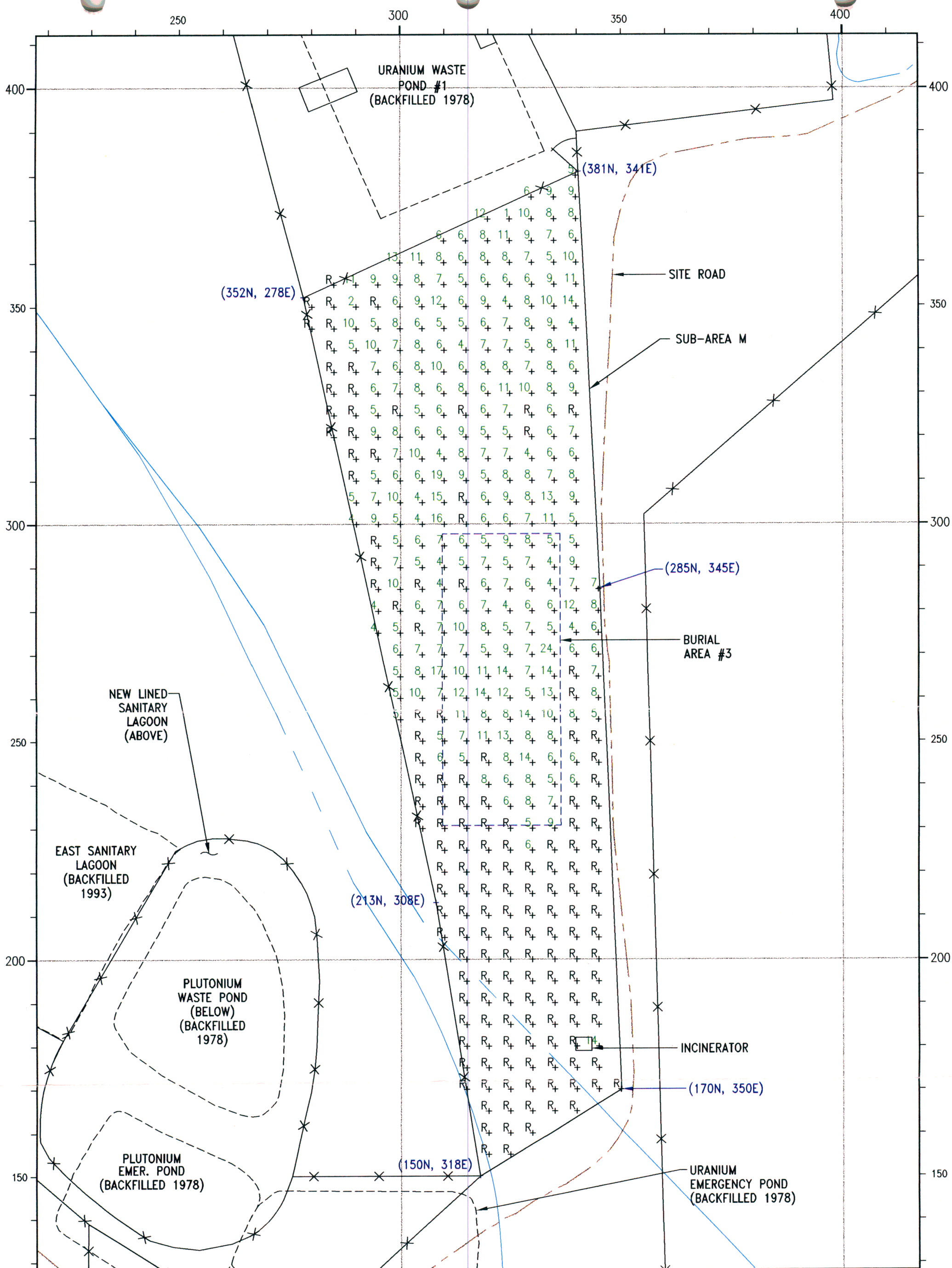


CIMARRON CORPORATION

CIMARRON FACILITY
PHASE III - SUB-AREA M
POST-REMEDIATION - SOIL SAMPLE RESULTS (1998)
SOIL SAMPLE ALIQUOT: 3'-4'

DRWN. BY: JE	DATE: 10/19/98	SCALE: AS SHOWN
JOB NO.	DRAWING NO. 98POAMSS-4	REV. 0

... \CIMARRON \SUBAREAM \98POAMSS



NOTES

URANIUM (pCi/g U).

CIMARRON GAMMA SPEC SOIL COUNTER.

SITE SOIL BACKGROUND OF APPROX. 4.0 pCi/g U,
NOT SUBTRACTED.



LEGEND

6+ URANIUM, 1 - 30 pCi/g U

58. URANIUM, 31 – 100 pCi/g U

129₊ URANIUM, 101 - 300 pCi/g U

327+ URANIUM, > 300 pCi/g U

R₊ HIT ROCK - NO SAMPLE

REV.	DESCRIPTION	DRWN BY:	CHK'D BY:	APP'D BY:	DATE
0	DRAWING ISSUED.	JE	WR	JL	12/18/98

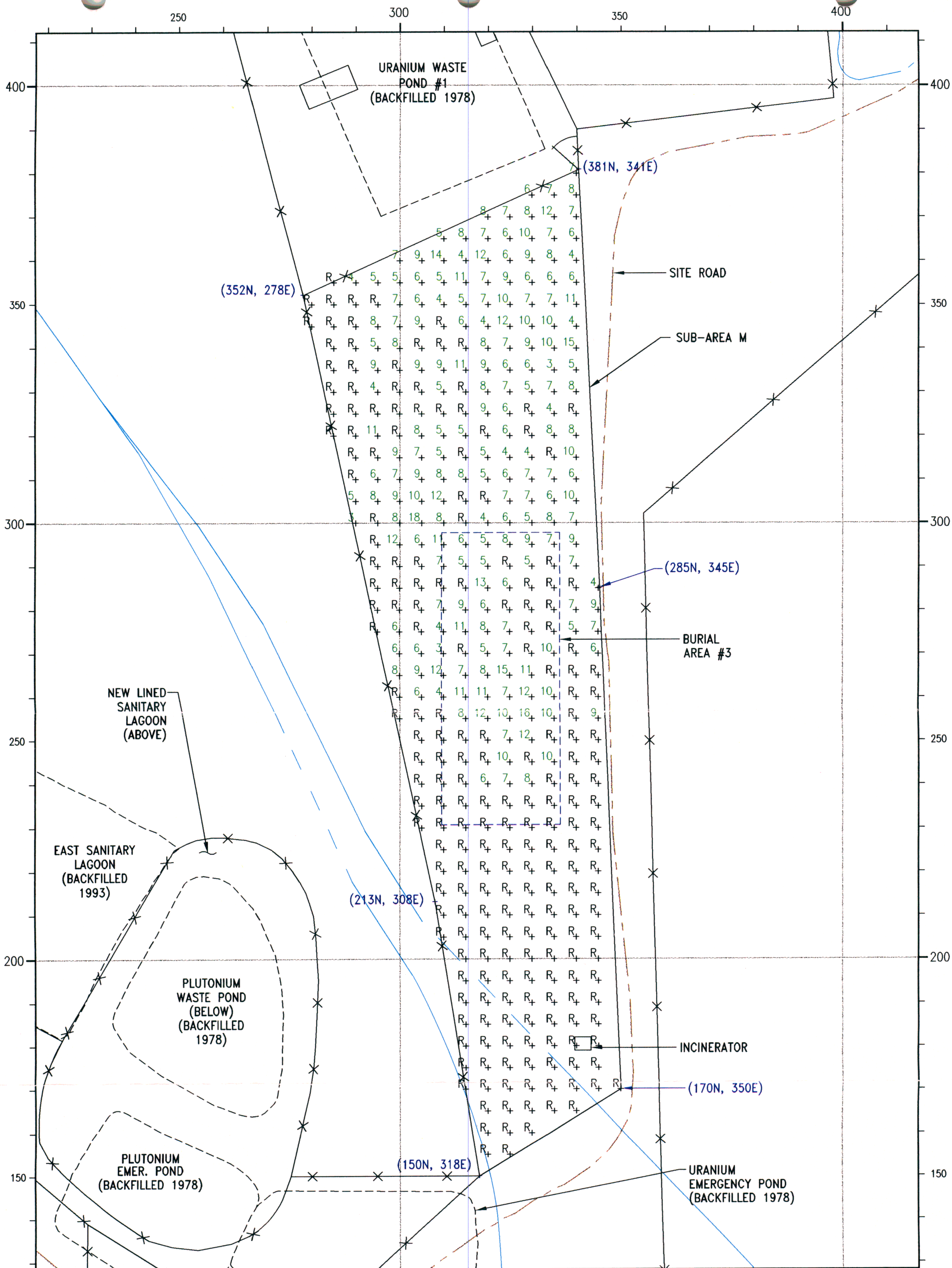


CIMARRON CORPORATION

CIMARRON FACILITY
PHASE III - SUB-AREA M
POST-REMEDIATION - SOIL SAMPLE RESULTS (1998)
SOIL SAMPLE ALIQUOT: 4'-5'

DRWN. BY JE	DATE 10/19/98	SCALE AS SHOWN
JOB NO.	DRAWING NO. 98POAMSS-5	REV. 0

... \CIMARRON\SUBAREAM\98POAMSS



NOTES

URANIUM (pCi/g U).
CIMARRON GAMMA SPEC SOIL COUNTER.
SITE SOIL BACKGROUND OF APPROX. 4.0 pCi/g U,
NOT SUBTRACTED.

20 0 20
SCALE IN METERS



LEGEND

6+ URANIUM, 1 - 30 pCi/g U 327+ URANIUM, > 300 pCi/g U
58+ URANIUM, 31 - 100 pCi/g U R+ HIT ROCK - NO SAMPLE
129+ URANIUM, 101 - 300 pCi/g U

REV.	DESCRIPTION	DRWN BY:	CK'D BY:	APP'D BY:	DATE
0	DRAWING ISSUED.	JE	WR	JL	12/18/98

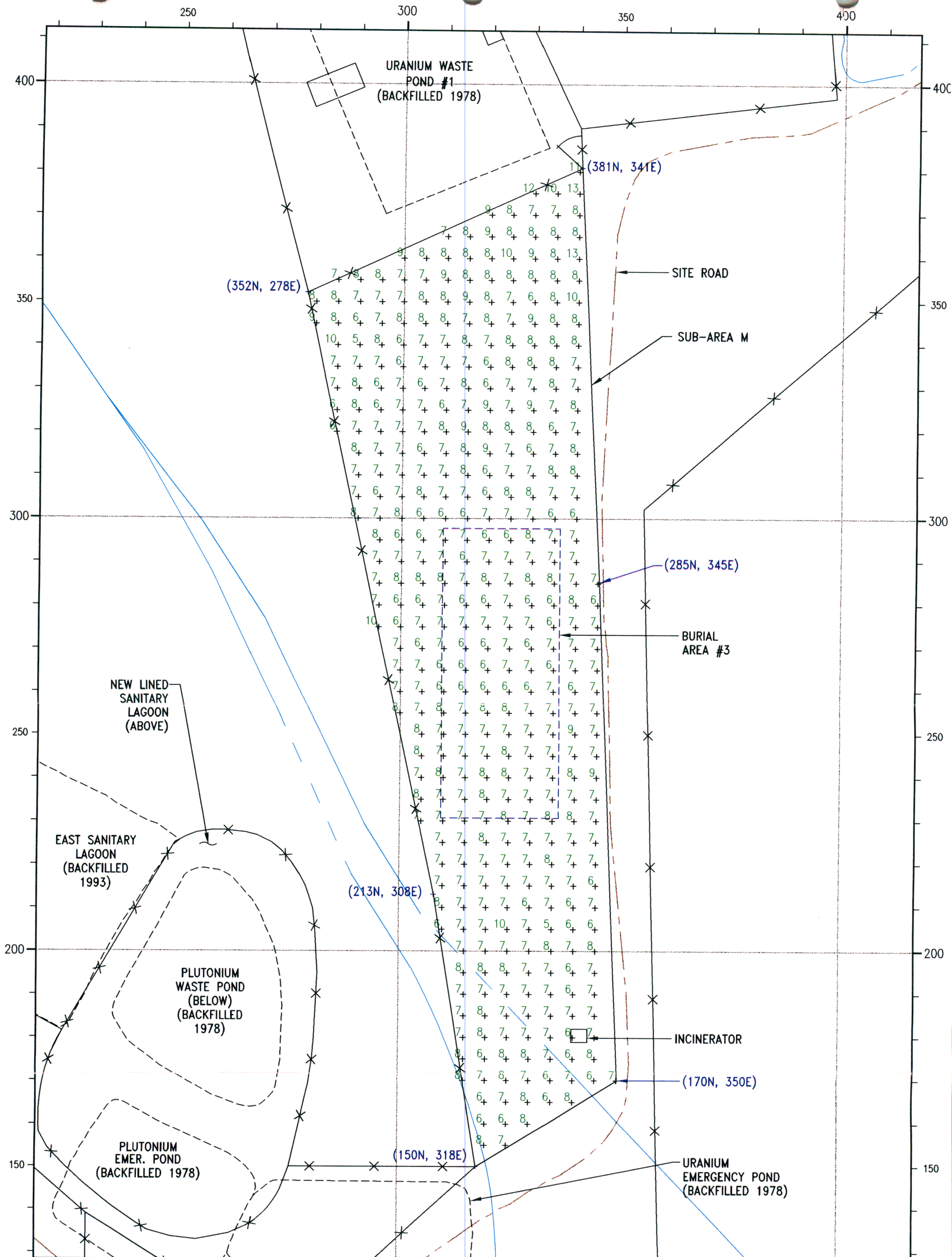


CIMARRON CORPORATION

CIMARRON FACILITY
PHASE III - SUB-AREA M
POST-REMEDIATION - SOIL SAMPLE RESULTS (1998)
SOIL SAMPLE ALIQUOT: 5'-6'

DRWN. BY: JE	DATE: 10/19/98	SCALE: AS SHOWN
JOB NO.	DRAWING NO. 98POAMSS-6	REV. 0

... \CIMARRON \SUBAREAM \98POAMSS



NOTES

READINGS ARE IN MICRO-R/HR (μ R/HR)
 INSTRUMENT: LUDLUM MICRO-R METER
 SERIAL NO: 9081
 BACKGROUND: 7 μ R/HR.

LEGEND

9+ \leq 17 μ R/HR
 20+ $>$ 17 μ R/HR

20 0 20
 SCALE IN METERS



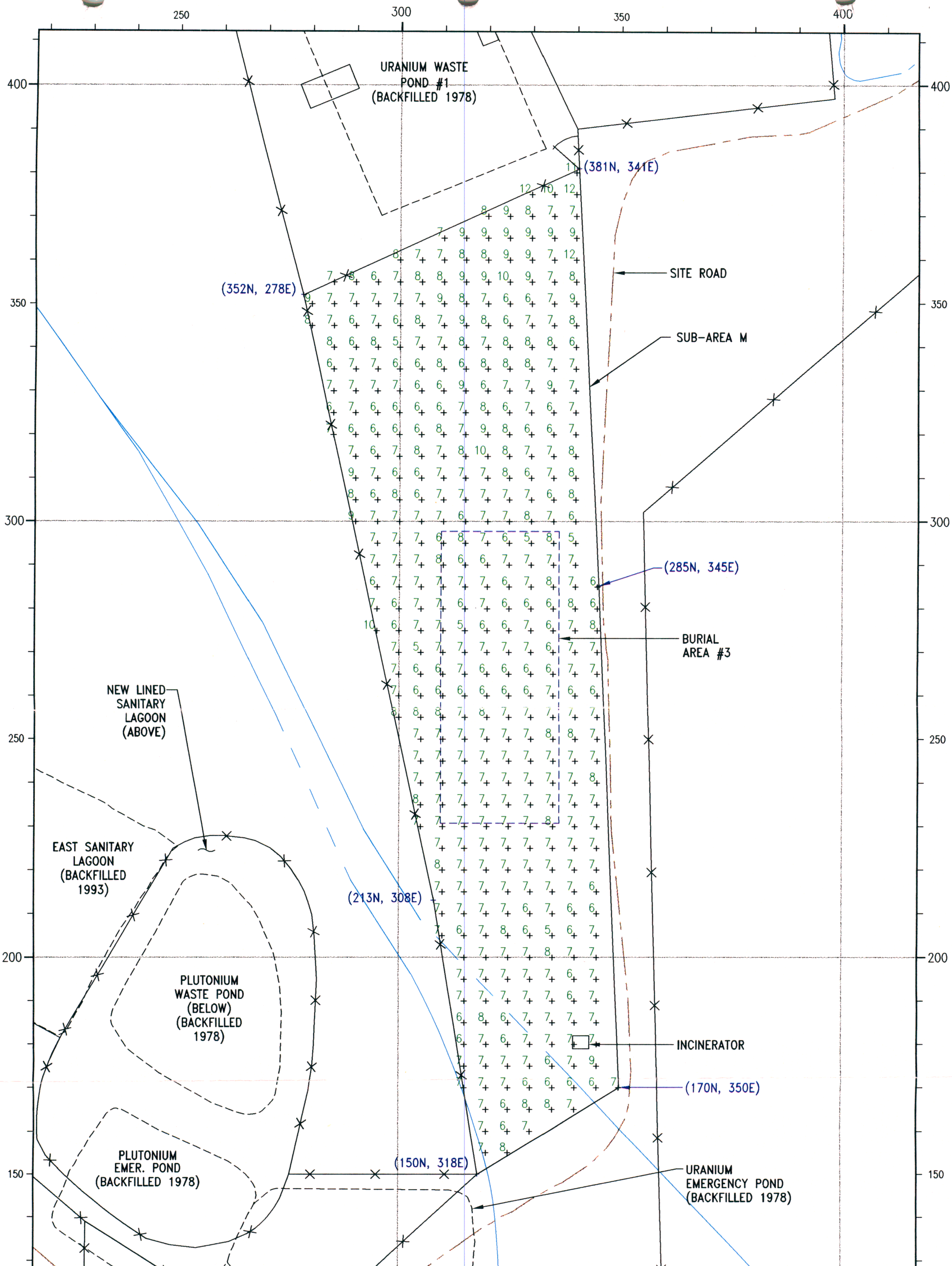
CIMARRON CORPORATION

CIMARRON FACILITY
 PHASE III - SUB-AREA M
 POST-REMEDIATION - MICRO-R SURVEY (1998)
 AT LAND SURFACE

REV.	DESCRIPTION	DRWN BY:	CK'D BY:	APP'D BY:	DATE
0	DRAWING ISSUED.	JE	WR	JL	12/18/98

DRWN BY: JE	DATE: 10/20/98	SCALE: AS SHOWN
JOB NO.	DRAWING NO. 98POAMUR-0	REV. 0

...\\CIMARRON\\SUBAREAM\\98POAMUR



NOTES

READINGS ARE IN MICRO-R/HR (μ R/HR)
 INSTRUMENT: LUDLUM MICRO-R METER
 SERIAL NO: 9081
 BACKGROUND: 7 μ R/HR.

LEGEND

9+ \leq 17 μ R/HR
 20+ $>$ 17 μ R/HR

20 0 20
 SCALE IN METERS



REV.	DESCRIPTION	DRWN BY:	CK'D BY:	APP'D BY:	DATE
0	DRAWING ISSUED.	JE	WR	JL	12/18/98

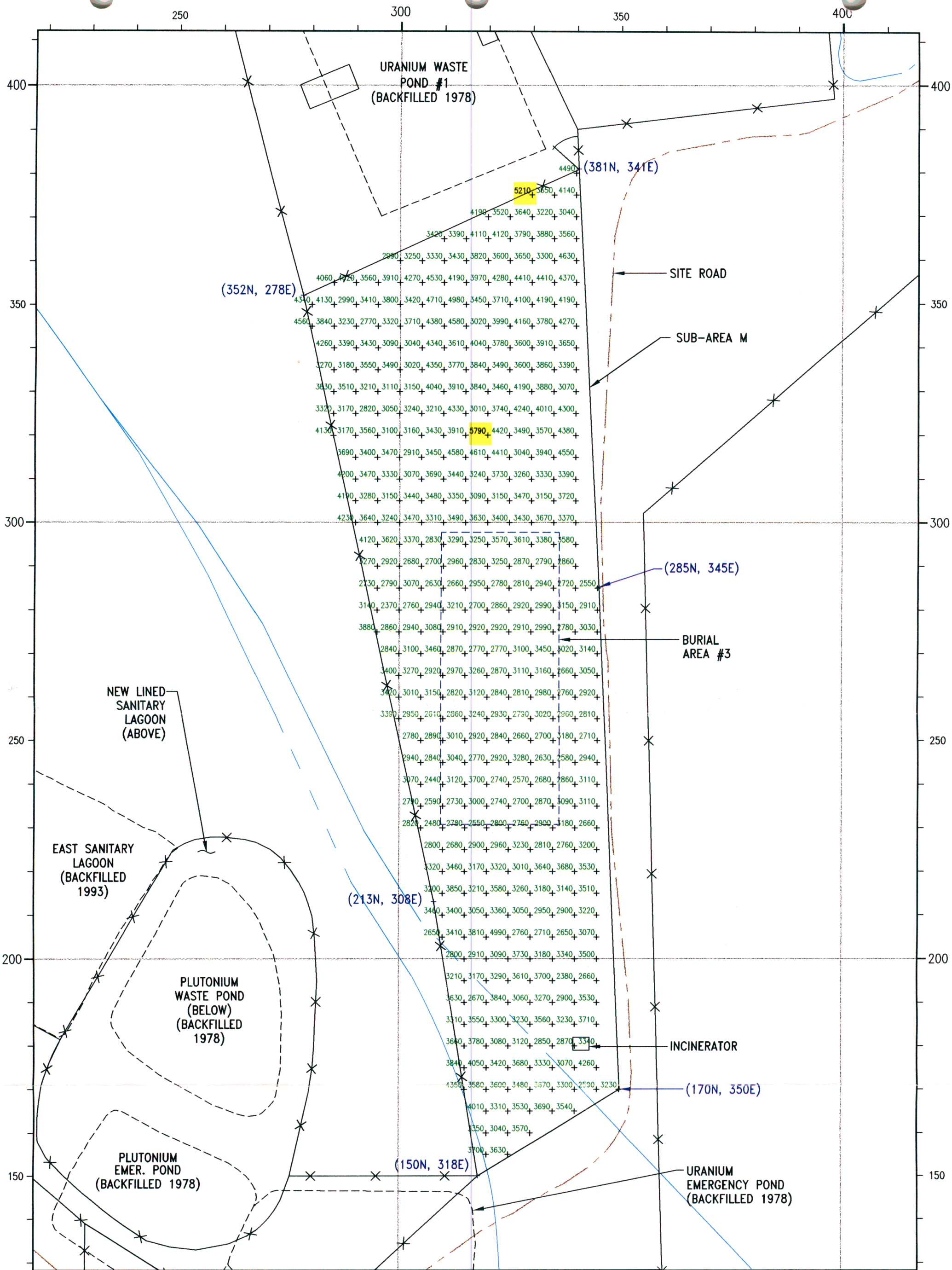


CIMARRON CORPORATION

CIMARRON FACILITY
 PHASE III - SUB-AREA M
 POST-REMEDIATION - MICRO-R SURVEY (1998)
 AT 1 METER ABOVE SURFACE

DRWN. BY: JE	DATE: 10/20/98	SCALE: AS SHOWN
JOB NO.	DRAWING NO. 98POAMUR-1	REV. 0

... \CIMARRON \SUBAREAM \98POAMUR

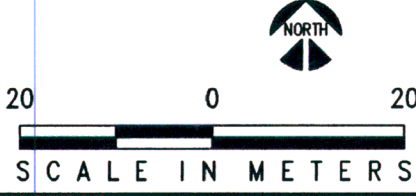


NOTES:

INSTRUMENT: LUDLUM 2220, S/N 48395 OR 50057,
LEAD-SHIELDED 3" X 1/2"
NaI DETECTOR.
BACKGROUND: 2500 CPM

LEGEND

3560+ < 5000 CPM
6500+ > 5000 CPM

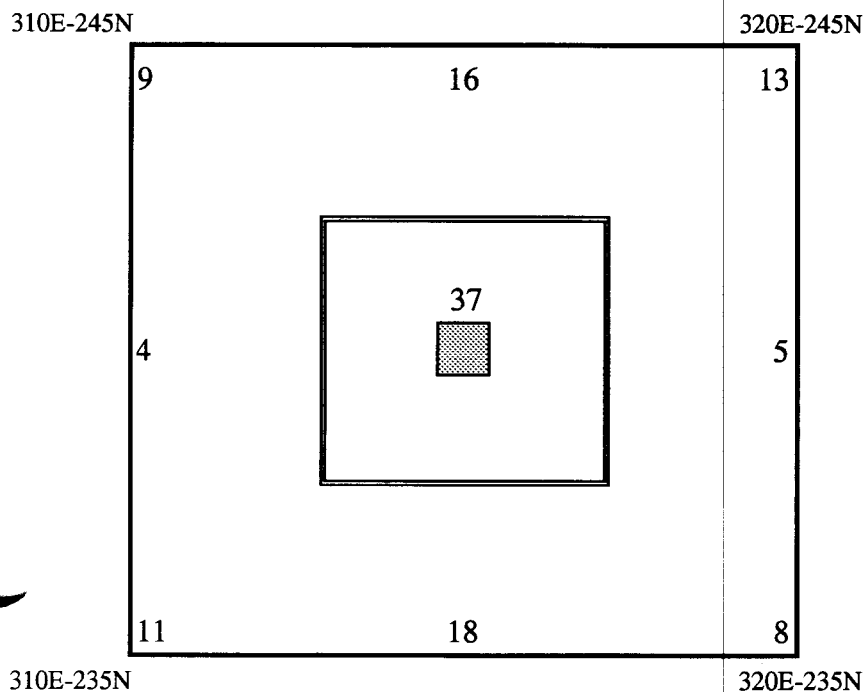


CIMARRON CORPORATION			
CIMARRON FACILITY PHASE III - SUB-AREA M POST REMEDIATION - GAMMA SURVEY (1998) READINGS IN CPM (3" DET.) AT SURFACE			
DRWN. BY: JE	DATE: 10/19/98	SCALE: AS SHOWN	
JOB NO.	DRAWING NO. 98POAM3D-0	REV. 0	

REV.	DESCRIPTION	DRWN BY:	CK'D BY:	APP'D BY:	DATE
0	DRAWING ISSUED.	JE	WR	JL	12/18/98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III - SUB - AREA " M "
HOT SPOT EVALUATION

HOT SPOT LOCATION : 315E - 240N (0 - 6 ") (37 pCi / g U)



LOCATION	pCi / gU
310E - 245N	9
315E - 245N	16
320E - 245N	13
310E - 240N	4
320E - 240N	5
310E - 235N	11
315E - 235N	18
320E - 235N	8
TOTAL :	84
AVERAGE :	10.50

ELEVATED AREA (315E - 240N) REPRESENTS 25 % OF THE GRIDDED AREA

$$\text{SQRT} (100 / A) = \text{SQRT} (100 / 25) = 2$$

$$2 \text{ TIMES THE GUIDELINE VALUE (ie. } 30 \text{ pCi / g U)} = 60 \text{ pCi / g U}$$

MAXIMIUM : 60 pCi / g U

37 pCi / g U < 60 pCi / g U CRITERIA SATISFIED

$$X_w = 10.5 \text{ pCi / g U } [1 - 25/100] + 37 \text{ pCi / g U } [25/100]$$

$$X_w = 7.88 \text{ pCi / g U } + 9.25 \text{ pCi / g U}$$

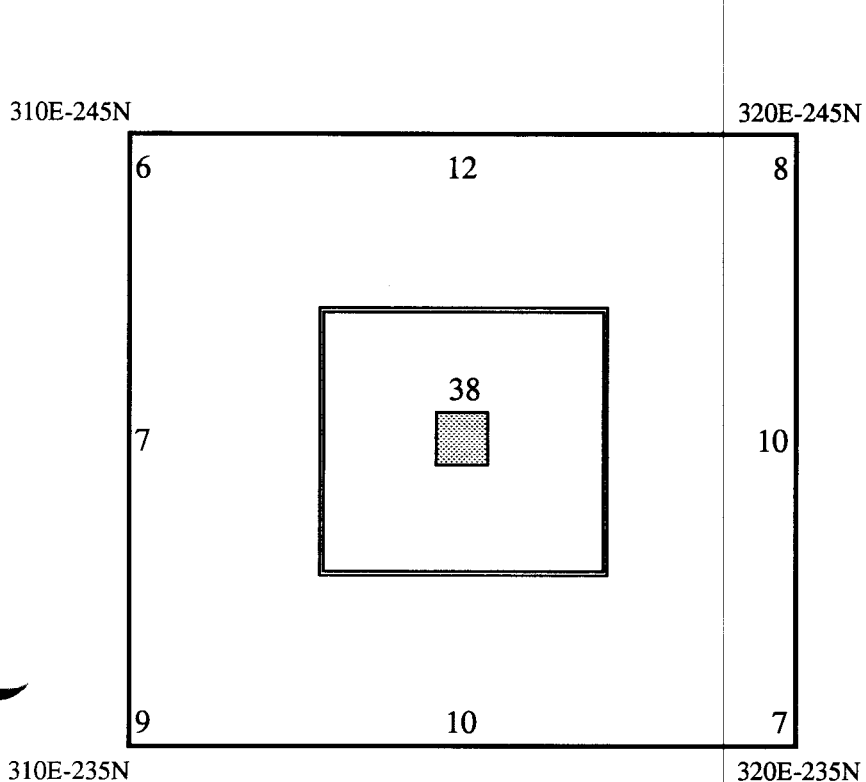
$$X_w = 17.13 \text{ pCi / g U } \quad (\text{BACKGROUND NOT SUBTRACTED})$$

PERFORMED BY : IRVING POWELL DATE : 8 - 19 - 98

REVIEWED BY : W. A. Rogers DATE : 8-19-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III - SUB - AREA " M "
HOT SPOT EVALUATION

HOT SPOT LOCATION : 315E - 240N (6 " - 1') (38 pCi / g U)



LOCATION	pCi / gU
310E - 245N	6
315E - 245N	12
320E - 245N	8
310E - 240N	7
320E - 240N	10
310E - 235N	9
315E - 235N	10
320E - 235N	7
TOTAL :	69
AVERAGE :	8.63

ELEVATED AREA (315E - 240N) REPRESENTS 25 % OF THE GRIDDED AREA

$$\text{SQRT} (100 / A) = \text{SQRT} (100 / 25) = 2$$

$$2 \text{ TIMES THE GUIDELINE VALUE (ie. } 30 \text{ pCi / g U)} = 60 \text{ pCi / g U}$$

MAXIMUM : 60 pCi / g U

38 pCi / g U < 60 pCi / g U CRITERIA SATISFIED

$$X_w = 8.63 \text{ pCi / g U } [1 - 25/100] + 38 \text{ pCi / g U } [25/100]$$

$$X_w = 6.47 \text{ pCi / g U } + 9.5 \text{ pCi / g U}$$

$$X_w = 15.97 \text{ pCi / g U } \quad (\text{BACKGROUND NOT SUBTRACTED})$$

PERFORMED BY : IRVING POWELL

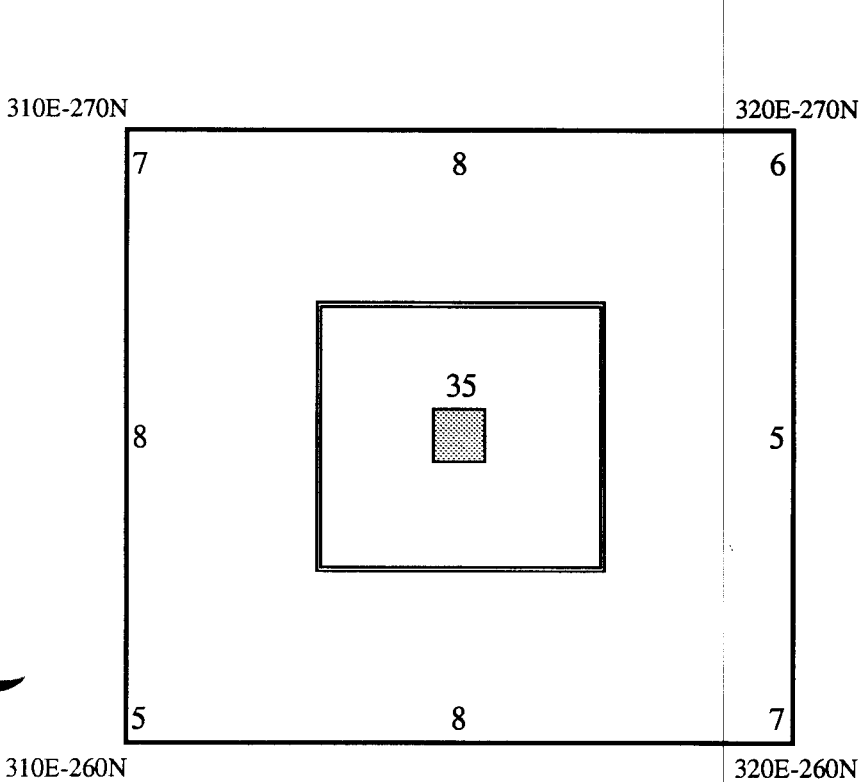
DATE : 8 - 19 - 98

REVIEWED BY : W.G. Ryan

DATE : 8-19-98

**CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III - SUB - AREA " M "
HOT SPOT EVALUATION**

HOT SPOT LOCATION : 315E - 265N (6" - 1') (35 pCi / g U)



LOCATION	pCi / gU
310E - 270N	7
315E - 270N	8
320E - 270N	6
310E - 265N	8
320E - 265N	5
310E - 260N	5
315E - 260N	8
320E - 260N	7
TOTAL :	54
AVERAGE :	6.75

ELEVATED AREA (315E - 265N) REPRESENTS 25 % OF THE GRIDDED AREA

$$\text{SQRT} (100 / A) = \text{SQRT} (100 / 25) = 2$$

$$2 \text{ TIMES THE GUIDELINE VALUE (ie. } 30 \text{ pCi / g U)} = 60 \text{ pCi / g U}$$

MAXIMUM : 60 pCi / g U

35 pCi / g U < 60 pCi / g U **CRITERIA SATISFIED**

$$X_w = 6.75 \text{ pCi / g U } [1 - 25/100] + 35 \text{ pCi / g U } [25/100]$$

$$X_w = 5.06 \text{ pCi / g U } + 8.75 \text{ pCi / g U }$$

$$X_w = 13.8 \text{ pCi / g U } \quad (\text{BACKGROUND NOT SUBTRACTED})$$

PERFORMED BY : IRVING POWELL

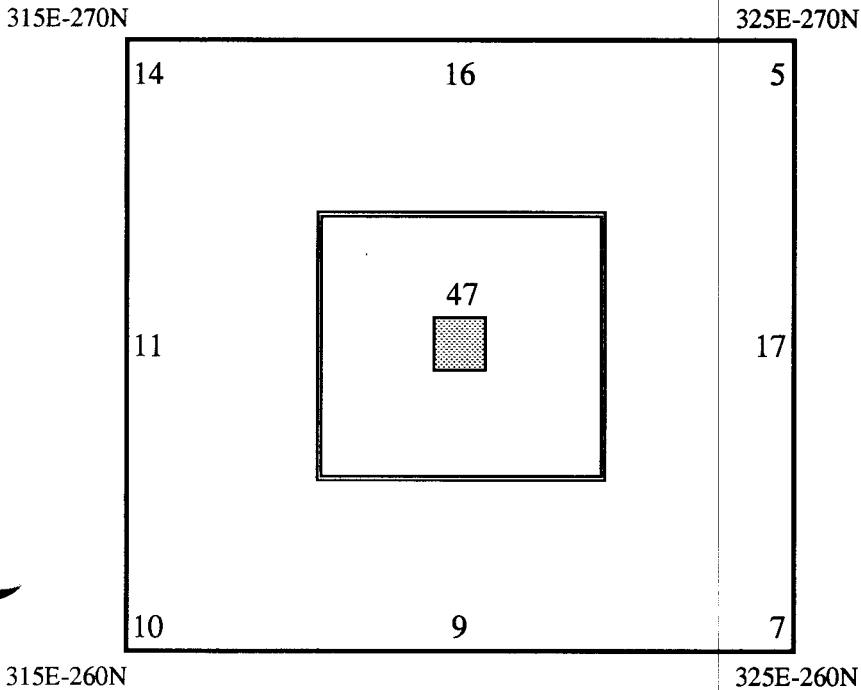
DATE : 8 - 19 - 98

REVIEWED BY : W. A. Rogers

DATE : 8 - 19 - 98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III - SUB - AREA " M "
HOT SPOT EVALUATION

HOT SPOT LOCATION : 320E - 265N (1' - 2') (47 pCi / g U)



LOCATION	pCi / gU
315E - 270N	14
320E - 270N	16
325E - 270N	5
315E - 265N	11
325E - 265N	17
315E - 260N	10
320E - 260N	9
325E - 260N	7
TOTAL :	89
AVERAGE :	11.13

ELEVATED AREA (320E - 265N) REPRESENTS 25 % OF THE GRIDDED AREA

$$\text{SQRT} (100 / A) = \text{SQRT} (100 / 25) = 2$$

$$2 \text{ TIMES THE GUIDELINE VALUE (ie. } 30 \text{ pCi / g U)} = 60 \text{ pCi / g U}$$

MAXIMUM : 60 pCi / g U

47 pCi / g U < 60 pCi / g U CRITERIA SATISFIED

$$X_w = 11.13 \text{ pCi / g U } [1 - 25/100] + 47 \text{ pCi / g U } [25/100]$$

$$X_w = 8.35 \text{ pCi / g U } + 11.75 \text{ pCi / g U}$$

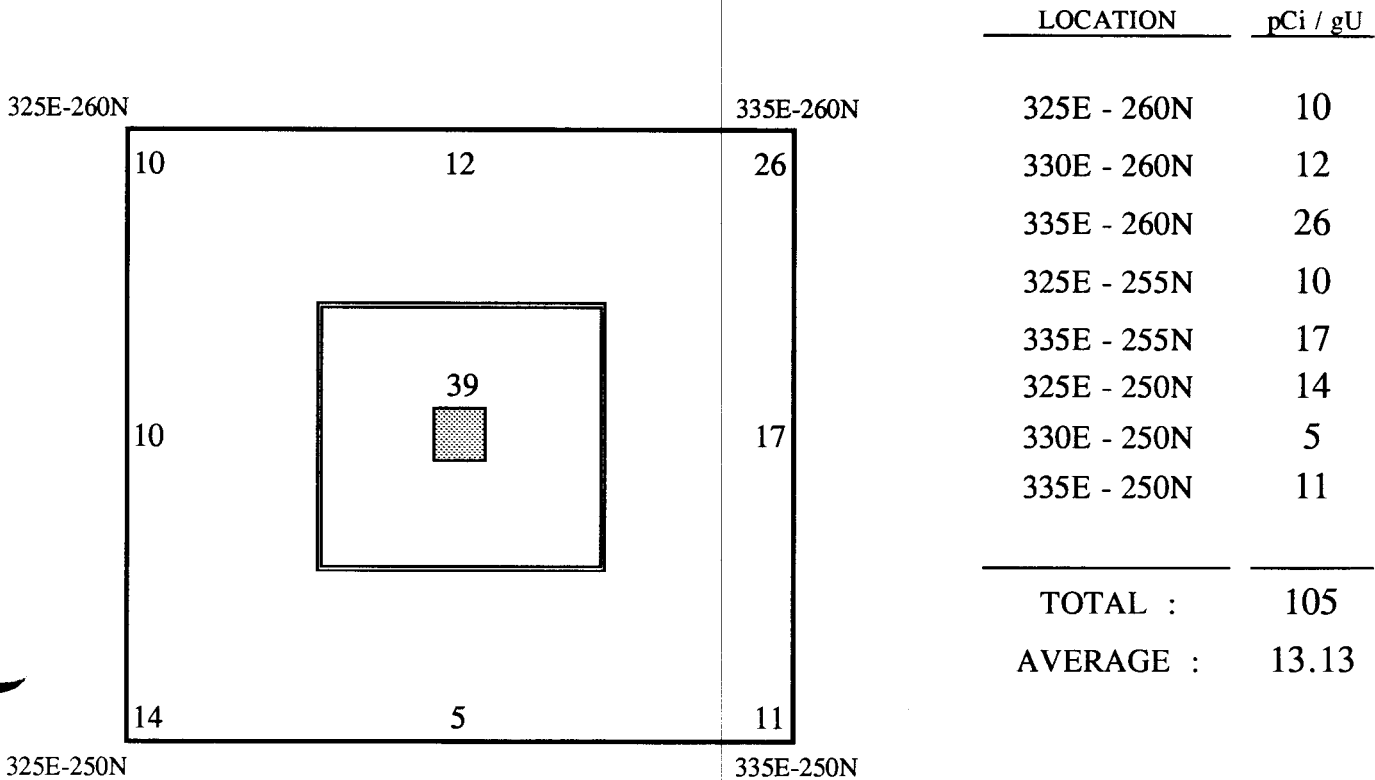
$$X_w = 20.1 \text{ pCi / g U } \quad (\text{BACKGROUND NOT SUBTRACTED})$$

PERFORMED BY : IRVING POWELL DATE : 8 - 19 - 98

REVIEWED BY : W. A. Rogers DATE : 8 - 19 - 98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III - SUB - AREA " M "
HOT SPOT EVALUATION

HOT SPOT LOCATION : 330E - 255N (2' - 3') (39 pCi / g U)



ELEVATED AREA (330E - 255N) REPRESENTS 25 % OF THE GRIDDED AREA

$$\text{SQRT} (100 / A) = \text{SQRT} (100 / 25) = 2$$

$$2 \text{ TIMES THE GUIDELINE VALUE (ie. } 30 \text{ pCi / g U)} = 60 \text{ pCi / g U}$$

MAXIMUM : 60 pCi / g U

39 pCi / g U < 60 pCi / g U CRITERIA SATISFIED

$$X_w = 13.13 \text{ pCi / g U } [1 - 25/100] + 39 \text{ pCi / g U } [25/100]$$

$$X_w = 9.85 \text{ pCi / g U } + 9.75 \text{ pCi / g U}$$

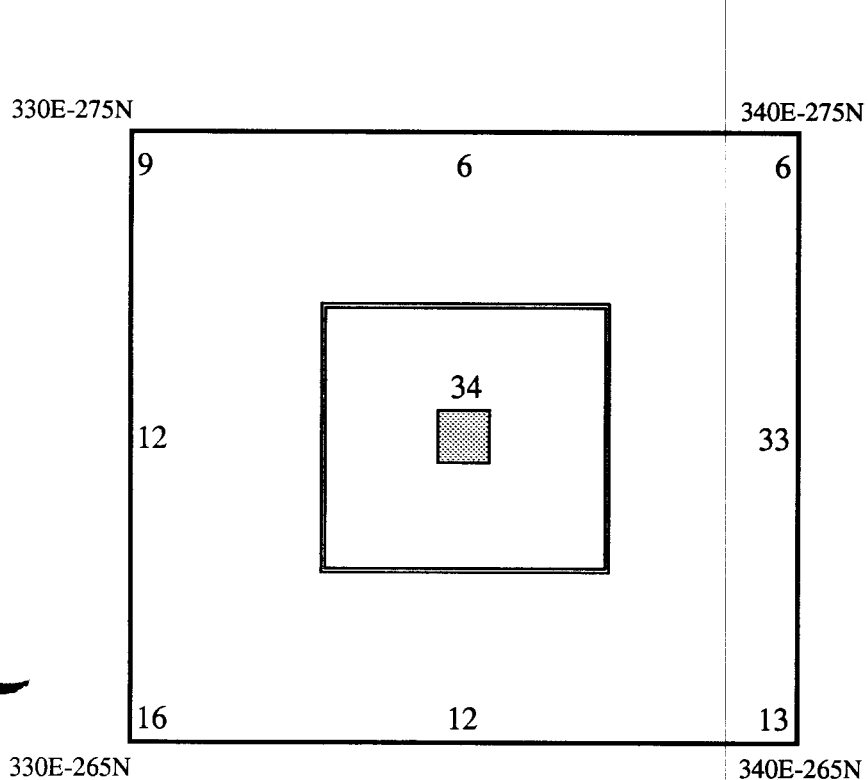
$$X_w = 19.6 \text{ pCi / g U } \quad (\text{BACKGROUND NOT SUBTRACTED})$$

PERFORMED BY : IRVING POWELL DATE : 8 - 19 - 98

REVIEWED BY : W.A. Rogers DATE : 8-19-98

CIMARRON CORPORATION
CIMARRON FACILITY
PHASE III - SUB - AREA " M "
HOT SPOT EVALUATION

HOT SPOT LOCATION : 335E - 270N (0 - 6") (34 pCi / g U)



LOCATION	pCi / gU
330E - 275N	9
335E - 275N	6
340E - 275N	6
330E - 270N	12
340E - 270N	33
330E - 265N	16
335E - 265N	12
340E - 265N	13
TOTAL :	107
AVERAGE :	13.38

ELEVATED AREA (335E - 270N) REPRESENTS 25 % OF THE GRIDDED AREA

$$\text{SQRT} (100 / A) = \text{SQRT} (100 / 25) = 2$$

$$2 \text{ TIMES THE GUIDELINE VALUE (ie. } 30 \text{ pCi / g U)} = 60 \text{ pCi / g U}$$

MAXIMUM : 60 pCi / g U

34 pCi / g U < 60 pCi / g U CRITERIA SATISFIED

$$X_w = 13.38 \text{ pCi / g U } [1 - 25/100] + 34 \text{ pCi / g U } [25/100]$$

$$X_w = 10.04 \text{ pCi / g U } + 8.5 \text{ pCi / g U}$$

$$X_w = 18.54 \text{ pCi / g U } \quad (\text{BACKGROUND NOT SUBTRACTED})$$

PERFORMED BY : IRVING POWELL

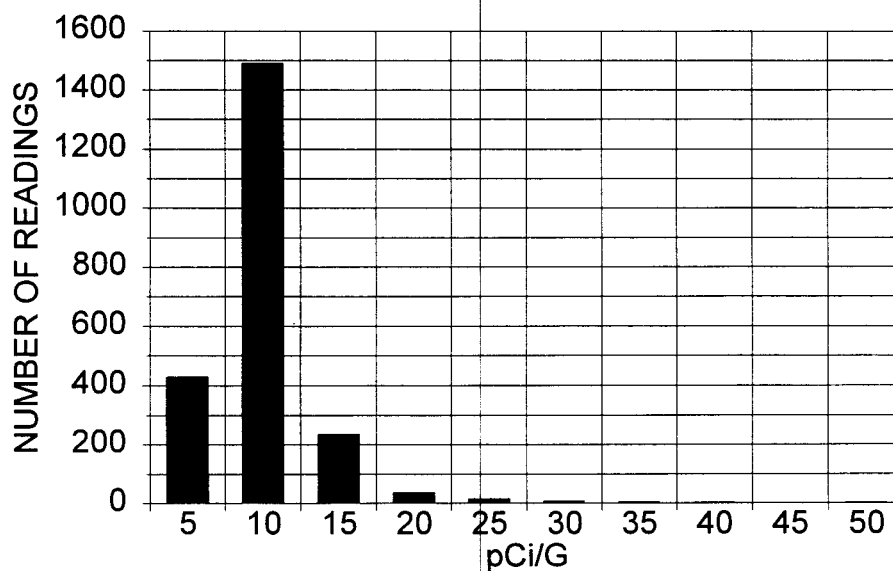
DATE : 8 - 19 - 98

REVIEWED BY : W.A. Rogers

DATE : 8 - 19 - 98

PHASE III, SUB-AREA "M"
'POST REMEDIATION SOIL SAMPLES
CIMARRON SOIL COUNTER
TOTAL URANIUM SAMPLE RESULTS
SITE BACKGROUND OF 4 pCi/g NOT SUBTRACTED
SEPTEMBER 1998

URANIUM SAMPLE RESULTS
FREQUENCY DISTRIBUTION



NUMBER OF READINGS	2224
AVERAGE READING	8
MINIMUM READING	1
MAXIMUM READING	47
STANDARD DEVIATION	4

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES
(URANIUM)

No. of Samples (x) : **2224**

COUNT TIME: 5 MINUTES

Sample Mean (N) = Sum(n) ÷ (x)

Sample Mean (N) : **7.94**

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

Standard Deviation: **3.6**

2 Std Deviations: **7.3**

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

(df) = **1.645**

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

(Aμ) = **8.06**

pCi/gU TOTAL U

GUIDELINE VALUE: **30**

pCi/gU TOTAL U

Acceptable Level: **34.0**

pCi/gU TOTAL U

(30 PLUS BACKGROUND)

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)

(df) low value(Y)

Desired value(df) (X)

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

The (df) value for (X)

	is (B)		95%
	is (A)		95%
2223	is calculated as follow:		
2223	1.645	95%	

	Sum(n)	Sum(n-N)²
1 - 50	372	322.72
51 - 100	380	353.71
101 - 150	463	1633.01
151 - 200	404	346.69
201 - 250	377	226.34
251 - 300	415	733.05
301 - 350	431	1031.04
351 - 400	479	1611.00
401 - 450	372	340.72
451 - 500	385	331.33
501 - 550	473	2490.25
551 - 600	374	506.97
601 - 650	387	383.58
651 - 700	451	887.52
701 - 750	420	952.67
751 - 800	400	362.19
801 - 850	342	364.99
851 - 900	354	248.48
901 - 950	432	900.16
951 - 1000	452	1956.65
1001 - 1050	346	333.49
1051 - 1100	448	1604.15
1101 - 1150	347	230.62
1151 - 1200	350	313.99
1201 - 1250	376	307.21
1251 - 1300	395	340.57
1301 - 1350	415	429.05
1351 - 1400	410	1427.43
1401 - 1450	427	878.54
1451 - 1500	386	508.46
1501 - 1550	371	265.59
1551 - 1600	369	305.35
1601 - 1650	382	301.96
1651 - 1700	465	1757.26
1701 - 1750	387	609.58
1751 - 1800	391	444.08
1801 - 1850	359	284.10
1851 - 1900	402	594.44
1901 - 1950	360	311.23
1951 - 2000	402	576.44
2001 - 2050	368	328.22
2051 - 2100	391	386.08
2101 - 2150	367	321.10
2151 - 2200	397	312.82
2201 - 2250	180	146.60
2251 - 2300	0	0.00
2301 - 2350	0	0.00
2351 - 2400	0	0.00
2401 - 2450	0	0.00
2451 - 2500	0	0.00
	17654	29301.44
TOTAL	Sum(n)	Sum(n-N)²

PERFORMED BY: *J. Smith*

DATE: *11-19-98*

REVIEWED BY: *W.A. Rogers*

DATE: *10-19-98*

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
1	8	0.06	0.00
2	8	0.06	0.00
3	7	-0.94	0.88
4	4	-3.94	15.51
5	9	1.06	1.13
6	8	0.06	0.00
7	8	0.06	0.00
8	6	-1.94	3.76
9	5	-2.94	8.63
10	9	1.06	1.13
11	7	-0.94	0.88
12	6	-1.94	3.76
13	6	-1.94	3.76
14	10	2.06	4.25
15	5	-2.94	8.63
16	9	1.06	1.13
17	10	2.06	4.25
18	10	2.06	4.25
19	5	-2.94	8.63
20	6	-1.94	3.76
21	10	2.06	4.25
22	8	0.06	0.00
23	6	-1.94	3.76
24	7	-0.94	0.88
25	6	-1.94	3.76
26	7	-0.94	0.88
27	11	3.06	9.38
28	8	0.06	0.00
29	4	-3.94	15.51
30	5	-2.94	8.63
31	18	10.06	101.24
32	6	-1.94	3.76
33	6	-1.94	3.76
34	6	-1.94	3.76
35	7	-0.94	0.88
36	8	0.06	0.00
37	9	1.06	1.13
38	7	-0.94	0.88
39	7	-0.94	0.88
40	7	-0.94	0.88
41	13	5.06	25.62
42	12	4.06	16.50
43	5	-2.94	8.63
44	4	-3.94	15.51
45	6	-1.94	3.76
46	7	-0.94	0.88
47	5	-2.94	8.63
48	8	0.06	0.00
49	6	-1.94	3.76
50	7	-0.94	0.88
	372		322.72
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
51	8	0.06	0.00
52	7	-0.94	0.88
53	11	3.06	9.38
54	11	3.06	9.38
55	8	0.06	0.00
56	10	2.06	4.25
57	6	-1.94	3.76
58	7	-0.94	0.88
59	5	-2.94	8.63
60	6	-1.94	3.76
61	11	3.06	9.38
62	8	0.06	0.00
63	6	-1.94	3.76
64	14	6.06	36.75
65	5	-2.94	8.63
66	4	-3.94	15.51
67	5	-2.94	8.63
68	6	-1.94	3.76
69	8	0.06	0.00
70	10	2.06	4.25
71	4	-3.94	15.51
72	9	1.06	1.13
73	12	4.06	16.50
74	5	-2.94	8.63
75	4	-3.94	15.51
76	13	5.06	25.62
77	6	-1.94	3.76
78	5	-2.94	8.63
79	8	0.06	0.00
80	8	0.06	0.00
81	11	3.06	9.38
82	13	5.06	25.62
83	7	-0.94	0.88
84	7	-0.94	0.88
85	9	1.06	1.13
86	7	-0.94	0.88
87	3	-4.94	24.38
88	8	0.06	0.00
89	6	-1.94	3.76
90	4	-3.94	15.51
91	7	-0.94	0.88
92	7	-0.94	0.88
93	6	-1.94	3.76
94	10	2.06	4.25
95	11	3.06	9.38
96	4	-3.94	15.51
97	9	1.06	1.13
98	6	-1.94	3.76
99	6	-1.94	3.76
100	9	1.06	1.13
	380		353.71
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
101	7	-0.94	0.88
102	6	-1.94	3.76
103	6	-1.94	3.76
104	7	-0.94	0.88
105	12	4.06	16.50
106	9	1.06	1.13
107	8	0.06	0.00
108	5	-2.94	8.63
109	9	1.06	1.13
110	6	-1.94	3.76
111	8	0.06	0.00
112	5	-2.94	8.63
113	7	-0.94	0.88
114	7	-0.94	0.88
115	9	1.06	1.13
116	5	-2.94	8.63
117	7	-0.94	0.88
118	5	-2.94	8.63
119	9	1.06	1.13
120	8	0.06	0.00
121	12	4.06	16.50
122	19	11.06	122.37
123	7	-0.94	0.88
124	9	1.06	1.13
125	11	3.06	9.38
126	1	-6.94	48.14
127	7	-0.94	0.88
128	5	-2.94	8.63
129	23	15.06	226.87
130	5	-2.94	8.63
131	11	3.06	9.38
132	8	0.06	0.00
133	7	-0.94	0.88
134	8	0.06	0.00
135	18	10.06	101.24
136	37	29.06	844.60
137	16	8.06	65.00
138	15	7.06	49.87
139	7	-0.94	0.88
140	8	0.06	0.00
141	13	5.06	25.62
142	10	2.06	4.25
143	7	-0.94	0.88
144	11	3.06	9.38
145	6	-1.94	3.76
146	8	0.06	0.00
147	7	-0.94	0.88
148	7	-0.94	0.88
149	7	-0.94	0.88
150	8	0.06	0.00
	463		1633.01
	Sum(n)		Sum(n-N)²

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
151	12	4.06	16.50
152	12	4.06	16.50
153	11	3.06	9.38
154	13	5.06	25.62
155	8	0.06	0.00
156	7	-0.94	0.88
157	7	-0.94	0.88
158	8	0.06	0.00
159	6	-1.94	3.76
160	13	5.06	25.62
161	5	-2.94	8.63
162	6	-1.94	3.76
163	9	1.06	1.13
164	8	0.06	0.00
165	9	1.06	1.13
166	6	-1.94	3.76
167	13	5.06	25.62
168	4	-3.94	15.51
169	5	-2.94	8.63
170	8	0.06	0.00
171	7	-0.94	0.88
172	8	0.06	0.00
173	12	4.06	16.50
174	5	-2.94	8.63
175	10	2.06	4.25
176	5	-2.94	8.63
177	6	-1.94	3.76
178	8	0.06	0.00
179	5	-2.94	8.63
180	13	5.06	25.62
181	9	1.06	1.13
182	8	0.06	0.00
183	13	5.06	25.62
184	9	1.06	1.13
185	6	-1.94	3.76
186	8	0.06	0.00
187	11	3.06	9.38
188	10	2.06	4.25
189	9	1.06	1.13
190	5	-2.94	8.63
191	7	-0.94	0.88
192	8	0.06	0.00
193	10	2.06	4.25
194	5	-2.94	8.63
195	7	-0.94	0.88
196	4	-3.94	15.51
197	8	0.06	0.00
198	5	-2.94	8.63
199	8	0.06	0.00
200	5	-2.94	8.63
	404		346.69
	Sum(n)		Sum(n-N)²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
201	8	0.06	0.00
202	9	1.06	1.13
203	5	-2.94	8.63
204	6	-1.94	3.76
205	8	0.06	0.00
206	10	2.06	4.25
207	9	1.06	1.13
208	5	-2.94	8.63
209	6	-1.94	3.76
210	7	-0.94	0.88
211	7	-0.94	0.88
212	9	1.06	1.13
213	9	1.06	1.13
214	10	2.06	4.25
215	7	-0.94	0.88
216	7	-0.94	0.88
217	5	-2.94	8.63
218	7	-0.94	0.88
219	7	-0.94	0.88
220	9	1.06	1.13
221	5	-2.94	8.63
222	5	-2.94	8.63
223	7	-0.94	0.88
224	14	6.06	36.75
225	8	0.06	0.00
226	13	5.06	25.62
227	10	2.06	4.25
228	10	2.06	4.25
229	8	0.06	0.00
230	8	0.06	0.00
231	9	1.06	1.13
232	5	-2.94	8.63
233	7	-0.94	0.88
234	6	-1.94	3.76
235	6	-1.94	3.76
236	6	-1.94	3.76
237	10	2.06	4.25
238	9	1.06	1.13
239	6	-1.94	3.76
240	5	-2.94	8.63
241	5	-2.94	8.63
242	5	-2.94	8.63
243	8	0.06	0.00
244	6	-1.94	3.76
245	6	-1.94	3.76
246	8	0.06	0.00
247	7	-0.94	0.88
248	9	1.06	1.13
249	11	3.06	9.38
250	5	-2.94	8.63
	377		226.34
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
251	8	0.06	0.00
252	8	0.06	0.00
253	5	-2.94	8.63
254	11	3.06	9.38
255	9	1.06	1.13
256	5	-2.94	8.63
257	9	1.06	1.13
258	5	-2.94	8.63
259	5	-2.94	8.63
260	7	-0.94	0.88
261	6	-1.94	3.76
262	7	-0.94	0.88
263	6	-1.94	3.76
264	7	-0.94	0.88
265	10	2.06	4.25
266	26	18.06	326.24
267	18	10.06	101.24
268	6	-1.94	3.76
269	10	2.06	4.25
270	13	5.06	25.62
271	16	8.06	65.00
272	12	4.06	16.50
273	9	1.06	1.13
274	6	-1.94	3.76
275	10	2.06	4.25
276	5	-2.94	8.63
277	6	-1.94	3.76
278	4	-3.94	15.51
279	9	1.06	1.13
280	8	0.06	0.00
281	6	-1.94	3.76
282	11	3.06	9.38
283	6	-1.94	3.76
284	8	0.06	0.00
285	7	-0.94	0.88
286	12	4.06	16.50
287	8	0.06	0.00
288	6	-1.94	3.76
289	8	0.06	0.00
290	10	2.06	4.25
291	7	-0.94	0.88
292	10	2.06	4.25
293	7	-0.94	0.88
294	7	-0.94	0.88
295	5	-2.94	8.63
296	7	-0.94	0.88
297	9	1.06	1.13
298	4	-3.94	15.51
299	7	-0.94	0.88
300	4	-3.94	15.51
	415		733.05
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
301	8	0.06	0.00
302	6	-1.94	3.76
303	5	-2.94	8.63
304	5	-2.94	8.63
305	8	0.06	0.00
306	11	3.06	9.38
307	7	-0.94	0.88
308	6	-1.94	3.76
309	8	0.06	0.00
310	6	-1.94	3.76
311	12	4.06	16.50
312	9	1.06	1.13
313	14	6.06	36.75
314	12	4.06	16.50
315	34	26.06	679.23
316	6	-1.94	3.76
317	7	-0.94	0.88
318	5	-2.94	8.63
319	12	4.06	16.50
320	16	8.06	65.00
321	6	-1.94	3.76
322	8	0.06	0.00
323	8	0.06	0.00
324	6	-1.94	3.76
325	8	0.06	0.00
326	5	-2.94	8.63
327	9	1.06	1.13
328	6	-1.94	3.76
329	5	-2.94	8.63
330	5	-2.94	8.63
331	6	-1.94	3.76
332	7	-0.94	0.88
333	8	0.06	0.00
334	16	8.06	65.00
335	10	2.06	4.25
336	6	-1.94	3.76
337	8	0.06	0.00
338	7	-0.94	0.88
339	9	1.06	1.13
340	9	1.06	1.13
341	7	-0.94	0.88
342	8	0.06	0.00
343	11	3.06	9.38
344	10	2.06	4.25
345	9	1.06	1.13
346	6	-1.94	3.76
347	7	-0.94	0.88
348	8	0.06	0.00
349	6	-1.94	3.76
350	10	2.06	4.25
	431		1031.04
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
351	5	-2.94	8.63
352	7	-0.94	0.88
353	8	0.06	0.00
354	26	18.06	326.24
355	9	1.06	1.13
356	22	14.06	197.74
357	13	5.06	25.62
358	33	25.06	628.11
359	6	-1.94	3.76
360	10	2.06	4.25
361	14	6.06	36.75
362	13	5.06	25.62
363	8	0.06	0.00
364	6	-1.94	3.76
365	10	2.06	4.25
366	11	3.06	9.38
367	7	-0.94	0.88
368	6	-1.94	3.76
369	6	-1.94	3.76
370	11	3.06	9.38
371	8	0.06	0.00
372	7	-0.94	0.88
373	6	-1.94	3.76
374	11	3.06	9.38
375	6	-1.94	3.76
376	11	3.06	9.38
377	9	1.06	1.13
378	5	-2.94	8.63
379	22	14.06	197.74
380	11	3.06	9.38
381	6	-1.94	3.76
382	9	1.06	1.13
383	10	2.06	4.25
384	7	-0.94	0.88
385	10	2.06	4.25
386	9	1.06	1.13
387	9	1.06	1.13
388	6	-1.94	3.76
389	4	-3.94	15.51
390	7	-0.94	0.88
391	8	0.06	0.00
392	5	-2.94	8.63
393	9	1.06	1.13
394	10	2.06	4.25
395	5	-2.94	8.63
396	6	-1.94	3.76
397	6	-1.94	3.76
398	7	-0.94	0.88
399	10	2.06	4.25
400	9	1.06	1.13
	479		1611.00
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
401	7	-0.94	0.88
402	7	-0.94	0.88
403	14	6.06	36.75
404	8	0.06	0.00
405	7	-0.94	0.88
406	8	0.06	0.00
407	5	-2.94	8.63
408	7	-0.94	0.88
409	8	0.06	0.00
410	4	-3.94	15.51
411	5	-2.94	8.63
412	9	1.06	1.13
413	6	-1.94	3.76
414	7	-0.94	0.88
415	10	2.06	4.25
416	7	-0.94	0.88
417	6	-1.94	3.76
418	6	-1.94	3.76
419	4	-3.94	15.51
420	6	-1.94	3.76
421	12	4.06	16.50
422	8	0.06	0.00
423	11	3.06	9.38
424	8	0.06	0.00
425	8	0.06	0.00
426	7	-0.94	0.88
427	5	-2.94	8.63
428	5	-2.94	8.63
429	7	-0.94	0.88
430	8	0.06	0.00
431	5	-2.94	8.63
432	9	1.06	1.13
433	8	0.06	0.00
434	6	-1.94	3.76
435	9	1.06	1.13
436	19	11.06	122.37
437	6	-1.94	3.76
438	8	0.06	0.00
439	7	-0.94	0.88
440	6	-1.94	3.76
441	5	-2.94	8.63
442	8	0.06	0.00
443	10	2.06	4.25
444	7	-0.94	0.88
445	5	-2.94	8.63
446	9	1.06	1.13
447	5	-2.94	8.63
448	6	-1.94	3.76
449	6	-1.94	3.76
450	8	0.06	0.00
	372		340.72
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
451	9	1.06	1.13
452	11	3.06	9.38
453	6	-1.94	3.76
454	8	0.06	0.00
455	4	-3.94	15.51
456	10	2.06	4.25
457	9	1.06	1.13
458	7	-0.94	0.88
459	16	8.06	65.00
460	9	1.06	1.13
461	4	-3.94	15.51
462	7	-0.94	0.88
463	5	-2.94	8.63
464	10	2.06	4.25
465	12	4.06	16.50
466	7	-0.94	0.88
467	7	-0.94	0.88
468	6	-1.94	3.76
469	4	-3.94	15.51
470	5	-2.94	8.63
471	6	-1.94	3.76
472	4	-3.94	15.51
473	9	1.06	1.13
474	9	1.06	1.13
475	7	-0.94	0.88
476	8	0.06	0.00
477	13	5.06	25.62
478	6	-1.94	3.76
479	9	1.06	1.13
480	8	0.06	0.00
481	6	-1.94	3.76
482	8	0.06	0.00
483	4	-3.94	15.51
484	8	0.06	0.00
485	12	4.06	16.50
486	10	2.06	4.25
487	8	0.06	0.00
488	8	0.06	0.00
489	7	-0.94	0.88
490	8	0.06	0.00
491	4	-3.94	15.51
492	7	-0.94	0.88
493	10	2.06	4.25
494	7	-0.94	0.88
495	6	-1.94	3.76
496	3	-4.94	24.38
497	6	-1.94	3.76
498	10	2.06	4.25
499	9	1.06	1.13
500	9	1.06	1.13
	385		331.33
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
501	7	-0.94	0.88
502	6	-1.94	3.76
503	6	-1.94	3.76
504	9	1.06	1.13
505	5	-2.94	8.63
506	8	0.06	0.00
507	7	-0.94	0.88
508	8	0.06	0.00
509	27	19.06	363.36
510	6	-1.94	3.76
511	4	-3.94	15.51
512	7	-0.94	0.88
513	6	-1.94	3.76
514	10	2.06	4.25
515	7	-0.94	0.88
516	5	-2.94	8.63
517	5	-2.94	8.63
518	4	-3.94	15.51
519	5	-2.94	8.63
520	6	-1.94	3.76
521	14	6.06	36.75
522	8	0.06	0.00
523	6	-1.94	3.76
524	8	0.06	0.00
525	12	4.06	16.50
526	10	2.06	4.25
527	18	10.06	101.24
528	9	1.06	1.13
529	8	0.06	0.00
530	4	-3.94	15.51
531	8	0.06	0.00
532	10	2.06	4.25
533	5	-2.94	8.63
534	5	-2.94	8.63
535	8	0.06	0.00
536	10	2.06	4.25
537	10	2.06	4.25
538	5	-2.94	8.63
539	10	2.06	4.25
540	38	30.06	903.73
541	12	4.06	16.50
542	18	10.06	101.24
543	10	2.06	4.25
544	8	0.06	0.00
545	35	27.06	732.35
546	8	0.06	0.00
547	6	-1.94	3.76
548	13	5.06	25.62
549	5	-2.94	8.63
550	4	-3.94	15.51
	473		2490.25
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
551	7	-0.94	0.88
552	5	-2.94	8.63
553	9	1.06	1.13
554	8	0.06	0.00
555	6	-1.94	3.76
556	12	4.06	16.50
557	14	6.06	36.75
558	10	2.06	4.25
559	6	-1.94	3.76
560	5	-2.94	8.63
561	12	4.06	16.50
562	6	-1.94	3.76
563	5	-2.94	8.63
564	6	-1.94	3.76
565	7	-0.94	0.88
566	7	-0.94	0.88
567	5	-2.94	8.63
568	8	0.06	0.00
569	2	-5.94	35.26
570	6	-1.94	3.76
571	8	0.06	0.00
572	8	0.06	0.00
573	5	-2.94	8.63
574	8	0.06	0.00
575	5	-2.94	8.63
576	11	3.06	9.38
577	6	-1.94	3.76
578	5	-2.94	8.63
579	10	2.06	4.25
580	6	-1.94	3.76
581	7	-0.94	0.88
582	10	2.06	4.25
583	8	0.06	0.00
584	9	1.06	1.13
585	21	13.06	170.62
586	7	-0.94	0.88
587	5	-2.94	8.63
588	6	-1.94	3.76
589	8	0.06	0.00
590	10	2.06	4.25
591	10	2.06	4.25
592	7	-0.94	0.88
593	6	-1.94	3.76
594	7	-0.94	0.88
595	2	-5.94	35.26
596	9	1.06	1.13
597	2	-5.94	35.26
598	9	1.06	1.13
599	4	-3.94	15.51
600	9	1.06	1.13
	374		506.97
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
601	9	1.06	1.13
602	9	1.06	1.13
603	8	0.06	0.00
604	6	-1.94	3.76
605	7	-0.94	0.88
606	9	1.06	1.13
607	8	0.06	0.00
608	6	-1.94	3.76
609	6	-1.94	3.76
610	10	2.06	4.25
611	8	0.06	0.00
612	7	-0.94	0.88
613	2	-5.94	35.26
614	8	0.06	0.00
615	6	-1.94	3.76
616	6	-1.94	3.76
617	12	4.06	16.50
618	9	1.06	1.13
619	8	0.06	0.00
620	6	-1.94	3.76
621	7	-0.94	0.88
622	6	-1.94	3.76
623	5	-2.94	8.63
624	5	-2.94	8.63
625	5	-2.94	8.63
626	6	-1.94	3.76
627	10	2.06	4.25
628	8	0.06	0.00
629	7	-0.94	0.88
630	6	-1.94	3.76
631	15	7.06	49.87
632	4	-3.94	15.51
633	7	-0.94	0.88
634	11	3.06	9.38
635	6	-1.94	3.76
636	7	-0.94	0.88
637	11	3.06	9.38
638	13	5.06	25.62
639	13	5.06	25.62
640	9	1.06	1.13
641	7	-0.94	0.88
642	8	0.06	0.00
643	6	-1.94	3.76
644	5	-2.94	8.63
645	8	0.06	0.00
646	4	-3.94	15.51
647	7	-0.94	0.88
648	17	9.06	82.12
649	7	-0.94	0.88
650	7	-0.94	0.88
	387		383.58
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
651	13	5.06	25.62
652	8	0.06	0.00
653	9	1.06	1.13
654	8	0.06	0.00
655	9	1.06	1.13
656	15	7.06	49.87
657	7	-0.94	0.88
658	6	-1.94	3.76
659	8	0.06	0.00
660	7	-0.94	0.88
661	8	0.06	0.00
662	5	-2.94	8.63
663	9	1.06	1.13
664	5	-2.94	8.63
665	7	-0.94	0.88
666	21	13.06	170.62
667	20	12.06	145.49
668	16	8.06	65.00
669	10	2.06	4.25
670	14	6.06	36.75
671	20	12.06	145.49
672	8	0.06	0.00
673	8	0.06	0.00
674	4	-3.94	15.51
675	8	0.06	0.00
676	5	-2.94	8.63
677	8	0.06	0.00
678	10	2.06	4.25
679	15	7.06	49.87
680	11	3.06	9.38
681	6	-1.94	3.76
682	10	2.06	4.25
683	9	1.06	1.13
684	7	-0.94	0.88
685	12	4.06	16.50
686	7	-0.94	0.88
687	7	-0.94	0.88
688	6	-1.94	3.76
689	5	-2.94	8.63
690	6	-1.94	3.76
691	9	1.06	1.13
692	5	-2.94	8.63
693	6	-1.94	3.76
694	10	2.06	4.25
695	9	1.06	1.13
696	8	0.06	0.00
697	13	5.06	25.62
698	7	-0.94	0.88
699	3	-4.94	24.38
700	4	-3.94	15.51
	451		887.52
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
701	6	-1.94	3.76
702	9	1.06	1.13
703	7	-0.94	0.88
704	7	-0.94	0.88
705	7	-0.94	0.88
706	7	-0.94	0.88
707	4	-3.94	15.51
708	5	-2.94	8.63
709	11	3.06	9.38
710	25	17.06	291.11
711	22	14.06	197.74
712	21	13.06	170.62
713	7	-0.94	0.88
714	10	2.06	4.25
715	5	-2.94	8.63
716	7	-0.94	0.88
717	4	-3.94	15.51
718	8	0.06	0.00
719	11	3.06	9.38
720	10	2.06	4.25
721	8	0.06	0.00
722	6	-1.94	3.76
723	8	0.06	0.00
724	2	-5.94	35.26
725	4	-3.94	15.51
726	9	1.06	1.13
727	7	-0.94	0.88
728	10	2.06	4.25
729	8	0.06	0.00
730	10	2.06	4.25
731	7	-0.94	0.88
732	7	-0.94	0.88
733	10	2.06	4.25
734	8	0.06	0.00
735	10	2.06	4.25
736	6	-1.94	3.76
737	8	0.06	0.00
738	11	3.06	9.38
739	5	-2.94	8.63
740	11	3.06	9.38
741	5	-2.94	8.63
742	5	-2.94	8.63
743	6	-1.94	3.76
744	7	-0.94	0.88
745	7	-0.94	0.88
746	6	-1.94	3.76
747	5	-2.94	8.63
748	16	8.06	65.00
749	7	-0.94	0.88
750	8	0.06	0.00
	420		952.67
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
751	8	0.06	0.00
752	6	-1.94	3.76
753	8	0.06	0.00
754	6	-1.94	3.76
755	6	-1.94	3.76
756	14	6.06	36.75
757	6	-1.94	3.76
758	9	1.06	1.13
759	8	0.06	0.00
760	8	0.06	0.00
761	8	0.06	0.00
762	8	0.06	0.00
763	5	-2.94	8.63
764	7	-0.94	0.88
765	10	2.06	4.25
766	6	-1.94	3.76
767	7	-0.94	0.88
768	5	-2.94	8.63
769	10	2.06	4.25
770	16	8.06	65.00
771	9	1.06	1.13
772	11	3.06	9.38
773	7	-0.94	0.88
774	6	-1.94	3.76
775	9	1.06	1.13
776	7	-0.94	0.88
777	16	8.06	65.00
778	8	0.06	0.00
779	11	3.06	9.38
780	11	3.06	9.38
781	6	-1.94	3.76
782	5	-2.94	8.63
783	5	-2.94	8.63
784	8	0.06	0.00
785	7	-0.94	0.88
786	4	-3.94	15.51
787	8	0.06	0.00
788	6	-1.94	3.76
789	5	-2.94	8.63
790	5	-2.94	8.63
791	10	2.06	4.25
792	6	-1.94	3.76
793	9	1.06	1.13
794	9	1.06	1.13
795	10	2.06	4.25
796	9	1.06	1.13
797	11	3.06	9.38
798	11	3.06	9.38
799	4	-3.94	15.51
800	6	-1.94	3.76
	400		362.19
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
801	11	3.06	9.38
802	7	-0.94	0.88
803	6	-1.94	3.76
804	3	-4.94	24.38
805	5	-2.94	8.63
806	6	-1.94	3.76
807	9	1.06	1.13
808	7	-0.94	0.88
809	5	-2.94	8.63
810	6	-1.94	3.76
811	9	1.06	1.13
812	4	-3.94	15.51
813	4	-3.94	15.51
814	4	-3.94	15.51
815	5	-2.94	8.63
816	5	-2.94	8.63
817	6	-1.94	3.76
818	6	-1.94	3.76
819	9	1.06	1.13
820	5	-2.94	8.63
821	6	-1.94	3.76
822	6	-1.94	3.76
823	5	-2.94	8.63
824	7	-0.94	0.88
825	5	-2.94	8.63
826	9	1.06	1.13
827	8	0.06	0.00
828	7	-0.94	0.88
829	7	-0.94	0.88
830	17	9.06	82.12
831	6	-1.94	3.76
832	5	-2.94	8.63
833	9	1.06	1.13
834	6	-1.94	3.76
835	9	1.06	1.13
836	9	1.06	1.13
837	7	-0.94	0.88
838	6	-1.94	3.76
839	5	-2.94	8.63
840	6	-1.94	3.76
841	12	4.06	16.50
842	5	-2.94	8.63
843	6	-1.94	3.76
844	6	-1.94	3.76
845	9	1.06	1.13
846	6	-1.94	3.76
847	12	4.06	16.50
848	4	-3.94	15.51
849	8	0.06	0.00
850	7	-0.94	0.88
	342		364.99
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
851	9	1.06	1.13
852	9	1.06	1.13
853	5	-2.94	8.63
854	6	-1.94	3.76
855	7	-0.94	0.88
856	4	-3.94	15.51
857	6	-1.94	3.76
858	10	2.06	4.25
859	6	-1.94	3.76
860	6	-1.94	3.76
861	6	-1.94	3.76
862	7	-0.94	0.88
863	8	0.06	0.00
864	4	-3.94	15.51
865	5	-2.94	8.63
866	7	-0.94	0.88
867	8	0.06	0.00
868	5	-2.94	8.63
869	7	-0.94	0.88
870	6	-1.94	3.76
871	9	1.06	1.13
872	6	-1.94	3.76
873	7	-0.94	0.88
874	5	-2.94	8.63
875	4	-3.94	15.51
876	6	-1.94	3.76
877	4	-3.94	15.51
878	9	1.06	1.13
879	10	2.06	4.25
880	10	2.06	4.25
881	8	0.06	0.00
882	11	3.06	9.38
883	7	-0.94	0.88
884	7	-0.94	0.88
885	7	-0.94	0.88
886	8	0.06	0.00
887	6	-1.94	3.76
888	7	-0.94	0.88
889	6	-1.94	3.76
890	4	-3.94	15.51
891	11	3.06	9.38
892	7	-0.94	0.88
893	12	4.06	16.50
894	10	2.06	4.25
895	4	-3.94	15.51
896	8	0.06	0.00
897	7	-0.94	0.88
898	6	-1.94	3.76
899	6	-1.94	3.76
900	11	3.06	9.38
	354		248.48
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
901	6	-1.94	3.76
902	7	-0.94	0.88
903	7	-0.94	0.88
904	8	0.06	0.00
905	6	-1.94	3.76
906	8	0.06	0.00
907	6	-1.94	3.76
908	6	-1.94	3.76
909	6	-1.94	3.76
910	7	-0.94	0.88
911	3	-4.94	24.38
912	8	0.06	0.00
913	7	-0.94	0.88
914	9	1.06	1.13
915	9	1.06	1.13
916	5	-2.94	8.63
917	10	2.06	4.25
918	5	-2.94	8.63
919	5	-2.94	8.63
920	8	0.06	0.00
921	9	1.06	1.13
922	7	-0.94	0.88
923	10	2.06	4.25
924	9	1.06	1.13
925	5	-2.94	8.63
926	5	-2.94	8.63
927	7	-0.94	0.88
928	9	1.06	1.13
929	7	-0.94	0.88
930	7	-0.94	0.88
931	8	0.06	0.00
932	27	19.06	363.36
933	18	10.06	101.24
934	6	-1.94	3.76
935	19	11.06	122.37
936	10	2.06	4.25
937	10	2.06	4.25
938	11	3.06	9.38
939	14	6.06	36.75
940	12	4.06	16.50
941	12	4.06	16.50
942	9	1.06	1.13
943	7	-0.94	0.88
944	9	1.06	1.13
945	5	-2.94	8.63
946	9	1.06	1.13
947	6	-1.94	3.76
948	8	0.06	0.00
949	4	-3.94	15.51
950	17	9.06	82.12
	432		900.16
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
951	14	6.06	36.75
952	6	-1.94	3.76
953	10	2.06	4.25
954	8	0.06	0.00
955	8	0.06	0.00
956	5	-2.94	8.63
957	11	3.06	9.38
958	7	-0.94	0.88
959	14	6.06	36.75
960	9	1.06	1.13
961	8	0.06	0.00
962	9	1.06	1.13
963	7	-0.94	0.88
964	11	3.06	9.38
965	5	-2.94	8.63
966	6	-1.94	3.76
967	7	-0.94	0.88
968	6	-1.94	3.76
969	6	-1.94	3.76
970	5	-2.94	8.63
971	5	-2.94	8.63
972	8	0.06	0.00
973	7	-0.94	0.88
974	11	3.06	9.38
975	5	-2.94	8.63
976	10	2.06	4.25
977	15	7.06	49.87
978	9	1.06	1.13
979	47	39.06	1525.84
980	16	8.06	65.00
981	15	7.06	49.87
982	7	-0.94	0.88
983	8	0.06	0.00
984	7	-0.94	0.88
985	7	-0.94	0.88
986	7	-0.94	0.88
987	6	-1.94	3.76
988	6	-1.94	3.76
989	7	-0.94	0.88
990	6	-1.94	3.76
991	8	0.06	0.00
992	9	1.06	1.13
993	12	4.06	16.50
994	9	1.06	1.13
995	5	-2.94	8.63
996	13	5.06	25.62
997	9	1.06	1.13
998	5	-2.94	8.63
999	6	-1.94	3.76
1000	5	-2.94	8.63
	452		1956.65
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
1001	8	0.06	0.00
1002	6	-1.94	3.76
1003	7	-0.94	0.88
1004	7	-0.94	0.88
1005	8	0.06	0.00
1006	5	-2.94	8.63
1007	10	2.06	4.25
1008	5	-2.94	8.63
1009	7	-0.94	0.88
1010	8	0.06	0.00
1011	4	-3.94	15.51
1012	4	-3.94	15.51
1013	9	1.06	1.13
1014	6	-1.94	3.76
1015	6	-1.94	3.76
1016	5	-2.94	8.63
1017	8	0.06	0.00
1018	11	3.06	9.38
1019	7	-0.94	0.88
1020	9	1.06	1.13
1021	7	-0.94	0.88
1022	17	9.06	82.12
1023	5	-2.94	8.63
1024	7	-0.94	0.88
1025	8	0.06	0.00
1026	6	-1.94	3.76
1027	4	-3.94	15.51
1028	6	-1.94	3.76
1029	8	0.06	0.00
1030	9	1.06	1.13
1031	6	-1.94	3.76
1032	5	-2.94	8.63
1033	9	1.06	1.13
1034	7	-0.94	0.88
1035	6	-1.94	3.76
1036	7	-0.94	0.88
1037	5	-2.94	8.63
1038	6	-1.94	3.76
1039	8	0.06	0.00
1040	9	1.06	1.13
1041	9	1.06	1.13
1042	4	-3.94	15.51
1043	4	-3.94	15.51
1044	12	4.06	16.50
1045	7	-0.94	0.88
1046	5	-2.94	8.63
1047	4	-3.94	15.51
1048	6	-1.94	3.76
1049	6	-1.94	3.76
1050	4	-3.94	15.51
	346		333.49
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
1051	5	-2.94	8.63
1052	7	-0.94	0.88
1053	8	0.06	0.00
1054	11	3.06	9.38
1055	27	19.06	363.36
1056	15	7.06	49.87
1057	9	1.06	1.13
1058	9	1.06	1.13
1059	9	1.06	1.13
1060	15	7.06	49.87
1061	9	1.06	1.13
1062	9	1.06	1.13
1063	7	-0.94	0.88
1064	7	-0.94	0.88
1065	13	5.06	25.62
1066	8	0.06	0.00
1067	10	2.06	4.25
1068	9	1.06	1.13
1069	9	1.06	1.13
1070	8	0.06	0.00
1071	8	0.06	0.00
1072	5	-2.94	8.63
1073	5	-2.94	8.63
1074	4	-3.94	15.51
1075	5	-2.94	8.63
1076	5	-2.94	8.63
1077	6	-1.94	3.76
1078	7	-0.94	0.88
1079	8	0.06	0.00
1080	10	2.06	4.25
1081	4	-3.94	15.51
1082	6	-1.94	3.76
1083	6	-1.94	3.76
1084	9	1.06	1.13
1085	4	-3.94	15.51
1086	4	-3.94	15.51
1087	4	-3.94	15.51
1088	5	-2.94	8.63
1089	6	-1.94	3.76
1090	9	1.06	1.13
1091	5	-2.94	8.63
1092	5	-2.94	8.63
1093	9	1.06	1.13
1094	8	0.06	0.00
1095	13	5.06	25.62
1096	8	0.06	0.00
1097	33	25.06	628.11
1098	11	3.06	9.38
1099	24	16.06	257.99
1100	8	0.06	0.00
	448		1604.15
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
1101	7	-0.94	0.88
1102	8	0.06	0.00
1103	7	-0.94	0.88
1104	10	2.06	4.25
1105	11	3.06	9.38
1106	5	-2.94	8.63
1107	3	-4.94	24.38
1108	8	0.06	0.00
1109	8	0.06	0.00
1110	6	-1.94	3.76
1111	10	2.06	4.25
1112	5	-2.94	8.63
1113	6	-1.94	3.76
1114	7	-0.94	0.88
1115	4	-3.94	15.51
1116	7	-0.94	0.88
1117	7	-0.94	0.88
1118	5	-2.94	8.63
1119	6	-1.94	3.76
1120	7	-0.94	0.88
1121	5	-2.94	8.63
1122	8	0.06	0.00
1123	5	-2.94	8.63
1124	5	-2.94	8.63
1125	9	1.06	1.13
1126	6	-1.94	3.76
1127	8	0.06	0.00
1128	6	-1.94	3.76
1129	5	-2.94	8.63
1130	6	-1.94	3.76
1131	10	2.06	4.25
1132	9	1.06	1.13
1133	6	-1.94	3.76
1134	10	2.06	4.25
1135	9	1.06	1.13
1136	5	-2.94	8.63
1137	7	-0.94	0.88
1138	10	2.06	4.25
1139	7	-0.94	0.88
1140	7	-0.94	0.88
1141	5	-2.94	8.63
1142	7	-0.94	0.88
1143	5	-2.94	8.63
1144	7	-0.94	0.88
1145	6	-1.94	3.76
1146	6	-1.94	3.76
1147	11	3.06	9.38
1148	4	-3.94	15.51
1149	9	1.06	1.13
1150	7	-0.94	0.88
	347		230.62
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
1151	9	1.06	1.13
1152	8	0.06	0.00
1153	7	-0.94	0.88
1154	9	1.06	1.13
1155	8	0.06	0.00
1156	7	-0.94	0.88
1157	7	-0.94	0.88
1158	8	0.06	0.00
1159	4	-3.94	15.51
1160	10	2.06	4.25
1161	9	1.06	1.13
1162	7	-0.94	0.88
1163	7	-0.94	0.88
1164	1	-6.94	48.14
1165	4	-3.94	15.51
1166	5	-2.94	8.63
1167	11	3.06	9.38
1168	6	-1.94	3.76
1169	7	-0.94	0.88
1170	6	-1.94	3.76
1171	9	1.06	1.13
1172	6	-1.94	3.76
1173	6	-1.94	3.76
1174	6	-1.94	3.76
1175	13	5.06	25.62
1176	6	-1.94	3.76
1177	5	-2.94	8.63
1178	5	-2.94	8.63
1179	3	-4.94	24.38
1180	8	0.06	0.00
1181	4	-3.94	15.51
1182	5	-2.94	8.63
1183	8	0.06	0.00
1184	10	2.06	4.25
1185	10	2.06	4.25
1186	8	0.06	0.00
1187	8	0.06	0.00
1188	5	-2.94	8.63
1189	2	-5.94	35.26
1190	7	-0.94	0.88
1191	8	0.06	0.00
1192	10	2.06	4.25
1193	11	3.06	9.38
1194	8	0.06	0.00
1195	7	-0.94	0.88
1196	6	-1.94	3.76
1197	5	-2.94	8.63
1198	8	0.06	0.00
1199	5	-2.94	8.63
1200	8	0.06	0.00
	350		313.99
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
1201	10	2.06	4.25
1202	8	0.06	0.00
1203	8	0.06	0.00
1204	13	5.06	25.62
1205	8	0.06	0.00
1206	6	-1.94	3.76
1207	12	4.06	16.50
1208	3	-4.94	24.38
1209	9	1.06	1.13
1210	6	-1.94	3.76
1211	8	0.06	0.00
1212	6	-1.94	3.76
1213	3	-4.94	24.38
1214	4	-3.94	15.51
1215	13	5.06	25.62
1216	5	-2.94	8.63
1217	8	0.06	0.00
1218	9	1.06	1.13
1219	8	0.06	0.00
1220	11	3.06	9.38
1221	6	-1.94	3.76
1222	8	0.06	0.00
1223	8	0.06	0.00
1224	7	-0.94	0.88
1225	9	1.06	1.13
1226	6	-1.94	3.76
1227	6	-1.94	3.76
1228	8	0.06	0.00
1229	5	-2.94	8.63
1230	7	-0.94	0.88
1231	7	-0.94	0.88
1232	8	0.06	0.00
1233	6	-1.94	3.76
1234	7	-0.94	0.88
1235	7	-0.94	0.88
1236	4	-3.94	15.51
1237	6	-1.94	3.76
1238	5	-2.94	8.63
1239	9	1.06	1.13
1240	9	1.06	1.13
1241	5	-2.94	8.63
1242	14	6.06	36.75
1243	6	-1.94	3.76
1244	12	4.06	16.50
1245	5	-2.94	8.63
1246	8	0.06	0.00
1247	7	-0.94	0.88
1248	6	-1.94	3.76
1249	8	0.06	0.00
1250	9	1.06	1.13
	376		307.21
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
1251	5	-2.94	8.63
1252	10	2.06	4.25
1253	9	1.06	1.13
1254	11	3.06	9.38
1255	8	0.06	0.00
1256	10	2.06	4.25
1257	5	-2.94	8.63
1258	7	-0.94	0.88
1259	7	-0.94	0.88
1260	5	-2.94	8.63
1261	5	-2.94	8.63
1262	6	-1.94	3.76
1263	6	-1.94	3.76
1264	3	-4.94	24.38
1265	9	1.06	1.13
1266	5	-2.94	8.63
1267	8	0.06	0.00
1268	7	-0.94	0.88
1269	9	1.06	1.13
1270	7	-0.94	0.88
1271	12	4.06	16.50
1272	5	-2.94	8.63
1273	7	-0.94	0.88
1274	9	1.06	1.13
1275	5	-2.94	8.63
1276	8	0.06	0.00
1277	10	2.06	4.25
1278	4	-3.94	15.51
1279	7	-0.94	0.88
1280	6	-1.94	3.76
1281	6	-1.94	3.76
1282	8	0.06	0.00
1283	5	-2.94	8.63
1284	13	5.06	25.62
1285	7	-0.94	0.88
1286	8	0.06	0.00
1287	8	0.06	0.00
1288	10	2.06	4.25
1289	11	3.06	9.38
1290	6	-1.94	3.76
1291	9	1.06	1.13
1292	15	7.06	49.87
1293	11	3.06	9.38
1294	6	-1.94	3.76
1295	6	-1.94	3.76
1296	9	1.06	1.13
1297	12	4.06	16.50
1298	7	-0.94	0.88
1299	9	1.06	1.13
1300	14	6.06	36.75
	395		340.57
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
1301	7	-0.94	0.88
1302	21	13.06	170.62
1303	6	-1.94	3.76
1304	7	-0.94	0.88
1305	8	0.06	0.00
1306	6	-1.94	3.76
1307	9	1.06	1.13
1308	8	0.06	0.00
1309	11	3.06	9.38
1310	9	1.06	1.13
1311	6	-1.94	3.76
1312	7	-0.94	0.88
1313	8	0.06	0.00
1314	8	0.06	0.00
1315	8	0.06	0.00
1316	6	-1.94	3.76
1317	13	5.06	25.62
1318	3	-4.94	24.38
1319	7	-0.94	0.88
1320	5	-2.94	8.63
1321	9	1.06	1.13
1322	7	-0.94	0.88
1323	6	-1.94	3.76
1324	7	-0.94	0.88
1325	8	0.06	0.00
1326	7	-0.94	0.88
1327	10	2.06	4.25
1328	7	-0.94	0.88
1329	14	6.06	36.75
1330	9	1.06	1.13
1331	6	-1.94	3.76
1332	9	1.06	1.13
1333	11	3.06	9.38
1334	11	3.06	9.38
1335	8	0.06	0.00
1336	7	-0.94	0.88
1337	10	2.06	4.25
1338	10	2.06	4.25
1339	6	-1.94	3.76
1340	6	-1.94	3.76
1341	10	2.06	4.25
1342	9	1.06	1.13
1343	6	-1.94	3.76
1344	4	-3.94	15.51
1345	8	0.06	0.00
1346	5	-2.94	8.63
1347	8	0.06	0.00
1348	10	2.06	4.25
1349	10	2.06	4.25
1350	14	6.06	36.75
	415		429.05
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
1351	4	-3.94	15.51
1352	6	-1.94	3.76
1353	8	0.06	0.00
1354	6	-1.94	3.76
1355	8	0.06	0.00
1356	6	-1.94	3.76
1357	9	1.06	1.13
1358	7	-0.94	0.88
1359	8	0.06	0.00
1360	7	-0.94	0.88
1361	5	-2.94	8.63
1362	7	-0.94	0.88
1363	6	-1.94	3.76
1364	7	-0.94	0.88
1365	14	6.06	36.75
1366	10	2.06	4.25
1367	10	2.06	4.25
1368	11	3.06	9.38
1369	6	-1.94	3.76
1370	6	-1.94	3.76
1371	8	0.06	0.00
1372	6	-1.94	3.76
1373	5	-2.94	8.63
1374	8	0.06	0.00
1375	5	-2.94	8.63
1376	8	0.06	0.00
1377	8	0.06	0.00
1378	6	-1.94	3.76
1379	6	-1.94	3.76
1380	5	-2.94	8.63
1381	8	0.06	0.00
1382	8	0.06	0.00
1383	8	0.06	0.00
1384	11	3.06	9.38
1385	7	-0.94	0.88
1386	9	1.06	1.13
1387	6	-1.94	3.76
1388	6	-1.94	3.76
1389	8	0.06	0.00
1390	6	-1.94	3.76
1391	10	2.06	4.25
1392	7	-0.94	0.88
1393	9	1.06	1.13
1394	6	-1.94	3.76
1395	7	-0.94	0.88
1396	4	-3.94	15.51
1397	6	-1.94	3.76
1398	24	16.06	257.99
1399	5	-2.94	8.63
1400	39	31.06	964.85
	410		1427.43
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
1401	12	4.06	16.50
1402	17	9.06	82.12
1403	12	4.06	16.50
1404	9	1.06	1.13
1405	5	-2.94	8.63
1406	9	1.06	1.13
1407	5	-2.94	8.63
1408	9	1.06	1.13
1409	12	4.06	16.50
1410	9	1.06	1.13
1411	9	1.06	1.13
1412	8	0.06	0.00
1413	5	-2.94	8.63
1414	10	2.06	4.25
1415	10	2.06	4.25
1416	6	-1.94	3.76
1417	9	1.06	1.13
1418	6	-1.94	3.76
1419	6	-1.94	3.76
1420	7	-0.94	0.88
1421	5	-2.94	8.63
1422	6	-1.94	3.76
1423	8	0.06	0.00
1424	6	-1.94	3.76
1425	10	2.06	4.25
1426	6	-1.94	3.76
1427	8	0.06	0.00
1428	8	0.06	0.00
1429	5	-2.94	8.63
1430	7	-0.94	0.88
1431	7	-0.94	0.88
1432	5	-2.94	8.63
1433	6	-1.94	3.76
1434	11	3.06	9.38
1435	17	9.06	82.12
1436	26	18.06	326.24
1437	19	11.06	122.37
1438	15	7.06	49.87
1439	6	-1.94	3.76
1440	6	-1.94	3.76
1441	7	-0.94	0.88
1442	6	-1.94	3.76
1443	7	-0.94	0.88
1444	7	-0.94	0.88
1445	7	-0.94	0.88
1446	10	2.06	4.25
1447	6	-1.94	3.76
1448	7	-0.94	0.88
1449	3	-4.94	24.38
1450	5	-2.94	8.63
	427		878.54
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
1451	8	0.06	0.00
1452	3	-4.94	24.38
1453	7	-0.94	0.88
1454	9	1.06	1.13
1455	7	-0.94	0.88
1456	7	-0.94	0.88
1457	6	-1.94	3.76
1458	11	3.06	9.38
1459	9	1.06	1.13
1460	7	-0.94	0.88
1461	5	-2.94	8.63
1462	9	1.06	1.13
1463	6	-1.94	3.76
1464	6	-1.94	3.76
1465	10	2.06	4.25
1466	8	0.06	0.00
1467	7	-0.94	0.88
1468	10	2.06	4.25
1469	14	6.06	36.75
1470	7	-0.94	0.88
1471	5	-2.94	8.63
1472	6	-1.94	3.76
1473	10	2.06	4.25
1474	7	-0.94	0.88
1475	5	-2.94	8.63
1476	8	0.06	0.00
1477	5	-2.94	8.63
1478	6	-1.94	3.76
1479	7	-0.94	0.88
1480	8	0.06	0.00
1481	9	1.06	1.13
1482	7	-0.94	0.88
1483	6	-1.94	3.76
1484	7	-0.94	0.88
1485	8	0.06	0.00
1486	6	-1.94	3.76
1487	10	2.06	4.25
1488	25	17.06	291.11
1489	10	2.06	4.25
1490	7	-0.94	0.88
1491	5	-2.94	8.63
1492	4	-3.94	15.51
1493	10	2.06	4.25
1494	7	-0.94	0.88
1495	7	-0.94	0.88
1496	6	-1.94	3.76
1497	8	0.06	0.00
1498	5	-2.94	8.63
1499	6	-1.94	3.76
1500	10	2.06	4.25
	386		508.46
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
1501	6	-1.94	3.76
1502	4	-3.94	15.51
1503	7	-0.94	0.88
1504	9	1.06	1.13
1505	6	-1.94	3.76
1506	5	-2.94	8.63
1507	8	0.06	0.00
1508	7	-0.94	0.88
1509	8	0.06	0.00
1510	6	-1.94	3.76
1511	4	-3.94	15.51
1512	8	0.06	0.00
1513	6	-1.94	3.76
1514	12	4.06	16.50
1515	6	-1.94	3.76
1516	9	1.06	1.13
1517	7	-0.94	0.88
1518	4	-3.94	15.51
1519	10	2.06	4.25
1520	8	0.06	0.00
1521	6	-1.94	3.76
1522	3	-4.94	24.38
1523	6	-1.94	3.76
1524	5	-2.94	8.63
1525	9	1.06	1.13
1526	8	0.06	0.00
1527	12	4.06	16.50
1528	7	-0.94	0.88
1529	6	-1.94	3.76
1530	3	-4.94	24.38
1531	7	-0.94	0.88
1532	8	0.06	0.00
1533	9	1.06	1.13
1534	8	0.06	0.00
1535	11	3.06	9.38
1536	7	-0.94	0.88
1537	7	-0.94	0.88
1538	10	2.06	4.25
1539	6	-1.94	3.76
1540	6	-1.94	3.76
1541	10	2.06	4.25
1542	8	0.06	0.00
1543	8	0.06	0.00
1544	9	1.06	1.13
1545	8	0.06	0.00
1546	14	6.06	36.75
1547	8	0.06	0.00
1548	6	-1.94	3.76
1549	6	-1.94	3.76
1550	10	2.06	4.25
	371		265.59
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
1551	7	-0.94	0.88
1552	6	-1.94	3.76
1553	6	-1.94	3.76
1554	5	-2.94	8.63
1555	4	-3.94	15.51
1556	6	-1.94	3.76
1557	13	5.06	25.62
1558	9	1.06	1.13
1559	8	0.06	0.00
1560	4	-3.94	15.51
1561	6	-1.94	3.76
1562	5	-2.94	8.63
1563	8	0.06	0.00
1564	8	0.06	0.00
1565	10	2.06	4.25
1566	6	-1.94	3.76
1567	8	0.06	0.00
1568	10	2.06	4.25
1569	14	6.06	36.75
1570	11	3.06	9.38
1571	11	3.06	9.38
1572	7	-0.94	0.88
1573	10	2.06	4.25
1574	5	-2.94	8.63
1575	8	0.06	0.00
1576	10	2.06	4.25
1577	4	-3.94	15.51
1578	5	-2.94	8.63
1579	5	-2.94	8.63
1580	9	1.06	1.13
1581	8	0.06	0.00
1582	8	0.06	0.00
1583	6	-1.94	3.76
1584	6	-1.94	3.76
1585	7	-0.94	0.88
1586	8	0.06	0.00
1587	5	-2.94	8.63
1588	5	-2.94	8.63
1589	9	1.06	1.13
1590	9	1.06	1.13
1591	9	1.06	1.13
1592	7	-0.94	0.88
1593	8	0.06	0.00
1594	3	-4.94	24.38
1595	4	-3.94	15.51
1596	6	-1.94	3.76
1597	8	0.06	0.00
1598	7	-0.94	0.88
1599	6	-1.94	3.76
1600	12	4.06	16.50
	369		305.35
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
1601	6	-1.94	3.76
1602	9	1.06	1.13
1603	12	4.06	16.50
1604	7	-0.94	0.88
1605	6	-1.94	3.76
1606	9	1.06	1.13
1607	8	0.06	0.00
1608	6	-1.94	3.76
1609	10	2.06	4.25
1610	11	3.06	9.38
1611	5	-2.94	8.63
1612	7	-0.94	0.88
1613	12	4.06	16.50
1614	10	2.06	4.25
1615	8	0.06	0.00
1616	11	3.06	9.38
1617	7	-0.94	0.88
1618	4	-3.94	15.51
1619	8	0.06	0.00
1620	7	-0.94	0.88
1621	8	0.06	0.00
1622	6	-1.94	3.76
1623	6	-1.94	3.76
1624	8	0.06	0.00
1625	10	2.06	4.25
1626	6	-1.94	3.76
1627	10	2.06	4.25
1628	4	-3.94	15.51
1629	8	0.06	0.00
1630	8	0.06	0.00
1631	8	0.06	0.00
1632	7	-0.94	0.88
1633	10	2.06	4.25
1634	6	-1.94	3.76
1635	7	-0.94	0.88
1636	4	-3.94	15.51
1637	15	7.06	49.87
1638	13	5.06	25.62
1639	7	-0.94	0.88
1640	5	-2.94	8.63
1641	8	0.06	0.00
1642	5	-2.94	8.63
1643	8	0.06	0.00
1644	6	-1.94	3.76
1645	3	-4.94	24.38
1646	7	-0.94	0.88
1647	6	-1.94	3.76
1648	5	-2.94	8.63
1649	9	1.06	1.13
1650	6	-1.94	3.76
	382		301.96
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
1651	6	-1.94	3.76
1652	8	0.06	0.00
1653	9	1.06	1.13
1654	8	0.06	0.00
1655	13	5.06	25.62
1656	7	-0.94	0.88
1657	10	2.06	4.25
1658	7	-0.94	0.88
1659	9	1.06	1.13
1660	7	-0.94	0.88
1661	7	-0.94	0.88
1662	7	-0.94	0.88
1663	5	-2.94	8.63
1664	11	3.06	9.38
1665	7	-0.94	0.88
1666	7	-0.94	0.88
1667	8	0.06	0.00
1668	11	3.06	9.38
1669	21	13.06	170.62
1670	4	-3.94	15.51
1671	7	-0.94	0.88
1672	7	-0.94	0.88
1673	9	1.06	1.13
1674	6	-1.94	3.76
1675	8	0.06	0.00
1676	5	-2.94	8.63
1677	4	-3.94	15.51
1678	7	-0.94	0.88
1679	6	-1.94	3.76
1680	5	-2.94	8.63
1681	6	-1.94	3.76
1682	5	-2.94	8.63
1683	8	0.06	0.00
1684	8	0.06	0.00
1685	10	2.06	4.25
1686	6	-1.94	3.76
1687	5	-2.94	8.63
1688	8	0.06	0.00
1689	31	23.06	531.86
1690	9	1.06	1.13
1691	6	-1.94	3.76
1692	11	3.06	9.38
1693	6	-1.94	3.76
1694	7	-0.94	0.88
1695	17	9.06	82.12
1696	26	18.06	326.24
1697	8	0.06	0.00
1698	29	21.06	443.61
1699	11	3.06	9.38
1700	12	4.06	16.50
	465		1757.26
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
1701	7	-0.94	0.88
1702	7	-0.94	0.88
1703	4	-3.94	15.51
1704	6	-1.94	3.76
1705	4	-3.94	15.51
1706	5	-2.94	8.63
1707	10	2.06	4.25
1708	5	-2.94	8.63
1709	6	-1.94	3.76
1710	4	-3.94	15.51
1711	12	4.06	16.50
1712	11	3.06	9.38
1713	4	-3.94	15.51
1714	4	-3.94	15.51
1715	7	-0.94	0.88
1716	7	-0.94	0.88
1717	8	0.06	0.00
1718	8	0.06	0.00
1719	7	-0.94	0.88
1720	7	-0.94	0.88
1721	8	0.06	0.00
1722	4	-3.94	15.51
1723	6	-1.94	3.76
1724	4	-3.94	15.51
1725	10	2.06	4.25
1726	8	0.06	0.00
1727	16	8.06	65.00
1728	15	7.06	49.87
1729	22	14.06	197.74
1730	10	2.06	4.25
1731	14	6.06	36.75
1732	8	0.06	0.00
1733	5	-2.94	8.63
1734	6	-1.94	3.76
1735	8	0.06	0.00
1736	5	-2.94	8.63
1737	6	-1.94	3.76
1738	6	-1.94	3.76
1739	8	0.06	0.00
1740	5	-2.94	8.63
1741	9	1.06	1.13
1742	5	-2.94	8.63
1743	7	-0.94	0.88
1744	12	4.06	16.50
1745	10	2.06	4.25
1746	9	1.06	1.13
1747	7	-0.94	0.88
1748	6	-1.94	3.76
1749	6	-1.94	3.76
1750	9	1.06	1.13
	387		609.58
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
1751	11	3.06	9.38
1752	11	3.06	9.38
1753	8	0.06	0.00
1754	8	0.06	0.00
1755	7	-0.94	0.88
1756	16	8.06	65.00
1757	7	-0.94	0.88
1758	10	2.06	4.25
1759	7	-0.94	0.88
1760	7	-0.94	0.88
1761	5	-2.94	8.63
1762	12	4.06	16.50
1763	5	-2.94	8.63
1764	7	-0.94	0.88
1765	6	-1.94	3.76
1766	8	0.06	0.00
1767	9	1.06	1.13
1768	8	0.06	0.00
1769	11	3.06	9.38
1770	7	-0.94	0.88
1771	9	1.06	1.13
1772	4	-3.94	15.51
1773	14	6.06	36.75
1774	11	3.06	9.38
1775	14	6.06	36.75
1776	8	0.06	0.00
1777	14	6.06	36.75
1778	6	-1.94	3.76
1779	9	1.06	1.13
1780	6	-1.94	3.76
1781	8	0.06	0.00
1782	6	-1.94	3.76
1783	8	0.06	0.00
1784	6	-1.94	3.76
1785	6	-1.94	3.76
1786	8	0.06	0.00
1787	5	-2.94	8.63
1788	6	-1.94	3.76
1789	4	-3.94	15.51
1790	9	1.06	1.13
1791	6	-1.94	3.76
1792	4	-3.94	15.51
1793	5	-2.94	8.63
1794	5	-2.94	8.63
1795	10	2.06	4.25
1796	2	-5.94	35.26
1797	11	3.06	9.38
1798	4	-3.94	15.51
1799	4	-3.94	15.51
1800	9	1.06	1.13
	391		444.08
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
1801	7	-0.94	0.88
1802	5	-2.94	8.63
1803	9	1.06	1.13
1804	5	-2.94	8.63
1805	6	-1.94	3.76
1806	7	-0.94	0.88
1807	10	2.06	4.25
1808	5	-2.94	8.63
1809	9	1.06	1.13
1810	5	-2.94	8.63
1811	15	7.06	49.87
1812	5	-2.94	8.63
1813	6	-1.94	3.76
1814	5	-2.94	8.63
1815	10	2.06	4.25
1816	7	-0.94	0.88
1817	5	-2.94	8.63
1818	5	-2.94	8.63
1819	10	2.06	4.25
1820	6	-1.94	3.76
1821	7	-0.94	0.88
1822	8	0.06	0.00
1823	7	-0.94	0.88
1824	6	-1.94	3.76
1825	7	-0.94	0.88
1826	8	0.06	0.00
1827	6	-1.94	3.76
1828	9	1.06	1.13
1829	13	5.06	25.62
1830	10	2.06	4.25
1831	8	0.06	0.00
1832	7	-0.94	0.88
1833	6	-1.94	3.76
1834	5	-2.94	8.63
1835	6	-1.94	3.76
1836	4	-3.94	15.51
1837	4	-3.94	15.51
1838	6	-1.94	3.76
1839	10	2.06	4.25
1840	6	-1.94	3.76
1841	5	-2.94	8.63
1842	8	0.06	0.00
1843	8	0.06	0.00
1844	8	0.06	0.00
1845	6	-1.94	3.76
1846	9	1.06	1.13
1847	8	0.06	0.00
1848	11	3.06	9.38
1849	6	-1.94	3.76
1850	5	-2.94	8.63
	359		284.10
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
1851	7	-0.94	0.88
1852	17	9.06	82.12
1853	7	-0.94	0.88
1854	7	-0.94	0.88
1855	7	-0.94	0.88
1856	4	-3.94	15.51
1857	4	-3.94	15.51
1858	7	-0.94	0.88
1859	16	8.06	65.00
1860	15	7.06	49.87
1861	19	11.06	122.37
1862	4	-3.94	15.51
1863	6	-1.94	3.76
1864	6	-1.94	3.76
1865	6	-1.94	3.76
1866	10	2.06	4.25
1867	6	-1.94	3.76
1868	5	-2.94	8.63
1869	12	4.06	16.50
1870	7	-0.94	0.88
1871	8	0.06	0.00
1872	6	-1.94	3.76
1873	5	-2.94	8.63
1874	7	-0.94	0.88
1875	11	3.06	9.38
1876	12	4.06	16.50
1877	10	2.06	4.25
1878	7	-0.94	0.88
1879	10	2.06	4.25
1880	6	-1.94	3.76
1881	5	-2.94	8.63
1882	6	-1.94	3.76
1883	9	1.06	1.13
1884	8	0.06	0.00
1885	9	1.06	1.13
1886	8	0.06	0.00
1887	6	-1.94	3.76
1888	4	-3.94	15.51
1889	5	-2.94	8.63
1890	6	-1.94	3.76
1891	5	-2.94	8.63
1892	6	-1.94	3.76
1893	6	-1.94	3.76
1894	8	0.06	0.00
1895	11	3.06	9.38
1896	8	0.06	0.00
1897	14	6.06	36.75
1898	11	3.06	9.38
1899	5	-2.94	8.63
1900	8	0.06	0.00
	402		594.44
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
1901	7	-0.94	0.88
1902	6	-1.94	3.76
1903	7	-0.94	0.88
1904	5	-2.94	8.63
1905	6	-1.94	3.76
1906	6	-1.94	3.76
1907	5	-2.94	8.63
1908	7	-0.94	0.88
1909	5	-2.94	8.63
1910	6	-1.94	3.76
1911	6	-1.94	3.76
1912	8	0.06	0.00
1913	7	-0.94	0.88
1914	6	-1.94	3.76
1915	9	1.06	1.13
1916	6	-1.94	3.76
1917	8	0.06	0.00
1918	8	0.06	0.00
1919	12	4.06	16.50
1920	6	-1.94	3.76
1921	6	-1.94	3.76
1922	8	0.06	0.00
1923	13	5.06	25.62
1924	8	0.06	0.00
1925	12	4.06	16.50
1926	14	6.06	36.75
1927	9	1.06	1.13
1928	5	-2.94	8.63
1929	4	-3.94	15.51
1930	7	-0.94	0.88
1931	5	-2.94	8.63
1932	9	1.06	1.13
1933	6	-1.94	3.76
1934	9	1.06	1.13
1935	8	0.06	0.00
1936	7	-0.94	0.88
1937	5	-2.94	8.63
1938	7	-0.94	0.88
1939	11	3.06	9.38
1940	8	0.06	0.00
1941	7	-0.94	0.88
1942	7	-0.94	0.88
1943	4	-3.94	15.51
1944	6	-1.94	3.76
1945	8	0.06	0.00
1946	11	3.06	9.38
1947	1	-6.94	48.14
1948	6	-1.94	3.76
1949	5	-2.94	8.63
1950	8	0.06	0.00
	360		311.23
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
1951	8	0.06	0.00
1952	14	6.06	36.75
1953	8	0.06	0.00
1954	14	6.06	36.75
1955	5	-2.94	8.63
1956	7	-0.94	0.88
1957	7	-0.94	0.88
1958	7	-0.94	0.88
1959	6	-1.94	3.76
1960	6	-1.94	3.76
1961	7	-0.94	0.88
1962	8	0.06	0.00
1963	7	-0.94	0.88
1964	8	0.06	0.00
1965	8	0.06	0.00
1966	4	-3.94	15.51
1967	10	2.06	4.25
1968	7	-0.94	0.88
1969	5	-2.94	8.63
1970	8	0.06	0.00
1971	8	0.06	0.00
1972	6	-1.94	3.76
1973	7	-0.94	0.88
1974	9	1.06	1.13
1975	10	2.06	4.25
1976	6	-1.94	3.76
1977	9	1.06	1.13
1978	7	-0.94	0.88
1979	5	-2.94	8.63
1980	6	-1.94	3.76
1981	8	0.06	0.00
1982	10	2.06	4.25
1983	13	5.06	25.62
1984	14	6.06	36.75
1985	24	16.06	257.99
1986	5	-2.94	8.63
1987	6	-1.94	3.76
1988	4	-3.94	15.51
1989	4	-3.94	15.51
1990	5	-2.94	8.63
1991	11	3.06	9.38
1992	13	5.06	25.62
1993	7	-0.94	0.88
1994	6	-1.94	3.76
1995	6	-1.94	3.76
1996	6	-1.94	3.76
1997	8	0.06	0.00
1998	8	0.06	0.00
1999	8	0.06	0.00
2000	9	1.06	1.13
	402		576.44
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
2001	10	2.06	4.25
2002	9	1.06	1.13
2003	5	-2.94	8.63
2004	7	-0.94	0.88
2005	8	0.06	0.00
2006	9	1.06	1.13
2007	6	-1.94	3.76
2008	6	-1.94	3.76
2009	8	0.06	0.00
2010	6	-1.94	3.76
2011	4	-3.94	15.51
2012	12	4.06	16.50
2013	7	-0.94	0.88
2014	9	1.06	1.13
2015	5	-2.94	8.63
2016	5	-2.94	8.63
2017	9	1.06	1.13
2018	8	0.06	0.00
2019	6	-1.94	3.76
2020	7	-0.94	0.88
2021	9	1.06	1.13
2022	6	-1.94	3.76
2023	11	3.06	9.38
2024	4	-3.94	15.51
2025	14	6.06	36.75
2026	11	3.06	9.38
2027	10	2.06	4.25
2028	6	-1.94	3.76
2029	8	0.06	0.00
2030	9	1.06	1.13
2031	5	-2.94	8.63
2032	14	6.06	36.75
2033	5	-2.94	8.63
2034	8	0.06	0.00
2035	7	-0.94	0.88
2036	6	-1.94	3.76
2037	6	-1.94	3.76
2038	8	0.06	0.00
2039	7	-0.94	0.88
2040	3	-4.94	24.38
2041	5	-2.94	8.63
2042	4	-3.94	15.51
2043	8	0.06	0.00
2044	6	-1.94	3.76
2045	11	3.06	9.38
2046	4	-3.94	15.51
2047	9	1.06	1.13
2048	5	-2.94	8.63
2049	8	0.06	0.00
2050	5	-2.94	8.63
	368		328.22
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
2051	8	0.06	0.00
2052	6	-1.94	3.76
2053	6	-1.94	3.76
2054	12	4.06	16.50
2055	8	0.06	0.00
2056	9	1.06	1.13
2057	7	-0.94	0.88
2058	9	1.06	1.13
2059	8	0.06	0.00
2060	7	-0.94	0.88
2061	7	-0.94	0.88
2062	5	-2.94	8.63
2063	7	-0.94	0.88
2064	6	-1.94	3.76
2065	9	1.06	1.13
2066	6	-1.94	3.76
2067	6	-1.94	3.76
2068	18	10.06	101.24
2069	10	2.06	4.25
2070	9	1.06	1.13
2071	7	-0.94	0.88
2072	8	0.06	0.00
2073	9	1.06	1.13
2074	9	1.06	1.13
2075	6	-1.94	3.76
2076	6	-1.94	3.76
2077	9	1.06	1.13
2078	4	-3.94	15.51
2079	12	4.06	16.50
2080	3	-4.94	24.38
2081	4	-3.94	15.51
2082	7	-0.94	0.88
2083	7	-0.94	0.88
2084	11	3.06	9.38
2085	8	0.06	0.00
2086	12	4.06	16.50
2087	8	0.06	0.00
2088	5	-2.94	8.63
2089	5	-2.94	8.63
2090	5	-2.94	8.63
2091	9	1.06	1.13
2092	4	-3.94	15.51
2093	5	-2.94	8.63
2094	14	6.06	36.75
2095	5	-2.94	8.63
2096	8	0.06	0.00
2097	11	3.06	9.38
2098	7	-0.94	0.88
2099	11	3.06	9.38
2100	9	1.06	1.13
	391		386.08
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
2101	5	-2.94	8.63
2102	6	-1.94	3.76
2103	8	0.06	0.00
2104	5	-2.94	8.63
2105	11	3.06	9.38
2106	6	-1.94	3.76
2107	5	-2.94	8.63
2108	11	3.06	9.38
2109	4	-3.94	15.51
2110	8	0.06	0.00
2111	6	-1.94	3.76
2112	12	4.06	16.50
2113	11	3.06	9.38
2114	8	0.06	0.00
2115	5	-2.94	8.63
2116	8	0.06	0.00
2117	6	-1.94	3.76
2118	13	5.06	25.62
2119	5	-2.94	8.63
2120	5	-2.94	8.63
2121	4	-3.94	15.51
2122	5	-2.94	8.63
2123	5	-2.94	8.63
2124	9	1.06	1.13
2125	8	0.06	0.00
2126	9	1.06	1.13
2127	8	0.06	0.00
2128	4	-3.94	15.51
2129	7	-0.94	0.88
2130	7	-0.94	0.88
2131	12	4.06	16.50
2132	7	-0.94	0.88
2133	8	0.06	0.00
2134	7	-0.94	0.88
2135	10	2.06	4.25
2136	7	-0.94	0.88
2137	10	2.06	4.25
2138	7	-0.94	0.88
2139	15	7.06	49.87
2140	7	-0.94	0.88
2141	7	-0.94	0.88
2142	6	-1.94	3.76
2143	8	0.06	0.00
2144	6	-1.94	3.76
2145	7	-0.94	0.88
2146	6	-1.94	3.76
2147	4	-3.94	15.51
2148	6	-1.94	3.76
2149	6	-1.94	3.76
2150	7	-0.94	0.88
	367		321.10
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U

Number	n	(n-N)	(n-N) ²
2151	6	-1.94	3.76
2152	7	-0.94	0.88
2153	12	4.06	16.50
2154	10	2.06	4.25
2155	9	1.06	1.13
2156	6	-1.94	3.76
2157	6	-1.94	3.76
2158	7	-0.94	0.88
2159	8	0.06	0.00
2160	12	4.06	16.50
2161	16	8.06	65.00
2162	12	4.06	16.50
2163	11	3.06	9.38
2164	5	-2.94	8.63
2165	9	1.06	1.13
2166	5	-2.94	8.63
2167	7	-0.94	0.88
2168	7	-0.94	0.88
2169	4	-3.94	15.51
2170	5	-2.94	8.63
2171	6	-1.94	3.76
2172	9	1.06	1.13
2173	10	2.06	4.25
2174	7	-0.94	0.88
2175	6	-1.94	3.76
2176	9	1.06	1.13
2177	10	2.06	4.25
2178	8	0.06	0.00
2179	6	-1.94	3.76
2180	10	2.06	4.25
2181	10	2.06	4.25
2182	10	2.06	4.25
2183	10	2.06	4.25
2184	7	-0.94	0.88
2185	8	0.06	0.00
2186	6	-1.94	3.76
2187	7	-0.94	0.88
2188	8	0.06	0.00
2189	4	-3.94	15.51
2190	7	-0.94	0.88
2191	3	-4.94	24.38
2192	10	2.06	4.25
2193	10	2.06	4.25
2194	7	-0.94	0.88
2195	6	-1.94	3.76
2196	8	0.06	0.00
2197	7	-0.94	0.88
2198	12	4.06	16.50
2199	7	-0.94	0.88
2200	5	-2.94	8.63
	397		312.82
	Sum(n)		Sum(n-N) ²

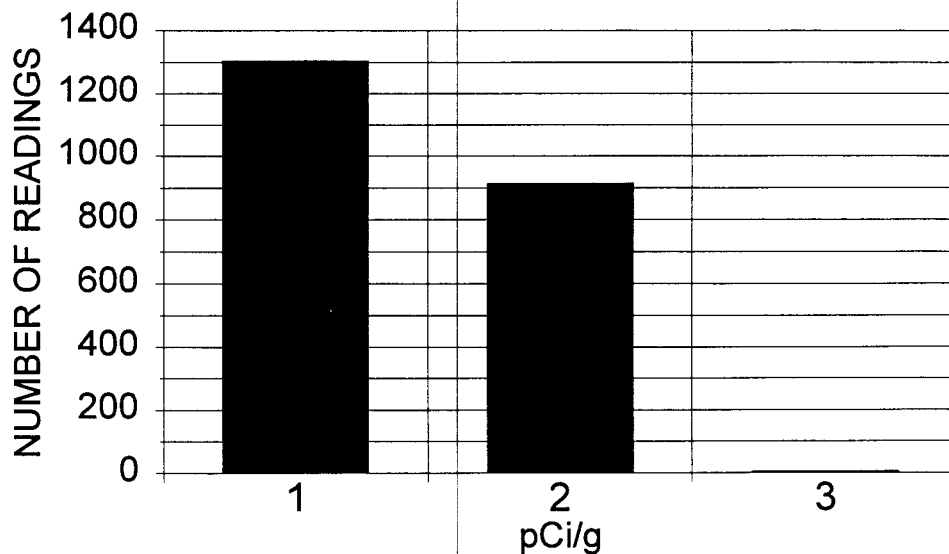
CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
2201	7	-0.94	0.88
2202	7	-0.94	0.88
2203	9	1.06	1.13
2204	7	-0.94	0.88
2205	10	2.06	4.25
2206	6	-1.94	3.76
2207	10	2.06	4.25
2208	8	0.06	0.00
2209	8	0.06	0.00
2210	5	-2.94	8.63
2211	15	7.06	49.87
2212	4	-3.94	15.51
2213	11	3.06	9.38
2214	6	-1.94	3.76
2215	4	-3.94	15.51
2216	6	-1.94	3.76
2217	7	-0.94	0.88
2218	8	0.06	0.00
2219	7	-0.94	0.88
2220	9	1.06	1.13
2221	6	-1.94	3.76
2222	7	-0.94	0.88
2223	9	1.06	1.13
2224	4	-3.94	15.51
2225		0.00	0.00
2226		0.00	0.00
2227		0.00	0.00
2228		0.00	0.00
2229		0.00	0.00
2230		0.00	0.00
2231		0.00	0.00
2232		0.00	0.00
2233		0.00	0.00
2234		0.00	0.00
2235		0.00	0.00
2236		0.00	0.00
2237		0.00	0.00
2238		0.00	0.00
2239		0.00	0.00
2240		0.00	0.00
2241		0.00	0.00
2242		0.00	0.00
2243		0.00	0.00
2244		0.00	0.00
2245		0.00	0.00
2246		0.00	0.00
2247		0.00	0.00
2248		0.00	0.00
2249		0.00	0.00
2250		0.00	0.00
	180		146.60
	Sum(n)		Sum(n-N) ²

n = pCi/g TOTAL U			
Number	n	(n-N)	(n-N) ²
2251		0.00	0.00
2252		0.00	0.00
2253		0.00	0.00
2254		0.00	0.00
2255		0.00	0.00
2256		0.00	0.00
2257		0.00	0.00
2258		0.00	0.00
2259		0.00	0.00
2260		0.00	0.00
2261		0.00	0.00
2262		0.00	0.00
2263		0.00	0.00
2264		0.00	0.00
2265		0.00	0.00
2266		0.00	0.00
2267		0.00	0.00
2268		0.00	0.00
2269		0.00	0.00
2270		0.00	0.00
2271		0.00	0.00
2272		0.00	0.00
2273		0.00	0.00
2274		0.00	0.00
2275		0.00	0.00
2276		0.00	0.00
2277		0.00	0.00
2278		0.00	0.00
2279		0.00	0.00
2280		0.00	0.00
2281		0.00	0.00
2282		0.00	0.00
2283		0.00	0.00
2284		0.00	0.00
2285		0.00	0.00
2286		0.00	0.00
2287		0.00	0.00
2288		0.00	0.00
2289		0.00	0.00
2290		0.00	0.00
2291		0.00	0.00
2292		0.00	0.00
2293		0.00	0.00
2294		0.00	0.00
2295		0.00	0.00
2296		0.00	0.00
2297		0.00	0.00
2298		0.00	0.00
2299		0.00	0.00
2300		0.00	0.00
	0		0.00
	Sum(n)		Sum(n-N) ²

PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
CIMARRON SOIL COUNTER
THORIUM (NAT) SAMPLE RESULTS
SITE BACKGROUND OF 1.5 pCi/g NOT SUBTRACTED

THORIUM (Natural) SAMPLE RESULTS
FREQUENCY DISTRIBUTION



NUMBER OF READINGS	2224
AVG READING	1
MINIMUM READING	1
MAXIMUM READING	3
STANDARD DEVIATION	0.5

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES
(THORIUM)

No. of Samples (x) : **2224**

COUNT TIME: 5 MINUTES

Sample Mean (N) = Sum(n) ÷ (x)

Sample Mean (N) : **1.42**

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

Standard Deviation: **0.5**

2 Std Deviations: **1.0**

Degree of Freedom(df). = (x) - 1

(df) = **1.645**

Data listed on Table B-1

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

(Aμ) = **1.43**

GUIDELINE VALUE: **10**

Acceptable Level: **4.0**

pCi/gTh (NAT)

pCi/gTh (NAT)

pCi/gTh (NAT)

(25% OF GUIDELINE PLUS BACKGROUND)

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)

(df) low value(Y)

Infinite	is (B)		95%
	is (A)		95%

Desired value(df) (X)

2223 is calculated as follow:

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

The (df) value for (X)

2223	1.645	95%
------	-------	-----

	Sum(n)	Sum(n-N)²
1 - 50	74	12.69
51 - 100	72	12.35
101 - 150	69	11.84
151 - 200	76	13.03
201 - 250	73	12.52
251 - 300	72	12.35
301 - 350	66	11.34
351 - 400	68	11.67
401 - 450	70	12.01
451 - 500	67	11.50
501 - 550	65	11.17
551 - 600	74	14.69
601 - 650	73	12.52
651 - 700	67	11.50
701 - 750	69	11.84
751 - 800	72	12.35
801 - 850	64	11.00
851 - 900	64	11.00
901 - 950	75	12.86
951 - 1000	73	14.52
1001 - 1050	75	12.86
1051 - 1100	73	14.52
1101 - 1150	70	12.01
1151 - 1200	68	11.67
1201 - 1250	68	11.67
1251 - 1300	68	13.67
1301 - 1350	70	12.01
1351 - 1400	82	14.04
1401 - 1450	75	12.86
1451 - 1500	76	13.03
1501 - 1550	62	10.66
1551 - 1600	61	10.49
1601 - 1650	59	10.15
1651 - 1700	81	15.87
1701 - 1750	80	13.70
1751 - 1800	70	12.01
1801 - 1850	60	10.32
1851 - 1900	68	11.67
1901 - 1950	75	12.86
1951 - 2000	74	12.69
2001 - 2050	72	12.35
2051 - 2100	68	11.67
2101 - 2150	74	12.69
2151 - 2200	79	13.53
2201 - 2250	37	6.34
2251 - 2300	0	0.00
2301 - 2350	0	0.00
2351 - 2400	0	0.00
2401 - 2450	0	0.00
2451 - 2500	0	0.00
	3148	550.11
TOTAL	Sum(n)	Sum(n-N)²

PERFORMED BY:

M. W. Kado

DATE:

10-19-98

REVIEWED BY:

W. A. Ryan

DATE:

10-19-98

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
1	2	0.64	0.41
2	2	0.64	0.41
3	1	-0.36	0.13
4	1	-0.36	0.13
5	1	-0.36	0.13
6	1	-0.36	0.13
7	1	-0.36	0.13
8	1	-0.36	0.13
9	2	0.64	0.41
10	2	0.64	0.41
11	2	0.64	0.41
12	1	-0.36	0.13
13	1	-0.36	0.13
14	1	-0.36	0.13
15	1	-0.36	0.13
16	1	-0.36	0.13
17	2	0.64	0.41
18	1	-0.36	0.13
19	1	-0.36	0.13
20	1	-0.36	0.13
21	1	-0.36	0.13
22	2	0.64	0.41
23	1	-0.36	0.13
24	2	0.64	0.41
25	1	-0.36	0.13
26	1	-0.36	0.13
27	2	0.64	0.41
28	2	0.64	0.41
29	2	0.64	0.41
30	2	0.64	0.41
31	2	0.64	0.41
32	1	-0.36	0.13
33	1	-0.36	0.13
34	2	0.64	0.41
35	1	-0.36	0.13
36	2	0.64	0.41
37	1	-0.36	0.13
38	1	-0.36	0.13
39	2	0.64	0.41
40	2	0.64	0.41
41	2	0.64	0.41
42	2	0.64	0.41
43	2	0.64	0.41
44	1	-0.36	0.13
45	1	-0.36	0.13
46	2	0.64	0.41
47	2	0.64	0.41
48	2	0.64	0.41
49	1	-0.36	0.13
50	2	0.64	0.41
	74		13.24
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
51	2	0.64	0.41
52	1	-0.36	0.13
53	2	0.64	0.41
54	1	-0.36	0.13
55	1	-0.36	0.13
56	1	-0.36	0.13
57	1	-0.36	0.13
58	2	0.64	0.41
59	1	-0.36	0.13
60	1	-0.36	0.13
61	1	-0.36	0.13
62	1	-0.36	0.13
63	1	-0.36	0.13
64	1	-0.36	0.13
65	2	0.64	0.41
66	2	0.64	0.41
67	2	0.64	0.41
68	2	0.64	0.41
69	1	-0.36	0.13
70	2	0.64	0.41
71	2	0.64	0.41
72	1	-0.36	0.13
73	2	0.64	0.41
74	1	-0.36	0.13
75	1	-0.36	0.13
76	2	0.64	0.41
77	1	-0.36	0.13
78	1	-0.36	0.13
79	1	-0.36	0.13
80	2	0.64	0.41
81	1	-0.36	0.13
82	2	0.64	0.41
83	2	0.64	0.41
84	1	-0.36	0.13
85	2	0.64	0.41
86	1	-0.36	0.13
87	1	-0.36	0.13
88	1	-0.36	0.13
89	1	-0.36	0.13
90	2	0.64	0.41
91	1	-0.36	0.13
92	2	0.64	0.41
93	1	-0.36	0.13
94	1	-0.36	0.13
95	2	0.64	0.41
96	1	-0.36	0.13
97	2	0.64	0.41
98	2	0.64	0.41
99	2	0.64	0.41
100	2	0.64	0.41
	72		12.66
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
101	1	-0.36	0.13
102	2	0.64	0.41
103	2	0.64	0.41
104	1	-0.36	0.13
105	1	-0.36	0.13
106	1	-0.36	0.13
107	1	-0.36	0.13
108	2	0.64	0.41
109	2	0.64	0.41
110	1	-0.36	0.13
111	1	-0.36	0.13
112	1	-0.36	0.13
113	1	-0.36	0.13
114	1	-0.36	0.13
115	2	0.64	0.41
116	2	0.64	0.41
117	2	0.64	0.41
118	1	-0.36	0.13
119	2	0.64	0.41
120	1	-0.36	0.13
121	2	0.64	0.41
122	1	-0.36	0.13
123	2	0.64	0.41
124	2	0.64	0.41
125	2	0.64	0.41
126	1	-0.36	0.13
127	1	-0.36	0.13
128	1	-0.36	0.13
129	1	-0.36	0.13
130	1	-0.36	0.13
131	1	-0.36	0.13
132	1	-0.36	0.13
133	2	0.64	0.41
134	1	-0.36	0.13
135	1	-0.36	0.13
136	1	-0.36	0.13
137	1	-0.36	0.13
138	1	-0.36	0.13
139	1	-0.36	0.13
140	1	-0.36	0.13
141	1	-0.36	0.13
142	2	0.64	0.41
143	2	0.64	0.41
144	2	0.64	0.41
145	1	-0.36	0.13
146	2	0.64	0.41
147	2	0.64	0.41
148	2	0.64	0.41
149	1	-0.36	0.13
150	1	-0.36	0.13
	69		11.81
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
151	2	0.64	0.41
152	2	0.64	0.41
153	2	0.64	0.41
154	2	0.64	0.41
155	2	0.64	0.41
156	1	-0.36	0.13
157	2	0.64	0.41
158	2	0.64	0.41
159	2	0.64	0.41
160	2	0.64	0.41
161	2	0.64	0.41
162	1	-0.36	0.13
163	1	-0.36	0.13
164	2	0.64	0.41
165	2	0.64	0.41
166	2	0.64	0.41
167	1	-0.36	0.13
168	2	0.64	0.41
169	1	-0.36	0.13
170	1	-0.36	0.13
171	1	-0.36	0.13
172	1	-0.36	0.13
173	1	-0.36	0.13
174	1	-0.36	0.13
175	1	-0.36	0.13
176	2	0.64	0.41
177	1	-0.36	0.13
178	1	-0.36	0.13
179	1	-0.36	0.13
180	1	-0.36	0.13
181	2	0.64	0.41
182	2	0.64	0.41
183	2	0.64	0.41
184	1	-0.36	0.13
185	2	0.64	0.41
186	2	0.64	0.41
187	1	-0.36	0.13
188	1	-0.36	0.13
189	1	-0.36	0.13
190	2	0.64	0.41
191	2	0.64	0.41
192	2	0.64	0.41
193	1	-0.36	0.13
194	2	0.64	0.41
195	2	0.64	0.41
196	2	0.64	0.41
197	1	-0.36	0.13
198	1	-0.36	0.13
199	1	-0.36	0.13
200	1	-0.36	0.13
	76		13.81
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
201	1	-0.36	0.13
202	1	-0.36	0.13
203	2	0.64	0.41
204	1	-0.36	0.13
205	2	0.64	0.41
206	1	-0.36	0.13
207	1	-0.36	0.13
208	1	-0.36	0.13
209	1	-0.36	0.13
210	1	-0.36	0.13
211	1	-0.36	0.13
212	2	0.64	0.41
213	1	-0.36	0.13
214	2	0.64	0.41
215	1	-0.36	0.13
216	1	-0.36	0.13
217	1	-0.36	0.13
218	1	-0.36	0.13
219	2	0.64	0.41
220	1	-0.36	0.13
221	1	-0.36	0.13
222	1	-0.36	0.13
223	2	0.64	0.41
224	1	-0.36	0.13
225	2	0.64	0.41
226	1	-0.36	0.13
227	2	0.64	0.41
228	1	-0.36	0.13
229	1	-0.36	0.13
230	2	0.64	0.41
231	2	0.64	0.41
232	1	-0.36	0.13
233	1	-0.36	0.13
234	1	-0.36	0.13
235	1	-0.36	0.13
236	2	0.64	0.41
237	2	0.64	0.41
238	2	0.64	0.41
239	2	0.64	0.41
240	2	0.64	0.41
241	1	-0.36	0.13
242	1	-0.36	0.13
243	2	0.64	0.41
244	2	0.64	0.41
245	2	0.64	0.41
246	2	0.64	0.41
247	2	0.64	0.41
248	2	0.64	0.41
249	2	0.64	0.41
250	2	0.64	0.41
	73		12.95
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
251	1	-0.36	0.13
252	2	0.64	0.41
253	1	-0.36	0.13
254	1	-0.36	0.13
255	2	0.64	0.41
256	2	0.64	0.41
257	1	-0.36	0.13
258	1	-0.36	0.13
259	1	-0.36	0.13
260	1	-0.36	0.13
261	1	-0.36	0.13
262	2	0.64	0.41
263	2	0.64	0.41
264	2	0.64	0.41
265	1	-0.36	0.13
266	2	0.64	0.41
267	1	-0.36	0.13
268	2	0.64	0.41
269	1	-0.36	0.13
270	2	0.64	0.41
271	1	-0.36	0.13
272	2	0.64	0.41
273	1	-0.36	0.13
274	1	-0.36	0.13
275	1	-0.36	0.13
276	1	-0.36	0.13
277	1	-0.36	0.13
278	2	0.64	0.41
279	1	-0.36	0.13
280	1	-0.36	0.13
281	1	-0.36	0.13
282	2	0.64	0.41
283	2	0.64	0.41
284	1	-0.36	0.13
285	2	0.64	0.41
286	1	-0.36	0.13
287	1	-0.36	0.13
288	2	0.64	0.41
289	2	0.64	0.41
290	2	0.64	0.41
291	2	0.64	0.41
292	2	0.64	0.41
293	2	0.64	0.41
294	2	0.64	0.41
295	2	0.64	0.41
296	1	-0.36	0.13
297	1	-0.36	0.13
298	1	-0.36	0.13
299	1	-0.36	0.13
300	1	-0.36	0.13
	72		12.66
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
301	1	-0.36	0.13
302	1	-0.36	0.13
303	1	-0.36	0.13
304	2	0.64	0.41
305	2	0.64	0.41
306	1	-0.36	0.13
307	1	-0.36	0.13
308	2	0.64	0.41
309	1	-0.36	0.13
310	1	-0.36	0.13
311	1	-0.36	0.13
312	2	0.64	0.41
313	2	0.64	0.41
314	2	0.64	0.41
315	1	-0.36	0.13
316	1	-0.36	0.13
317	2	0.64	0.41
318	2	0.64	0.41
319	2	0.64	0.41
320	2	0.64	0.41
321	1	-0.36	0.13
322	1	-0.36	0.13
323	1	-0.36	0.13
324	1	-0.36	0.13
325	1	-0.36	0.13
326	2	0.64	0.41
327	1	-0.36	0.13
328	2	0.64	0.41
329	1	-0.36	0.13
330	1	-0.36	0.13
331	1	-0.36	0.13
332	2	0.64	0.41
333	1	-0.36	0.13
334	2	0.64	0.41
335	1	-0.36	0.13
336	1	-0.36	0.13
337	1	-0.36	0.13
338	2	0.64	0.41
339	1	-0.36	0.13
340	1	-0.36	0.13
341	1	-0.36	0.13
342	1	-0.36	0.13
343	1	-0.36	0.13
344	1	-0.36	0.13
345	1	-0.36	0.13
346	1	-0.36	0.13
347	2	0.64	0.41
348	1	-0.36	0.13
349	1	-0.36	0.13
350	1	-0.36	0.13
	66		10.95
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
351	2	0.64	0.41
352	1	-0.36	0.13
353	2	0.64	0.41
354	1	-0.36	0.13
355	1	-0.36	0.13
356	1	-0.36	0.13
357	1	-0.36	0.13
358	1	-0.36	0.13
359	2	0.64	0.41
360	2	0.64	0.41
361	1	-0.36	0.13
362	1	-0.36	0.13
363	1	-0.36	0.13
364	2	0.64	0.41
365	1	-0.36	0.13
366	2	0.64	0.41
367	2	0.64	0.41
368	2	0.64	0.41
369	2	0.64	0.41
370	1	-0.36	0.13
371	1	-0.36	0.13
372	2	0.64	0.41
373	1	-0.36	0.13
374	1	-0.36	0.13
375	2	0.64	0.41
376	1	-0.36	0.13
377	2	0.64	0.41
378	2	0.64	0.41
379	2	0.64	0.41
380	1	-0.36	0.13
381	2	0.64	0.41
382	1	-0.36	0.13
383	1	-0.36	0.13
384	1	-0.36	0.13
385	1	-0.36	0.13
386	1	-0.36	0.13
387	1	-0.36	0.13
388	1	-0.36	0.13
389	1	-0.36	0.13
390	2	0.64	0.41
391	1	-0.36	0.13
392	1	-0.36	0.13
393	1	-0.36	0.13
394	2	0.64	0.41
395	1	-0.36	0.13
396	1	-0.36	0.13
397	1	-0.36	0.13
398	2	0.64	0.41
399	1	-0.36	0.13
400	1	-0.36	0.13
	68		11.52
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
401	2	0.64	0.41
402	1	-0.36	0.13
403	2	0.64	0.41
404	1	-0.36	0.13
405	1	-0.36	0.13
406	1	-0.36	0.13
407	2	0.64	0.41
408	2	0.64	0.41
409	1	-0.36	0.13
410	1	-0.36	0.13
411	1	-0.36	0.13
412	2	0.64	0.41
413	1	-0.36	0.13
414	2	0.64	0.41
415	2	0.64	0.41
416	2	0.64	0.41
417	1	-0.36	0.13
418	1	-0.36	0.13
419	2	0.64	0.41
420	1	-0.36	0.13
421	1	-0.36	0.13
422	2	0.64	0.41
423	2	0.64	0.41
424	1	-0.36	0.13
425	1	-0.36	0.13
426	1	-0.36	0.13
427	2	0.64	0.41
428	1	-0.36	0.13
429	1	-0.36	0.13
430	1	-0.36	0.13
431	2	0.64	0.41
432	1	-0.36	0.13
433	1	-0.36	0.13
434	1	-0.36	0.13
435	2	0.64	0.41
436	1	-0.36	0.13
437	1	-0.36	0.13
438	1	-0.36	0.13
439	1	-0.36	0.13
440	1	-0.36	0.13
441	2	0.64	0.41
442	1	-0.36	0.13
443	2	0.64	0.41
444	2	0.64	0.41
445	1	-0.36	0.13
446	2	0.64	0.41
447	2	0.64	0.41
448	2	0.64	0.41
449	1	-0.36	0.13
450	1	-0.36	0.13
	70		12.09
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
451	1	-0.36	0.13
452	1	-0.36	0.13
453	1	-0.36	0.13
454	2	0.64	0.41
455	2	0.64	0.41
456	2	0.64	0.41
457	1	-0.36	0.13
458	2	0.64	0.41
459	2	0.64	0.41
460	1	-0.36	0.13
461	1	-0.36	0.13
462	1	-0.36	0.13
463	1	-0.36	0.13
464	2	0.64	0.41
465	2	0.64	0.41
466	2	0.64	0.41
467	1	-0.36	0.13
468	1	-0.36	0.13
469	1	-0.36	0.13
470	2	0.64	0.41
471	1	-0.36	0.13
472	2	0.64	0.41
473	2	0.64	0.41
474	1	-0.36	0.13
475	1	-0.36	0.13
476	1	-0.36	0.13
477	1	-0.36	0.13
478	1	-0.36	0.13
479	1	-0.36	0.13
480	1	-0.36	0.13
481	1	-0.36	0.13
482	2	0.64	0.41
483	2	0.64	0.41
484	1	-0.36	0.13
485	1	-0.36	0.13
486	1	-0.36	0.13
487	1	-0.36	0.13
488	1	-0.36	0.13
489	1	-0.36	0.13
490	1	-0.36	0.13
491	2	0.64	0.41
492	2	0.64	0.41
493	1	-0.36	0.13
494	1	-0.36	0.13
495	1	-0.36	0.13
496	2	0.64	0.41
497	2	0.64	0.41
498	1	-0.36	0.13
499	1	-0.36	0.13
500	1	-0.36	0.13
	67		11.23
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
501	1	-0.36	0.13
502	1	-0.36	0.13
503	1	-0.36	0.13
504	1	-0.36	0.13
505	1	-0.36	0.13
506	1	-0.36	0.13
507	2	0.64	0.41
508	1	-0.36	0.13
509	1	-0.36	0.13
510	1	-0.36	0.13
511	1	-0.36	0.13
512	1	-0.36	0.13
513	2	0.64	0.41
514	2	0.64	0.41
515	1	-0.36	0.13
516	1	-0.36	0.13
517	1	-0.36	0.13
518	1	-0.36	0.13
519	2	0.64	0.41
520	2	0.64	0.41
521	1	-0.36	0.13
522	1	-0.36	0.13
523	2	0.64	0.41
524	1	-0.36	0.13
525	1	-0.36	0.13
526	2	0.64	0.41
527	2	0.64	0.41
528	2	0.64	0.41
529	2	0.64	0.41
530	1	-0.36	0.13
531	1	-0.36	0.13
532	1	-0.36	0.13
533	1	-0.36	0.13
534	1	-0.36	0.13
535	1	-0.36	0.13
536	1	-0.36	0.13
537	1	-0.36	0.13
538	1	-0.36	0.13
539	1	-0.36	0.13
540	1	-0.36	0.13
541	2	0.64	0.41
542	1	-0.36	0.13
543	1	-0.36	0.13
544	1	-0.36	0.13
545	2	0.64	0.41
546	2	0.64	0.41
547	1	-0.36	0.13
548	1	-0.36	0.13
549	2	0.64	0.41
550	2	0.64	0.41
	65		10.66
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
551	1	-0.36	0.13
552	1	-0.36	0.13
553	2	0.64	0.41
554	2	0.64	0.41
555	2	0.64	0.41
556	1	-0.36	0.13
557	2	0.64	0.41
558	1	-0.36	0.13
559	3	1.64	2.70
560	1	-0.36	0.13
561	1	-0.36	0.13
562	1	-0.36	0.13
563	2	0.64	0.41
564	2	0.64	0.41
565	2	0.64	0.41
566	2	0.64	0.41
567	2	0.64	0.41
568	2	0.64	0.41
569	1	-0.36	0.13
570	1	-0.36	0.13
571	2	0.64	0.41
572	2	0.64	0.41
573	1	-0.36	0.13
574	1	-0.36	0.13
575	1	-0.36	0.13
576	1	-0.36	0.13
577	1	-0.36	0.13
578	1	-0.36	0.13
579	1	-0.36	0.13
580	1	-0.36	0.13
581	1	-0.36	0.13
582	1	-0.36	0.13
583	1	-0.36	0.13
584	1	-0.36	0.13
585	1	-0.36	0.13
586	2	0.64	0.41
587	2	0.64	0.41
588	2	0.64	0.41
589	1	-0.36	0.13
590	1	-0.36	0.13
591	2	0.64	0.41
592	1	-0.36	0.13
593	2	0.64	0.41
594	1	-0.36	0.13
595	2	0.64	0.41
596	2	0.64	0.41
597	2	0.64	0.41
598	2	0.64	0.41
599	1	-0.36	0.13
600	2	0.64	0.41
	74		15.24
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
601	2	0.64	0.41
602	1	-0.36	0.13
603	2	0.64	0.41
604	1	-0.36	0.13
605	1	-0.36	0.13
606	2	0.64	0.41
607	1	-0.36	0.13
608	2	0.64	0.41
609	1	-0.36	0.13
610	1	-0.36	0.13
611	1	-0.36	0.13
612	1	-0.36	0.13
613	1	-0.36	0.13
614	1	-0.36	0.13
615	1	-0.36	0.13
616	1	-0.36	0.13
617	1	-0.36	0.13
618	1	-0.36	0.13
619	1	-0.36	0.13
620	2	0.64	0.41
621	1	-0.36	0.13
622	1	-0.36	0.13
623	2	0.64	0.41
624	2	0.64	0.41
625	2	0.64	0.41
626	1	-0.36	0.13
627	2	0.64	0.41
628	1	-0.36	0.13
629	2	0.64	0.41
630	2	0.64	0.41
631	1	-0.36	0.13
632	2	0.64	0.41
633	2	0.64	0.41
634	2	0.64	0.41
635	1	-0.36	0.13
636	2	0.64	0.41
637	1	-0.36	0.13
638	1	-0.36	0.13
639	1	-0.36	0.13
640	2	0.64	0.41
641	2	0.64	0.41
642	2	0.64	0.41
643	1	-0.36	0.13
644	2	0.64	0.41
645	1	-0.36	0.13
646	2	0.64	0.41
647	1	-0.36	0.13
648	2	0.64	0.41
649	2	0.64	0.41
650	2	0.64	0.41
	73		12.95
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
651	1	-0.36	0.13
652	2	0.64	0.41
653	1	-0.36	0.13
654	1	-0.36	0.13
655	2	0.64	0.41
656	2	0.64	0.41
657	1	-0.36	0.13
658	1	-0.36	0.13
659	1	-0.36	0.13
660	1	-0.36	0.13
661	1	-0.36	0.13
662	2	0.64	0.41
663	2	0.64	0.41
664	2	0.64	0.41
665	1	-0.36	0.13
666	2	0.64	0.41
667	1	-0.36	0.13
668	2	0.64	0.41
669	1	-0.36	0.13
670	2	0.64	0.41
671	1	-0.36	0.13
672	2	0.64	0.41
673	1	-0.36	0.13
674	1	-0.36	0.13
675	1	-0.36	0.13
676	1	-0.36	0.13
677	1	-0.36	0.13
678	2	0.64	0.41
679	1	-0.36	0.13
680	2	0.64	0.41
681	1	-0.36	0.13
682	1	-0.36	0.13
683	1	-0.36	0.13
684	2	0.64	0.41
685	1	-0.36	0.13
686	1	-0.36	0.13
687	1	-0.36	0.13
688	2	0.64	0.41
689	1	-0.36	0.13
690	1	-0.36	0.13
691	1	-0.36	0.13
692	2	0.64	0.41
693	2	0.64	0.41
694	1	-0.36	0.13
695	2	0.64	0.41
696	1	-0.36	0.13
697	1	-0.36	0.13
698	1	-0.36	0.13
699	1	-0.36	0.13
700	1	-0.36	0.13
	67		11.23
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
701	1	-0.36	0.13
702	1	-0.36	0.13
703	1	-0.36	0.13
704	2	0.64	0.41
705	1	-0.36	0.13
706	2	0.64	0.41
707	2	0.64	0.41
708	2	0.64	0.41
709	1	-0.36	0.13
710	1	-0.36	0.13
711	2	0.64	0.41
712	2	0.64	0.41
713	1	-0.36	0.13
714	1	-0.36	0.13
715	2	0.64	0.41
716	2	0.64	0.41
717	2	0.64	0.41
718	1	-0.36	0.13
719	1	-0.36	0.13
720	2	0.64	0.41
721	1	-0.36	0.13
722	2	0.64	0.41
723	1	-0.36	0.13
724	2	0.64	0.41
725	2	0.64	0.41
726	1	-0.36	0.13
727	1	-0.36	0.13
728	2	0.64	0.41
729	1	-0.36	0.13
730	1	-0.36	0.13
731	2	0.64	0.41
732	2	0.64	0.41
733	1	-0.36	0.13
734	1	-0.36	0.13
735	1	-0.36	0.13
736	1	-0.36	0.13
737	1	-0.36	0.13
738	1	-0.36	0.13
739	1	-0.36	0.13
740	1	-0.36	0.13
741	1	-0.36	0.13
742	1	-0.36	0.13
743	1	-0.36	0.13
744	1	-0.36	0.13
745	1	-0.36	0.13
746	1	-0.36	0.13
747	2	0.64	0.41
748	1	-0.36	0.13
749	2	0.64	0.41
750	2	0.64	0.41
	69		11.81
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
751	1	-0.36	0.13
752	1	-0.36	0.13
753	1	-0.36	0.13
754	1	-0.36	0.13
755	2	0.64	0.41
756	1	-0.36	0.13
757	2	0.64	0.41
758	2	0.64	0.41
759	1	-0.36	0.13
760	2	0.64	0.41
761	2	0.64	0.41
762	2	0.64	0.41
763	1	-0.36	0.13
764	2	0.64	0.41
765	1	-0.36	0.13
766	2	0.64	0.41
767	1	-0.36	0.13
768	2	0.64	0.41
769	2	0.64	0.41
770	1	-0.36	0.13
771	2	0.64	0.41
772	2	0.64	0.41
773	1	-0.36	0.13
774	1	-0.36	0.13
775	1	-0.36	0.13
776	1	-0.36	0.13
777	2	0.64	0.41
778	1	-0.36	0.13
779	1	-0.36	0.13
780	1	-0.36	0.13
781	1	-0.36	0.13
782	1	-0.36	0.13
783	1	-0.36	0.13
784	1	-0.36	0.13
785	1	-0.36	0.13
786	2	0.64	0.41
787	1	-0.36	0.13
788	2	0.64	0.41
789	1	-0.36	0.13
790	2	0.64	0.41
791	1	-0.36	0.13
792	1	-0.36	0.13
793	2	0.64	0.41
794	2	0.64	0.41
795	2	0.64	0.41
796	2	0.64	0.41
797	2	0.64	0.41
798	1	-0.36	0.13
799	1	-0.36	0.13
800	2	0.64	0.41
	72		12.66
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
801	1	-0.36	0.13
802	1	-0.36	0.13
803	1	-0.36	0.13
804	1	-0.36	0.13
805	1	-0.36	0.13
806	1	-0.36	0.13
807	2	0.64	0.41
808	1	-0.36	0.13
809	2	0.64	0.41
810	2	0.64	0.41
811	1	-0.36	0.13
812	1	-0.36	0.13
813	1	-0.36	0.13
814	1	-0.36	0.13
815	1	-0.36	0.13
816	1	-0.36	0.13
817	2	0.64	0.41
818	1	-0.36	0.13
819	1	-0.36	0.13
820	2	0.64	0.41
821	1	-0.36	0.13
822	1	-0.36	0.13
823	1	-0.36	0.13
824	2	0.64	0.41
825	2	0.64	0.41
826	2	0.64	0.41
827	1	-0.36	0.13
828	1	-0.36	0.13
829	1	-0.36	0.13
830	1	-0.36	0.13
831	1	-0.36	0.13
832	1	-0.36	0.13
833	1	-0.36	0.13
834	1	-0.36	0.13
835	1	-0.36	0.13
836	2	0.64	0.41
837	2	0.64	0.41
838	1	-0.36	0.13
839	2	0.64	0.41
840	1	-0.36	0.13
841	2	0.64	0.41
842	1	-0.36	0.13
843	1	-0.36	0.13
844	2	0.64	0.41
845	2	0.64	0.41
846	1	-0.36	0.13
847	1	-0.36	0.13
848	1	-0.36	0.13
849	1	-0.36	0.13
850	1	-0.36	0.13
	64		10.38
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
851	1	-0.36	0.13
852	1	-0.36	0.13
853	1	-0.36	0.13
854	1	-0.36	0.13
855	2	0.64	0.41
856	2	0.64	0.41
857	1	-0.36	0.13
858	2	0.64	0.41
859	2	0.64	0.41
860	1	-0.36	0.13
861	1	-0.36	0.13
862	1	-0.36	0.13
863	1	-0.36	0.13
864	1	-0.36	0.13
865	1	-0.36	0.13
866	2	0.64	0.41
867	2	0.64	0.41
868	1	-0.36	0.13
869	2	0.64	0.41
870	1	-0.36	0.13
871	2	0.64	0.41
872	1	-0.36	0.13
873	1	-0.36	0.13
874	1	-0.36	0.13
875	2	0.64	0.41
876	1	-0.36	0.13
877	1	-0.36	0.13
878	1	-0.36	0.13
879	1	-0.36	0.13
880	1	-0.36	0.13
881	1	-0.36	0.13
882	1	-0.36	0.13
883	2	0.64	0.41
884	2	0.64	0.41
885	2	0.64	0.41
886	1	-0.36	0.13
887	1	-0.36	0.13
888	1	-0.36	0.13
889	1	-0.36	0.13
890	1	-0.36	0.13
891	1	-0.36	0.13
892	1	-0.36	0.13
893	1	-0.36	0.13
894	1	-0.36	0.13
895	1	-0.36	0.13
896	1	-0.36	0.13
897	2	0.64	0.41
898	1	-0.36	0.13
899	1	-0.36	0.13
900	2	0.64	0.41
	64		10.38
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
901	2	0.64	0.41
902	2	0.64	0.41
903	1	-0.36	0.13
904	1	-0.36	0.13
905	1	-0.36	0.13
906	2	0.64	0.41
907	2	0.64	0.41
908	1	-0.36	0.13
909	1	-0.36	0.13
910	1	-0.36	0.13
911	1	-0.36	0.13
912	1	-0.36	0.13
913	1	-0.36	0.13
914	1	-0.36	0.13
915	2	0.64	0.41
916	2	0.64	0.41
917	2	0.64	0.41
918	2	0.64	0.41
919	2	0.64	0.41
920	2	0.64	0.41
921	1	-0.36	0.13
922	2	0.64	0.41
923	2	0.64	0.41
924	1	-0.36	0.13
925	1	-0.36	0.13
926	2	0.64	0.41
927	1	-0.36	0.13
928	1	-0.36	0.13
929	2	0.64	0.41
930	1	-0.36	0.13
931	1	-0.36	0.13
932	2	0.64	0.41
933	1	-0.36	0.13
934	1	-0.36	0.13
935	2	0.64	0.41
936	2	0.64	0.41
937	1	-0.36	0.13
938	2	0.64	0.41
939	2	0.64	0.41
940	1	-0.36	0.13
941	1	-0.36	0.13
942	2	0.64	0.41
943	2	0.64	0.41
944	1	-0.36	0.13
945	1	-0.36	0.13
946	2	0.64	0.41
947	2	0.64	0.41
948	2	0.64	0.41
949	1	-0.36	0.13
950	2	0.64	0.41
	75		13.52
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
951	1	-0.36	0.13
952	3	1.64	2.70
953	1	-0.36	0.13
954	1	-0.36	0.13
955	1	-0.36	0.13
956	2	0.64	0.41
957	2	0.64	0.41
958	2	0.64	0.41
959	1	-0.36	0.13
960	1	-0.36	0.13
961	1	-0.36	0.13
962	1	-0.36	0.13
963	1	-0.36	0.13
964	1	-0.36	0.13
965	1	-0.36	0.13
966	1	-0.36	0.13
967	2	0.64	0.41
968	1	-0.36	0.13
969	1	-0.36	0.13
970	2	0.64	0.41
971	1	-0.36	0.13
972	1	-0.36	0.13
973	1	-0.36	0.13
974	1	-0.36	0.13
975	2	0.64	0.41
976	1	-0.36	0.13
977	1	-0.36	0.13
978	2	0.64	0.41
979	2	0.64	0.41
980	2	0.64	0.41
981	2	0.64	0.41
982	1	-0.36	0.13
983	2	0.64	0.41
984	2	0.64	0.41
985	2	0.64	0.41
986	1	-0.36	0.13
987	2	0.64	0.41
988	1	-0.36	0.13
989	1	-0.36	0.13
990	1	-0.36	0.13
991	2	0.64	0.41
992	2	0.64	0.41
993	2	0.64	0.41
994	2	0.64	0.41
995	1	-0.36	0.13
996	1	-0.36	0.13
997	1	-0.36	0.13
998	2	0.64	0.41
999	2	0.64	0.41
1000	2	0.64	0.41
	73		14.95
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
1001	1	-0.36	0.13
1002	2	0.64	0.41
1003	1	-0.36	0.13
1004	1	-0.36	0.13
1005	2	0.64	0.41
1006	1	-0.36	0.13
1007	1	-0.36	0.13
1008	1	-0.36	0.13
1009	1	-0.36	0.13
1010	1	-0.36	0.13
1011	2	0.64	0.41
1012	1	-0.36	0.13
1013	2	0.64	0.41
1014	2	0.64	0.41
1015	1	-0.36	0.13
1016	1	-0.36	0.13
1017	1	-0.36	0.13
1018	2	0.64	0.41
1019	2	0.64	0.41
1020	2	0.64	0.41
1021	2	0.64	0.41
1022	2	0.64	0.41
1023	1	-0.36	0.13
1024	2	0.64	0.41
1025	2	0.64	0.41
1026	2	0.64	0.41
1027	2	0.64	0.41
1028	1	-0.36	0.13
1029	1	-0.36	0.13
1030	2	0.64	0.41
1031	1	-0.36	0.13
1032	1	-0.36	0.13
1033	1	-0.36	0.13
1034	2	0.64	0.41
1035	2	0.64	0.41
1036	2	0.64	0.41
1037	1	-0.36	0.13
1038	1	-0.36	0.13
1039	2	0.64	0.41
1040	2	0.64	0.41
1041	1	-0.36	0.13
1042	2	0.64	0.41
1043	2	0.64	0.41
1044	1	-0.36	0.13
1045	2	0.64	0.41
1046	1	-0.36	0.13
1047	1	-0.36	0.13
1048	1	-0.36	0.13
1049	2	0.64	0.41
1050	2	0.64	0.41
	75		13.52
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
1051	2	0.64	0.41
1052	1	-0.36	0.13
1053	1	-0.36	0.13
1054	1	-0.36	0.13
1055	2	0.64	0.41
1056	2	0.64	0.41
1057	2	0.64	0.41
1058	1	-0.36	0.13
1059	1	-0.36	0.13
1060	1	-0.36	0.13
1061	2	0.64	0.41
1062	1	-0.36	0.13
1063	2	0.64	0.41
1064	2	0.64	0.41
1065	2	0.64	0.41
1066	2	0.64	0.41
1067	2	0.64	0.41
1068	2	0.64	0.41
1069	1	-0.36	0.13
1070	1	-0.36	0.13
1071	1	-0.36	0.13
1072	1	-0.36	0.13
1073	1	-0.36	0.13
1074	1	-0.36	0.13
1075	1	-0.36	0.13
1076	1	-0.36	0.13
1077	1	-0.36	0.13
1078	2	0.64	0.41
1079	2	0.64	0.41
1080	2	0.64	0.41
1081	1	-0.36	0.13
1082	1	-0.36	0.13
1083	1	-0.36	0.13
1084	3	1.64	2.70
1085	1	-0.36	0.13
1086	1	-0.36	0.13
1087	2	0.64	0.41
1088	1	-0.36	0.13
1089	1	-0.36	0.13
1090	2	0.64	0.41
1091	2	0.64	0.41
1092	2	0.64	0.41
1093	1	-0.36	0.13
1094	2	0.64	0.41
1095	1	-0.36	0.13
1096	1	-0.36	0.13
1097	2	0.64	0.41
1098	1	-0.36	0.13
1099	1	-0.36	0.13
1100	2	0.64	0.41
	73		14.95
	Sum(n)		Sum(n-N) ²

PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
1151	1	-0.36	0.13
1152	2	0.64	0.41
1153	1	-0.36	0.13
1154	2	0.64	0.41
1155	2	0.64	0.41
1156	2	0.64	0.41
1157	2	0.64	0.41
1158	2	0.64	0.41
1159	1	-0.36	0.13
1160	1	-0.36	0.13
1161	1	-0.36	0.13
1162	1	-0.36	0.13
1163	1	-0.36	0.13
1164	2	0.64	0.41
1165	1	-0.36	0.13
1166	1	-0.36	0.13
1167	1	-0.36	0.13
1168	2	0.64	0.41
1169	1	-0.36	0.13
1170	1	-0.36	0.13
1171	1	-0.36	0.13
1172	1	-0.36	0.13
1173	2	0.64	0.41
1174	2	0.64	0.41
1175	2	0.64	0.41
1176	1	-0.36	0.13
1177	1	-0.36	0.13
1178	1	-0.36	0.13
1179	1	-0.36	0.13
1180	1	-0.36	0.13
1181	1	-0.36	0.13
1182	1	-0.36	0.13
1183	1	-0.36	0.13
1184	1	-0.36	0.13
1185	2	0.64	0.41
1186	2	0.64	0.41
1187	2	0.64	0.41
1188	1	-0.36	0.13
1189	1	-0.36	0.13
1190	1	-0.36	0.13
1191	1	-0.36	0.13
1192	1	-0.36	0.13
1193	2	0.64	0.41
1194	2	0.64	0.41
1195	1	-0.36	0.13
1196	2	0.64	0.41
1197	2	0.64	0.41
1198	1	-0.36	0.13
1199	1	-0.36	0.13
1200	1	-0.36	0.13
	68		11.52
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)

Number	n	(n-N)	(n-N) ²
1201	1	-0.36	0.13
1202	1	-0.36	0.13
1203	1	-0.36	0.13
1204	1	-0.36	0.13
1205	1	-0.36	0.13
1206	2	0.64	0.41
1207	1	-0.36	0.13
1208	1	-0.36	0.13
1209	2	0.64	0.41
1210	2	0.64	0.41
1211	2	0.64	0.41
1212	1	-0.36	0.13
1213	1	-0.36	0.13
1214	2	0.64	0.41
1215	2	0.64	0.41
1216	2	0.64	0.41
1217	1	-0.36	0.13
1218	1	-0.36	0.13
1219	1	-0.36	0.13
1220	1	-0.36	0.13
1221	1	-0.36	0.13
1222	1	-0.36	0.13
1223	2	0.64	0.41
1224	2	0.64	0.41
1225	1	-0.36	0.13
1226	1	-0.36	0.13
1227	1	-0.36	0.13
1228	1	-0.36	0.13
1229	1	-0.36	0.13
1230	1	-0.36	0.13
1231	1	-0.36	0.13
1232	2	0.64	0.41
1233	2	0.64	0.41
1234	1	-0.36	0.13
1235	1	-0.36	0.13
1236	1	-0.36	0.13
1237	2	0.64	0.41
1238	1	-0.36	0.13
1239	1	-0.36	0.13
1240	1	-0.36	0.13
1241	2	0.64	0.41
1242	2	0.64	0.41
1243	1	-0.36	0.13
1244	1	-0.36	0.13
1245	2	0.64	0.41
1246	2	0.64	0.41
1247	1	-0.36	0.13
1248	2	0.64	0.41
1249	2	0.64	0.41
1250	1	-0.36	0.13
	68		11.52
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)

Number	n	(n-N)	(n-N) ²
1251	1	-0.36	0.13
1252	1	-0.36	0.13
1253	1	-0.36	0.13
1254	1	-0.36	0.13
1255	1	-0.36	0.13
1256	1	-0.36	0.13
1257	2	0.64	0.41
1258	2	0.64	0.41
1259	2	0.64	0.41
1260	2	0.64	0.41
1261	1	-0.36	0.13
1262	1	-0.36	0.13
1263	1	-0.36	0.13
1264	1	-0.36	0.13
1265	1	-0.36	0.13
1266	2	0.64	0.41
1267	1	-0.36	0.13
1268	1	-0.36	0.13
1269	1	-0.36	0.13
1270	1	-0.36	0.13
1271	1	-0.36	0.13
1272	1	-0.36	0.13
1273	2	0.64	0.41
1274	2	0.64	0.41
1275	1	-0.36	0.13
1276	1	-0.36	0.13
1277	1	-0.36	0.13
1278	1	-0.36	0.13
1279	1	-0.36	0.13
1280	1	-0.36	0.13
1281	2	0.64	0.41
1282	1	-0.36	0.13
1283	1	-0.36	0.13
1284	1	-0.36	0.13
1285	2	0.64	0.41
1286	2	0.64	0.41
1287	2	0.64	0.41
1288	2	0.64	0.41
1289	2	0.64	0.41
1290	1	-0.36	0.13
1291	1	-0.36	0.13
1292	1	-0.36	0.13
1293	1	-0.36	0.13
1294	1	-0.36	0.13
1295	1	-0.36	0.13
1296	1	-0.36	0.13
1297	2	0.64	0.41
1298	2	0.64	0.41
1299	2	0.64	0.41
1300	3	1.64	2.70
	68		13.52
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY

TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE

PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
1301	2	0.64	0.41
1302	1	-0.36	0.13
1303	2	0.64	0.41
1304	2	0.64	0.41
1305	1	-0.36	0.13
1306	2	0.64	0.41
1307	1	-0.36	0.13
1308	2	0.64	0.41
1309	2	0.64	0.41
1310	1	-0.36	0.13
1311	1	-0.36	0.13
1312	2	0.64	0.41
1313	2	0.64	0.41
1314	2	0.64	0.41
1315	2	0.64	0.41
1316	2	0.64	0.41
1317	1	-0.36	0.13
1318	1	-0.36	0.13
1319	1	-0.36	0.13
1320	1	-0.36	0.13
1321	1	-0.36	0.13
1322	1	-0.36	0.13
1323	1	-0.36	0.13
1324	1	-0.36	0.13
1325	1	-0.36	0.13
1326	1	-0.36	0.13
1327	1	-0.36	0.13
1328	2	0.64	0.41
1329	1	-0.36	0.13
1330	2	0.64	0.41
1331	1	-0.36	0.13
1332	1	-0.36	0.13
1333	2	0.64	0.41
1334	1	-0.36	0.13
1335	1	-0.36	0.13
1336	1	-0.36	0.13
1337	2	0.64	0.41
1338	2	0.64	0.41
1339	2	0.64	0.41
1340	2	0.64	0.41
1341	1	-0.36	0.13
1342	1	-0.36	0.13
1343	1	-0.36	0.13
1344	1	-0.36	0.13
1345	1	-0.36	0.13
1346	2	0.64	0.41
1347	1	-0.36	0.13
1348	2	0.64	0.41
1349	1	-0.36	0.13
1350	1	-0.36	0.13
	70		12.09
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
1351	2	0.64	0.41
1352	1	-0.36	0.13
1353	2	0.64	0.41
1354	1	-0.36	0.13
1355	1	-0.36	0.13
1356	2	0.64	0.41
1357	2	0.64	0.41
1358	1	-0.36	0.13
1359	2	0.64	0.41
1360	1	-0.36	0.13
1361	2	0.64	0.41
1362	1	-0.36	0.13
1363	1	-0.36	0.13
1364	2	0.64	0.41
1365	2	0.64	0.41
1366	2	0.64	0.41
1367	2	0.64	0.41
1368	1	-0.36	0.13
1369	2	0.64	0.41
1370	1	-0.36	0.13
1371	2	0.64	0.41
1372	2	0.64	0.41
1373	1	-0.36	0.13
1374	2	0.64	0.41
1375	2	0.64	0.41
1376	1	-0.36	0.13
1377	2	0.64	0.41
1378	2	0.64	0.41
1379	1	-0.36	0.13
1380	1	-0.36	0.13
1381	2	0.64	0.41
1382	1	-0.36	0.13
1383	2	0.64	0.41
1384	2	0.64	0.41
1385	2	0.64	0.41
1386	1	-0.36	0.13
1387	2	0.64	0.41
1388	2	0.64	0.41
1389	2	0.64	0.41
1390	1	-0.36	0.13
1391	1	-0.36	0.13
1392	2	0.64	0.41
1393	2	0.64	0.41
1394	2	0.64	0.41
1395	2	0.64	0.41
1396	2	0.64	0.41
1397	2	0.64	0.41
1398	2	0.64	0.41
1399	2	0.64	0.41
1400	1	-0.36	0.13
	82		15.52
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
1401	1	-0.36	0.13
1402	2	0.64	0.41
1403	1	-0.36	0.13
1404	2	0.64	0.41
1405	1	-0.36	0.13
1406	1	-0.36	0.13
1407	2	0.64	0.41
1408	2	0.64	0.41
1409	1	-0.36	0.13
1410	2	0.64	0.41
1411	2	0.64	0.41
1412	1	-0.36	0.13
1413	1	-0.36	0.13
1414	2	0.64	0.41
1415	2	0.64	0.41
1416	1	-0.36	0.13
1417	1	-0.36	0.13
1418	1	-0.36	0.13
1419	2	0.64	0.41
1420	1	-0.36	0.13
1421	2	0.64	0.41
1422	2	0.64	0.41
1423	2	0.64	0.41
1424	2	0.64	0.41
1425	2	0.64	0.41
1426	1	-0.36	0.13
1427	1	-0.36	0.13
1428	1	-0.36	0.13
1429	2	0.64	0.41
1430	2	0.64	0.41
1431	1	-0.36	0.13
1432	1	-0.36	0.13
1433	1	-0.36	0.13
1434	2	0.64	0.41
1435	2	0.64	0.41
1436	2	0.64	0.41
1437	1	-0.36	0.13
1438	2	0.64	0.41
1439	1	-0.36	0.13
1440	2	0.64	0.41
1441	2	0.64	0.41
1442	1	-0.36	0.13
1443	2	0.64	0.41
1444	2	0.64	0.41
1445	2	0.64	0.41
1446	1	-0.36	0.13
1447	1	-0.36	0.13
1448	1	-0.36	0.13
1449	1	-0.36	0.13
1450	1	-0.36	0.13
	75		13.52
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
1451	1	-0.36	0.13
1452	1	-0.36	0.13
1453	1	-0.36	0.13
1454	2	0.64	0.41
1455	2	0.64	0.41
1456	2	0.64	0.41
1457	2	0.64	0.41
1458	2	0.64	0.41
1459	2	0.64	0.41
1460	2	0.64	0.41
1461	2	0.64	0.41
1462	1	-0.36	0.13
1463	1	-0.36	0.13
1464	2	0.64	0.41
1465	1	-0.36	0.13
1466	2	0.64	0.41
1467	1	-0.36	0.13
1468	2	0.64	0.41
1469	1	-0.36	0.13
1470	1	-0.36	0.13
1471	1	-0.36	0.13
1472	2	0.64	0.41
1473	2	0.64	0.41
1474	2	0.64	0.41
1475	1	-0.36	0.13
1476	2	0.64	0.41
1477	1	-0.36	0.13
1478	1	-0.36	0.13
1479	1	-0.36	0.13
1480	1	-0.36	0.13
1481	1	-0.36	0.13
1482	2	0.64	0.41
1483	2	0.64	0.41
1484	1	-0.36	0.13
1485	2	0.64	0.41
1486	2	0.64	0.41
1487	2	0.64	0.41
1488	2	0.64	0.41
1489	1	-0.36	0.13
1490	2	0.64	0.41
1491	2	0.64	0.41
1492	1	-0.36	0.13
1493	1	-0.36	0.13
1494	2	0.64	0.41
1495	1	-0.36	0.13
1496	2	0.64	0.41
1497	1	-0.36	0.13
1498	1	-0.36	0.13
1499	2	0.64	0.41
1500	1	-0.36	0.13
	76		13.81
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
1501	2	0.64	0.41
1502	2	0.64	0.41
1503	2	0.64	0.41
1504	1	-0.36	0.13
1505	1	-0.36	0.13
1506	1	-0.36	0.13
1507	1	-0.36	0.13
1508	1	-0.36	0.13
1509	1	-0.36	0.13
1510	1	-0.36	0.13
1511	1	-0.36	0.13
1512	1	-0.36	0.13
1513	1	-0.36	0.13
1514	2	0.64	0.41
1515	1	-0.36	0.13
1516	1	-0.36	0.13
1517	2	0.64	0.41
1518	1	-0.36	0.13
1519	2	0.64	0.41
1520	1	-0.36	0.13
1521	1	-0.36	0.13
1522	1	-0.36	0.13
1523	1	-0.36	0.13
1524	1	-0.36	0.13
1525	1	-0.36	0.13
1526	2	0.64	0.41
1527	2	0.64	0.41
1528	1	-0.36	0.13
1529	1	-0.36	0.13
1530	1	-0.36	0.13
1531	1	-0.36	0.13
1532	1	-0.36	0.13
1533	2	0.64	0.41
1534	1	-0.36	0.13
1535	2	0.64	0.41
1536	1	-0.36	0.13
1537	1	-0.36	0.13
1538	1	-0.36	0.13
1539	1	-0.36	0.13
1540	1	-0.36	0.13
1541	1	-0.36	0.13
1542	1	-0.36	0.13
1543	1	-0.36	0.13
1544	2	0.64	0.41
1545	2	0.64	0.41
1546	1	-0.36	0.13
1547	1	-0.36	0.13
1548	1	-0.36	0.13
1549	1	-0.36	0.13
1550	1	-0.36	0.13
	62		9.80
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
1551	1	-0.36	0.13
1552	1	-0.36	0.13
1553	2	0.64	0.41
1554	2	0.64	0.41
1555	1	-0.36	0.13
1556	1	-0.36	0.13
1557	2	0.64	0.41
1558	1	-0.36	0.13
1559	2	0.64	0.41
1560	1	-0.36	0.13
1561	2	0.64	0.41
1562	1	-0.36	0.13
1563	1	-0.36	0.13
1564	1	-0.36	0.13
1565	1	-0.36	0.13
1566	2	0.64	0.41
1567	1	-0.36	0.13
1568	1	-0.36	0.13
1569	1	-0.36	0.13
1570	1	-0.36	0.13
1571	2	0.64	0.41
1572	1	-0.36	0.13
1573	1	-0.36	0.13
1574	2	0.64	0.41
1575	2	0.64	0.41
1576	1	-0.36	0.13
1577	2	0.64	0.41
1578	1	-0.36	0.13
1579	1	-0.36	0.13
1580	1	-0.36	0.13
1581	1	-0.36	0.13
1582	1	-0.36	0.13
1583	1	-0.36	0.13
1584	1	-0.36	0.13
1585	1	-0.36	0.13
1586	1	-0.36	0.13
1587	1	-0.36	0.13
1588	1	-0.36	0.13
1589	1	-0.36	0.13
1590	2	0.64	0.41
1591	1	-0.36	0.13
1592	1	-0.36	0.13
1593	1	-0.36	0.13
1594	1	-0.36	0.13
1595	1	-0.36	0.13
1596	1	-0.36	0.13
1597	1	-0.36	0.13
1598	1	-0.36	0.13
1599	1	-0.36	0.13
1600	1	-0.36	0.13
	61		9.52
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
1601	2	0.58	0.34
1602	1	-0.42	0.17
1603	2	0.58	0.34
1604	1	-0.42	0.17
1605	1	-0.42	0.17
1606	1	-0.42	0.17
1607	1	-0.42	0.17
1608	2	0.58	0.34
1609	1	-0.42	0.17
1610	1	-0.42	0.17
1611	1	-0.42	0.17
1612	1	-0.42	0.17
1613	1	-0.42	0.17
1614	2	0.58	0.34
1615	1	-0.42	0.17
1616	1	-0.42	0.17
1617	1	-0.42	0.17
1618	1	-0.42	0.17
1619	1	-0.42	0.17
1620	1	-0.42	0.17
1621	1	-0.42	0.17
1622	1	-0.42	0.17
1623	1	-0.42	0.17
1624	1	-0.42	0.17
1625	1	-0.42	0.17
1626	2	0.58	0.34
1627	2	0.58	0.34
1628	2	0.58	0.34
1629	1	-0.42	0.17
1630	1	-0.42	0.17
1631	1	-0.42	0.17
1632	1	-0.42	0.17
1633	1	-0.42	0.17
1634	1	-0.42	0.17
1635	1	-0.42	0.17
1636	2	0.58	0.34
1637	2	0.58	0.34
1638	1	-0.42	0.17
1639	1	-0.42	0.17
1640	1	-0.42	0.17
1641	1	-0.42	0.17
1642	1	-0.42	0.17
1643	1	-0.42	0.17
1644	1	-0.42	0.17
1645	1	-0.42	0.17
1646	1	-0.42	0.17
1647	1	-0.42	0.17
1648	1	-0.42	0.17
1649	1	-0.42	0.17
1650	1	-0.42	0.17
	59		10.15
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
1651	2	0.58	0.34
1652	2	0.58	0.34
1653	2	0.58	0.34
1654	2	0.58	0.34
1655	3	1.58	2.51
1656	1	-0.42	0.17
1657	1	-0.42	0.17
1658	2	0.58	0.34
1659	2	0.58	0.34
1660	1	-0.42	0.17
1661	2	0.58	0.34
1662	2	0.58	0.34
1663	1	-0.42	0.17
1664	1	-0.42	0.17
1665	2	0.58	0.34
1666	2	0.58	0.34
1667	2	0.58	0.34
1668	2	0.58	0.34
1669	1	-0.42	0.17
1670	1	-0.42	0.17
1671	1	-0.42	0.17
1672	1	-0.42	0.17
1673	2	0.58	0.34
1674	2	0.58	0.34
1675	1	-0.42	0.17
1676	2	0.58	0.34
1677	1	-0.42	0.17
1678	1	-0.42	0.17
1679	2	0.58	0.34
1680	2	0.58	0.34
1681	1	-0.42	0.17
1682	2	0.58	0.34
1683	2	0.58	0.34
1684	2	0.58	0.34
1685	2	0.58	0.34
1686	1	-0.42	0.17
1687	2	0.58	0.34
1688	2	0.58	0.34
1689	2	0.58	0.34
1690	2	0.58	0.34
1691	1	-0.42	0.17
1692	2	0.58	0.34
1693	1	-0.42	0.17
1694	1	-0.42	0.17
1695	1	-0.42	0.17
1696	1	-0.42	0.17
1697	2	0.58	0.34
1698	2	0.58	0.34
1699	1	-0.42	0.17
1700	2	0.58	0.34
	81		15.87
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
1701	2	0.64	0.41
1702	1	-0.36	0.13
1703	2	0.64	0.41
1704	1	-0.36	0.13
1705	2	0.64	0.41
1706	2	0.64	0.41
1707	1	-0.36	0.13
1708	2	0.64	0.41
1709	2	0.64	0.41
1710	2	0.64	0.41
1711	2	0.64	0.41
1712	2	0.64	0.41
1713	1	-0.36	0.13
1714	2	0.64	0.41
1715	1	-0.36	0.13
1716	1	-0.36	0.13
1717	2	0.64	0.41
1718	2	0.64	0.41
1719	2	0.64	0.41
1720	2	0.64	0.41
1721	2	0.64	0.41
1722	2	0.64	0.41
1723	2	0.64	0.41
1724	2	0.64	0.41
1725	2	0.64	0.41
1726	2	0.64	0.41
1727	1	-0.36	0.13
1728	1	-0.36	0.13
1729	1	-0.36	0.13
1730	1	-0.36	0.13
1731	1	-0.36	0.13
1732	2	0.64	0.41
1733	1	-0.36	0.13
1734	1	-0.36	0.13
1735	1	-0.36	0.13
1736	2	0.64	0.41
1737	2	0.64	0.41
1738	2	0.64	0.41
1739	2	0.64	0.41
1740	2	0.64	0.41
1741	1	-0.36	0.13
1742	2	0.64	0.41
1743	1	-0.36	0.13
1744	1	-0.36	0.13
1745	1	-0.36	0.13
1746	1	-0.36	0.13
1747	1	-0.36	0.13
1748	2	0.64	0.41
1749	2	0.64	0.41
1750	2	0.64	0.41
	80		14.95
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
1751	2	0.64	0.41
1752	2	0.64	0.41
1753	2	0.64	0.41
1754	2	0.64	0.41
1755	2	0.64	0.41
1756	1	-0.36	0.13
1757	1	-0.36	0.13
1758	2	0.64	0.41
1759	1	-0.36	0.13
1760	1	-0.36	0.13
1761	1	-0.36	0.13
1762	2	0.64	0.41
1763	2	0.64	0.41
1764	1	-0.36	0.13
1765	1	-0.36	0.13
1766	2	0.64	0.41
1767	1	-0.36	0.13
1768	1	-0.36	0.13
1769	2	0.64	0.41
1770	1	-0.36	0.13
1771	1	-0.36	0.13
1772	1	-0.36	0.13
1773	1	-0.36	0.13
1774	1	-0.36	0.13
1775	1	-0.36	0.13
1776	2	0.64	0.41
1777	1	-0.36	0.13
1778	2	0.64	0.41
1779	2	0.64	0.41
1780	2	0.64	0.41
1781	2	0.64	0.41
1782	2	0.64	0.41
1783	1	-0.36	0.13
1784	2	0.64	0.41
1785	2	0.64	0.41
1786	1	-0.36	0.13
1787	1	-0.36	0.13
1788	2	0.64	0.41
1789	1	-0.36	0.13
1790	2	0.64	0.41
1791	1	-0.36	0.13
1792	1	-0.36	0.13
1793	1	-0.36	0.13
1794	1	-0.36	0.13
1795	1	-0.36	0.13
1796	1	-0.36	0.13
1797	1	-0.36	0.13
1798	1	-0.36	0.13
1799	1	-0.36	0.13
1800	1	-0.36	0.13
	70		12.09
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
1801	1	-0.39	0.15
1802	1	-0.39	0.15
1803	1	-0.39	0.15
1804	1	-0.39	0.15
1805	1	-0.39	0.15
1806	1	-0.39	0.15
1807	1	-0.39	0.15
1808	1	-0.39	0.15
1809	2	0.61	0.37
1810	1	-0.39	0.15
1811	1	-0.39	0.15
1812	1	-0.39	0.15
1813	1	-0.39	0.15
1814	1	-0.39	0.15
1815	1	-0.39	0.15
1816	1	-0.39	0.15
1817	1	-0.39	0.15
1818	1	-0.39	0.15
1819	2	0.61	0.37
1820	1	-0.39	0.15
1821	2	0.61	0.37
1822	1	-0.39	0.15
1823	1	-0.39	0.15
1824	1	-0.39	0.15
1825	1	-0.39	0.15
1826	2	0.61	0.37
1827	1	-0.39	0.15
1828	2	0.61	0.37
1829	1	-0.39	0.15
1830	1	-0.39	0.15
1831	2	0.61	0.37
1832	1	-0.39	0.15
1833	1	-0.39	0.15
1834	1	-0.39	0.15
1835	1	-0.39	0.15
1836	1	-0.39	0.15
1837	2	0.61	0.37
1838	1	-0.39	0.15
1839	1	-0.39	0.15
1840	1	-0.39	0.15
1841	1	-0.39	0.15
1842	1	-0.39	0.15
1843	1	-0.39	0.15
1844	1	-0.39	0.15
1845	1	-0.39	0.15
1846	2	0.61	0.37
1847	2	0.61	0.37
1848	2	0.61	0.37
1849	1	-0.39	0.15
1850	1	-0.39	0.15
	60		9.80
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
1851	2	0.61	0.37
1852	1	-0.39	0.15
1853	2	0.61	0.37
1854	2	0.61	0.37
1855	1	-0.39	0.15
1856	1	-0.39	0.15
1857	1	-0.39	0.15
1858	1	-0.39	0.15
1859	1	-0.39	0.15
1860	2	0.61	0.37
1861	1	-0.39	0.15
1862	1	-0.39	0.15
1863	1	-0.39	0.15
1864	1	-0.39	0.15
1865	1	-0.39	0.15
1866	1	-0.39	0.15
1867	1	-0.39	0.15
1868	1	-0.39	0.15
1869	1	-0.39	0.15
1870	2	0.61	0.37
1871	2	0.61	0.37
1872	2	0.61	0.37
1873	1	-0.39	0.15
1874	2	0.61	0.37
1875	1	-0.39	0.15
1876	2	0.61	0.37
1877	1	-0.39	0.15
1878	1	-0.39	0.15
1879	2	0.61	0.37
1880	1	-0.39	0.15
1881	1	-0.39	0.15
1882	1	-0.39	0.15
1883	1	-0.39	0.15
1884	1	-0.39	0.15
1885	1	-0.39	0.15
1886	2	0.61	0.37
1887	1	-0.39	0.15
1888	1	-0.39	0.15
1889	2	0.61	0.37
1890	2	0.61	0.37
1891	2	0.61	0.37
1892	2	0.61	0.37
1893	2	0.61	0.37
1894	1	-0.39	0.15
1895	1	-0.39	0.15
1896	1	-0.39	0.15
1897	2	0.61	0.37
1898	2	0.61	0.37
1899	1	-0.39	0.15
1900	1	-0.39	0.15
	68		11.56
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
1901	2	0.61	0.37
1902	1	-0.39	0.15
1903	1	-0.39	0.15
1904	1	-0.39	0.15
1905	1	-0.39	0.15
1906	1	-0.39	0.15
1907	1	-0.39	0.15
1908	1	-0.39	0.15
1909	1	-0.39	0.15
1910	1	-0.39	0.15
1911	1	-0.39	0.15
1912	2	0.61	0.37
1913	2	0.61	0.37
1914	1	-0.39	0.15
1915	2	0.61	0.37
1916	2	0.61	0.37
1917	2	0.61	0.37
1918	2	0.61	0.37
1919	1	-0.39	0.15
1920	1	-0.39	0.15
1921	1	-0.39	0.15
1922	2	0.61	0.37
1923	2	0.61	0.37
1924	2	0.61	0.37
1925	2	0.61	0.37
1926	1	-0.39	0.15
1927	1	-0.39	0.15
1928	1	-0.39	0.15
1929	2	0.61	0.37
1930	1	-0.39	0.15
1931	2	0.61	0.37
1932	2	0.61	0.37
1933	1	-0.39	0.15
1934	1	-0.39	0.15
1935	2	0.61	0.37
1936	1	-0.39	0.15
1937	1	-0.39	0.15
1938	2	0.61	0.37
1939	1	-0.39	0.15
1940	2	0.61	0.37
1941	2	0.61	0.37
1942	2	0.61	0.37
1943	2	0.61	0.37
1944	2	0.61	0.37
1945	2	0.61	0.37
1946	2	0.61	0.37
1947	2	0.61	0.37
1948	1	-0.39	0.15
1949	1	-0.39	0.15
1950	2	0.61	0.37
	75		13.11
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
1951	2	0.61	0.37
1952	2	0.61	0.37
1953	2	0.61	0.37
1954	2	0.61	0.37
1955	2	0.61	0.37
1956	1	-0.39	0.15
1957	1	-0.39	0.15
1958	1	-0.39	0.15
1959	1	-0.39	0.15
1960	1	-0.39	0.15
1961	2	0.61	0.37
1962	2	0.61	0.37
1963	2	0.61	0.37
1964	1	-0.39	0.15
1965	1	-0.39	0.15
1966	1	-0.39	0.15
1967	2	0.61	0.37
1968	1	-0.39	0.15
1969	1	-0.39	0.15
1970	2	0.61	0.37
1971	2	0.61	0.37
1972	1	-0.39	0.15
1973	2	0.61	0.37
1974	2	0.61	0.37
1975	2	0.61	0.37
1976	2	0.61	0.37
1977	1	-0.39	0.15
1978	1	-0.39	0.15
1979	2	0.61	0.37
1980	2	0.61	0.37
1981	1	-0.39	0.15
1982	1	-0.39	0.15
1983	2	0.61	0.37
1984	1	-0.39	0.15
1985	1	-0.39	0.15
1986	1	-0.39	0.15
1987	2	0.61	0.37
1988	1	-0.39	0.15
1989	1	-0.39	0.15
1990	2	0.61	0.37
1991	2	0.61	0.37
1992	2	0.61	0.37
1993	2	0.61	0.37
1994	1	-0.39	0.15
1995	1	-0.39	0.15
1996	1	-0.39	0.15
1997	1	-0.39	0.15
1998	1	-0.39	0.15
1999	1	-0.39	0.15
2000	2	0.61	0.37
	74		12.89
	Sum(n)		Sum(n-N) ²

CIMARRON CORPORATION - CIMARRON FACILITY
TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
2001	2	0.61	0.37
2002	2	0.61	0.37
2003	2	0.61	0.37
2004	2	0.61	0.37
2005	2	0.61	0.37
2006	2	0.61	0.37
2007	1	-0.39	0.15
2008	1	-0.39	0.15
2009	2	0.61	0.37
2010	1	-0.39	0.15
2011	1	-0.39	0.15
2012	2	0.61	0.37
2013	1	-0.39	0.15
2014	2	0.61	0.37
2015	1	-0.39	0.15
2016	1	-0.39	0.15
2017	1	-0.39	0.15
2018	2	0.61	0.37
2019	2	0.61	0.37
2020	2	0.61	0.37
2021	1	-0.39	0.15
2022	1	-0.39	0.15
2023	2	0.61	0.37
2024	2	0.61	0.37
2025	1	-0.39	0.15
2026	2	0.61	0.37
2027	2	0.61	0.37
2028	2	0.61	0.37
2029	1	-0.39	0.15
2030	2	0.61	0.37
2031	2	0.61	0.37
2032	1	-0.39	0.15
2033	1	-0.39	0.15
2034	1	-0.39	0.15
2035	2	0.61	0.37
2036	1	-0.39	0.15
2037	1	-0.39	0.15
2038	2	0.61	0.37
2039	1	-0.39	0.15
2040	1	-0.39	0.15
2041	1	-0.39	0.15
2042	1	-0.39	0.15
2043	1	-0.39	0.15
2044	1	-0.39	0.15
2045	1	-0.39	0.15
2046	1	-0.39	0.15
2047	1	-0.39	0.15
2048	2	0.61	0.37
2049	1	-0.39	0.15
2050	1	-0.39	0.15
	72		12.45
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
2051	1	-0.39	0.15
2052	1	-0.39	0.15
2053	1	-0.39	0.15
2054	1	-0.39	0.15
2055	1	-0.39	0.15
2056	1	-0.39	0.15
2057	2	0.61	0.37
2058	1	-0.39	0.15
2059	1	-0.39	0.15
2060	1	-0.39	0.15
2061	2	0.61	0.37
2062	2	0.61	0.37
2063	2	0.61	0.37
2064	1	-0.39	0.15
2065	1	-0.39	0.15
2066	1	-0.39	0.15
2067	1	-0.39	0.15
2068	1	-0.39	0.15
2069	2	0.61	0.37
2070	1	-0.39	0.15
2071	1	-0.39	0.15
2072	1	-0.39	0.15
2073	2	0.61	0.37
2074	1	-0.39	0.15
2075	2	0.61	0.37
2076	2	0.61	0.37
2077	2	0.61	0.37
2078	1	-0.39	0.15
2079	1	-0.39	0.15
2080	1	-0.39	0.15
2081	2	0.61	0.37
2082	1	-0.39	0.15
2083	1	-0.39	0.15
2084	2	0.61	0.37
2085	2	0.61	0.37
2086	1	-0.39	0.15
2087	1	-0.39	0.15
2088	1	-0.39	0.15
2089	1	-0.39	0.15
2090	1	-0.39	0.15
2091	1	-0.39	0.15
2092	2	0.61	0.37
2093	2	0.61	0.37
2094	2	0.61	0.37
2095	2	0.61	0.37
2096	1	-0.39	0.15
2097	2	0.61	0.37
2098	1	-0.39	0.15
2099	2	0.61	0.37
2100	1	-0.39	0.15
	68		11.56
	Sum(n)		Sum(n-N) ²

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TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
2101	1	-0.39	0.15
2102	1	-0.39	0.15
2103	1	-0.39	0.15
2104	1	-0.39	0.15
2105	1	-0.39	0.15
2106	1	-0.39	0.15
2107	2	0.61	0.37
2108	2	0.61	0.37
2109	2	0.61	0.37
2110	2	0.61	0.37
2111	1	-0.39	0.15
2112	2	0.61	0.37
2113	2	0.61	0.37
2114	1	-0.39	0.15
2115	1	-0.39	0.15
2116	1	-0.39	0.15
2117	1	-0.39	0.15
2118	1	-0.39	0.15
2119	1	-0.39	0.15
2120	1	-0.39	0.15
2121	1	-0.39	0.15
2122	1	-0.39	0.15
2123	1	-0.39	0.15
2124	1	-0.39	0.15
2125	2	0.61	0.37
2126	2	0.61	0.37
2127	1	-0.39	0.15
2128	2	0.61	0.37
2129	2	0.61	0.37
2130	2	0.61	0.37
2131	2	0.61	0.37
2132	2	0.61	0.37
2133	2	0.61	0.37
2134	2	0.61	0.37
2135	2	0.61	0.37
2136	2	0.61	0.37
2137	2	0.61	0.37
2138	2	0.61	0.37
2139	1	-0.39	0.15
2140	2	0.61	0.37
2141	1	-0.39	0.15
2142	2	0.61	0.37
2143	2	0.61	0.37
2144	2	0.61	0.37
2145	1	-0.39	0.15
2146	2	0.61	0.37
2147	1	-0.39	0.15
2148	1	-0.39	0.15
2149	1	-0.39	0.15
2150	1	-0.39	0.15
	74		12.89
	Sum(n)		Sum(n-N) ²

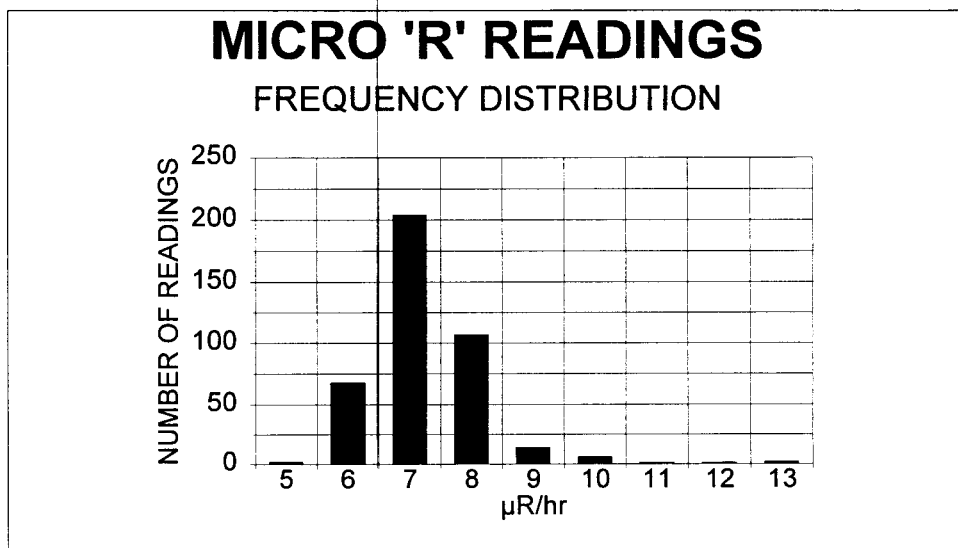
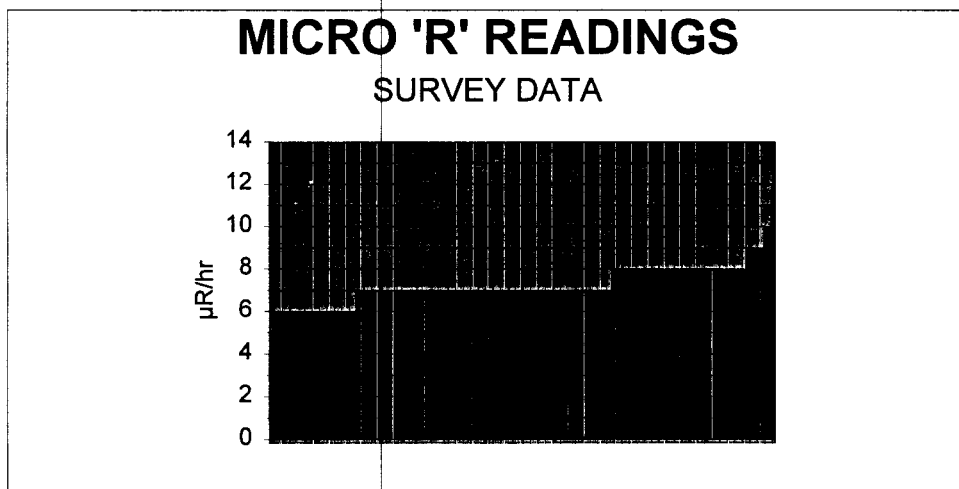
n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
2151	1	-0.39	0.15
2152	2	0.61	0.37
2153	2	0.61	0.37
2154	2	0.61	0.37
2155	2	0.61	0.37
2156	2	0.61	0.37
2157	2	0.61	0.37
2158	2	0.61	0.37
2159	1	-0.39	0.15
2160	1	-0.39	0.15
2161	1	-0.39	0.15
2162	2	0.61	0.37
2163	1	-0.39	0.15
2164	1	-0.39	0.15
2165	2	0.61	0.37
2166	2	0.61	0.37
2167	1	-0.39	0.15
2168	1	-0.39	0.15
2169	1	-0.39	0.15
2170	2	0.61	0.37
2171	2	0.61	0.37
2172	2	0.61	0.37
2173	1	-0.39	0.15
2174	2	0.61	0.37
2175	2	0.61	0.37
2176	2	0.61	0.37
2177	2	0.61	0.37
2178	2	0.61	0.37
2179	2	0.61	0.37
2180	1	-0.39	0.15
2181	1	-0.39	0.15
2182	1	-0.39	0.15
2183	1	-0.39	0.15
2184	1	-0.39	0.15
2185	1	-0.39	0.15
2186	2	0.61	0.37
2187	2	0.61	0.37
2188	1	-0.39	0.15
2189	2	0.61	0.37
2190	1	-0.39	0.15
2191	1	-0.39	0.15
2192	1	-0.39	0.15
2193	2	0.61	0.37
2194	2	0.61	0.37
2195	2	0.61	0.37
2196	2	0.61	0.37
2197	2	0.61	0.37
2198	2	0.61	0.37
2199	2	0.61	0.37
2200	1	-0.39	0.15
	79		13.99
	Sum(n)		Sum(n-N) ²

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TRUE MEAN ACTIVITY VS. GUIDELINE VALUE AT 95% CONFIDENCE
PHASE III SUB AREA " M " POST REMEDIATION SOIL SAMPLES

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
2201	2	0.61	0.37
2202	1	-0.39	0.15
2203	1	-0.39	0.15
2204	2	0.61	0.37
2205	1	-0.39	0.15
2206	1	-0.39	0.15
2207	1	-0.39	0.15
2208	2	0.61	0.37
2209	2	0.61	0.37
2210	1	-0.39	0.15
2211	2	0.61	0.37
2212	1	-0.39	0.15
2213	2	0.61	0.37
2214	2	0.61	0.37
2215	2	0.61	0.37
2216	2	0.61	0.37
2217	2	0.61	0.37
2218	2	0.61	0.37
2219	2	0.61	0.37
2220	1	-0.39	0.15
2221	1	-0.39	0.15
2222	1	-0.39	0.15
2223	2	0.61	0.37
2224	1	-0.39	0.15
2225		0.00	0.00
2226		0.00	0.00
2227		0.00	0.00
2228		0.00	0.00
2229		0.00	0.00
2230		0.00	0.00
2231		0.00	0.00
2232		0.00	0.00
2233		0.00	0.00
2234		0.00	0.00
2235		0.00	0.00
2236		0.00	0.00
2237		0.00	0.00
2238		0.00	0.00
2239		0.00	0.00
2240		0.00	0.00
2241		0.00	0.00
2242		0.00	0.00
2243		0.00	0.00
2244		0.00	0.00
2245		0.00	0.00
2246		0.00	0.00
2247		0.00	0.00
2248		0.00	0.00
2249		0.00	0.00
2250		0.00	0.00
	37		6.51
	Sum(n)		Sum(n-N) ²

n = pCi/g Th (NAT)			
Number	n	(n-N)	(n-N) ²
2251		0.00	0.00
2252		0.00	0.00
2253		0.00	0.00
2254		0.00	0.00
2255		0.00	0.00
2256		0.00	0.00
2257		0.00	0.00
2258		0.00	0.00
2259		0.00	0.00
2260		0.00	0.00
2261		0.00	0.00
2262		0.00	0.00
2263		0.00	0.00
2264		0.00	0.00
2265		0.00	0.00
2266		0.00	0.00
2267		0.00	0.00
2268		0.00	0.00
2269		0.00	0.00
2270		0.00	0.00
2271		0.00	0.00
2272		0.00	0.00
2273		0.00	0.00
2274		0.00	0.00
2275		0.00	0.00
2276		0.00	0.00
2277		0.00	0.00
2278		0.00	0.00
2279		0.00	0.00
2280		0.00	0.00
2281		0.00	0.00
2282		0.00	0.00
2283		0.00	0.00
2284		0.00	0.00
2285		0.00	0.00
2286		0.00	0.00
2287		0.00	0.00
2288		0.00	0.00
2289		0.00	0.00
2290		0.00	0.00
2291		0.00	0.00
2292		0.00	0.00
2293		0.00	0.00
2294		0.00	0.00
2295		0.00	0.00
2296		0.00	0.00
2297		0.00	0.00
2298		0.00	0.00
2299		0.00	0.00
2300		0.00	0.00
	0		0.00
	Sum(n)		Sum(n-N) ²

PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
MICRO 'R' READINGS AT SURFACE
LUDLUM MODEL 19, S/N 9081
RESULTS IN $\mu\text{R/hr}$
SEPTEMBER 1998

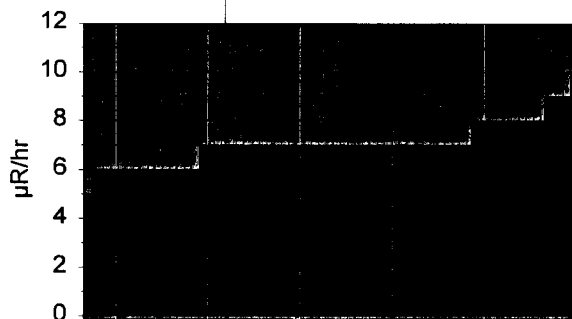


NUMBER OF READINGS	405
AVERAGE READING	7
MINIMUM READING	5
MAXIMUM READING	13
STANDARD DEVIATION	0.9

PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
MICRO 'R' READINGS AT 1 METER ABOVE SURFACE
LUDLUM MODEL 19, S/N 9081
RESULTS IN $\mu\text{R/hr}$
SEPTEMBER 1998

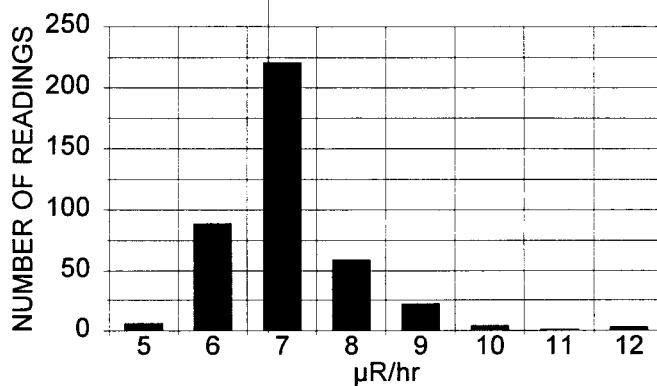
MICRO 'R' READINGS

SURVEY DATA



MICRO 'R' READINGS

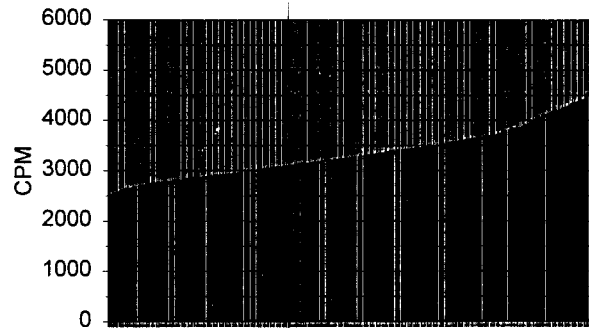
FREQUENCY DISTRIBUTION



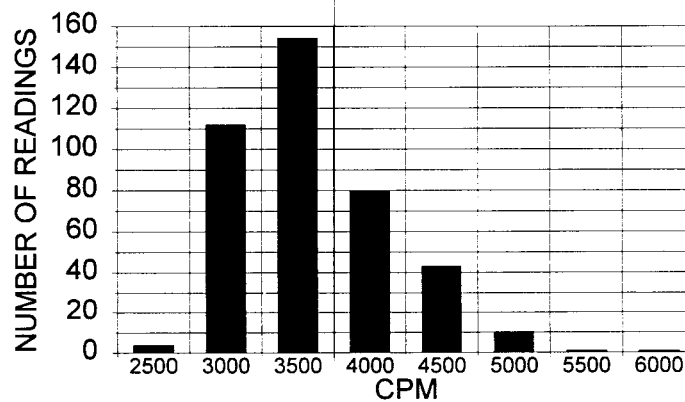
NUMBER OF READINGS	405
AVERAGE READING	7
MINIMUM READING	5
MAXIMUM READING	12
STANDARD DEVIATION	0.9

**'PHASE III, SUB-AREA "M"
POST REMEDIATION SOIL SAMPLES
GROSS GAMMA READINGS IN CPM
LUDLUM MODEL 2220, S/N 48395 & S/N 50057
BACKGROUND AVERAGE: 2500
SEPTEMBER 1998**

3" NaI DETECTOR READINGS
SURVEY DATA



3" DETECTION READINGS
FREQUENCY DISTRIBUTION



NUMBER OF READINGS	405
AVERAGE READING	3358
MINIMUM READING	2370
MAXIMUM READING	5790
STANDARD DEVIATION	531

TABLE OF CONTENTS

1.0 PURPOSE.....	1
2.0 BACKGROUND	1
2.1 Phase I Area	2
2.2 Phase II Area.....	2
2.3 Phase III Area.....	3
3.0 DECOMMISSIONING ACTIVITIES.....	3
3.1 Identification of Contaminants	3
3.2 Site Background Levels	4
3.2.1 Soils	4
3.2.2 Exposure Rate	4
3.3 Characterization Data.....	5
3.4 Environmental Monitoring Data.....	7
4.0 FINAL STATUS SURVEY PROCEDURE.....	7
4.1 Survey Method.....	7
4.1.1 Grid Areas	8
4.1.2 Survey Locations (Open Land Areas).....	8
4.1.3 Soil Sample Locations	8
4.2 Radiological Guideline Values	10
4.2.1 Equipment and Materials	10
4.2.2 Volumetric Activity of Soil	10
4.2.3 Gamma Surface Survey (Open Land Areas).....	11
4.2.4 Exposure Rate Survey (Open Land Areas).....	11
4.3 Equipment Selection	12
4.3.1 Equipment and Instrumentation.....	12
4.3.1.1 Unshielded 3" x 0.5" NaI Gamma Detector.....	13
4.3.1.2 Shielded 3" x 0.5" NaI Gamma Detector.....	13
4.3.1.3 Micro-R Meters.....	13
4.3.1.4 Soil Counter (Gamma Spectroscopy)	14
4.4 Procedures/Plans.....	15

4.4.1	Organization.....	15
4.4.2	Training.....	16
4.4.3	Radiation Protection Program.....	16
4.4.4	Cimarron Quality Assurance Program (QAP).....	16
5.0	SURVEY FINDINGS.....	17
5.1	Data Evaluation.....	18
5.2	Comparison With Guideline Values.....	18
5.3	QA/QC Procedures.....	20
6.0	SUMMARY.....	21
7.0	APPENDICES.....	22

APPENDICES

- Appendix 1 Drawing 95 MOST-RF3
- Appendix 2 Data Tabulation Sheet, Statistical Analyses, "Hot Spot"
Evaluations and Drawings

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23. USNRC letter from Mr. Ken Kalman, Project Manager, Facilities Decommissioning Section, to Mr. Jess Larsen, Vice President, Cimarron Corporation, dated August 16, 1996.
24. Cimarron Corporation letter from Mr. Jess Larsen, Vice President Cimarron Corporation, to Mr. Ken Kalman, Project Manager, Facilities Decommissioning Section, USNRC, dated September 9, 1996.
25. Cimarron Corporation letter from Mr. Jess Larsen, Vice President, Cimarron Corporation, to Mr. Ken Kalman, Project Manager, Facilities Decommissioning Section, USNRC, dated October 17, 1996.
26. Cimarron Corporation letter from Mr. Jess Larsen, Vice President Cimarron Corporation to

- Mr. Ken Kalman, Project Manager, Facilities Decommissioning Section, USNRC, dated November 4, 1996.
27. USNRC letter from Mr. Ken Kalman, Project Manager, Facilities Decommissioning Section, USNRC to Mr. Jess Larsen Vice President, Cimarron Corporation, dated November 8, 1996.
 28. Cimarron Corporation letter from Mr. Jess Larsen, Vice President, Cimarron Corporation to Mr. Ken Kalman, Project Manager, Facilities Decommissioning Section, USNRC, dated July 27, 1998.
 29. Cimarron Corporation, "Final Status Survey Report Phase III – Subarea "O" Subsurface for Cimarron Corporation's Former Nuclear Fuel Fabrication Facility, Crescent, Oklahoma", dated March 1998.
 30. Cimarron Corporation letter from Mr. Jess Larsen, Vice President, to Mr. Michael F. Weber, Chief Low-Level Waste and Decommission Projects Branch, Division of Waste Management, USNRC, dated June 21, 1995.
 31. ORAU Final Report, "Confirmatory Survey of the Cimarron Corporation Mixed Oxide Fuel Fabrication Plant", January 1991.
 32. USNRC, "Branch Technical Position on Disposal or On-site Storage of Residual Thorium and Uranium from Past Operations", FR. Vol. 46, No. 205, Page 52061, October 23, 1981.
 33. Kerr-McGee Corporation, "Decommissioning Plan – Groundwater Evaluation Report for Cimarron Corporation's Former Nuclear Fuel Fabrication Facility, Crescent, Oklahoma," July 1998.
 34. J.D. Berger, "Manual for Conducting Radiological Surveys in Support of License Termination"; Draft Report for Comment, Oak Ridge Associated Universities, NUREG/CR-5849, June 1992.
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 36. American National Standards Institute, "Radiation Protection Instrumentation Test and Calibration", ANSI N323-1978, Institute of Electrical and Electronic Engineers, Inc. September 1977.
 37. Cimarron Corporation, "Response to NRC Comments on Cimarron's Final Status Survey for Phase II, Subarea "J" for Cimarron Corporation's Former Nuclear Fuel Fabrication Facility, Crescent, Oklahoma", dated May 13, 1998.
 38. USNRC letter from Mr. Ross A. Scarano, Director Division of Nuclear Materials Safety to Mr. S. Jess Larsen, Vice President, Cimarron Corporation, dated July 31, 1997.

39. E.W. Abelquist, "Confirmatory Survey for the South Uranium Yard Remediation, Kerr-McGee Corporation, Cimarron Facility, Crescent, Oklahoma", Oak Ridge Institute for Science and Education, November 1995.
40. USNRC letter from Mr. Michael F. Weber, Chief, Low-Level Waste and Decommissioning Project Branch, Division of Waste Management to Mr. Jess Larsen, Vice President, Kerr-McGee Corporation, dated May 31, 1995.
41. USNRC letter from Mr. Ross A. Scarano, Director, Division of Nuclear Materials Safety, Region IV to Mr. S. Jess Larsen, Vice President, Cimarron Corporation, dated November 3, 1998.
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FINAL STATUS SURVEY REPORT FOR DECOMMISSIONING CIMARRON FACILITY SUBAREA M

1.0 PURPOSE

This Final Status Survey Report (FSSR) is being submitted by Cimarron Corporation to the Nuclear Regulatory Commission (NRC) for an area on the Cimarron site designated as Phase III Subarea M. This Subarea is shown on Drawing No. 95MOST-RF3, which is included in Appendix 1, and includes only affected areas that have been surveyed as part of the ongoing site decommissioning process. This report includes a discussion of the initial characterization survey performed to more precisely define the extent and magnitude of residual contamination present in soils located within Subarea M. The characterization data generated during the initial survey were utilized in designing the Final Status Survey (FSS) for this subarea which is described in the NRC approved Phase III Final Status Survey Plan (FSSP). Based upon the Phase III FSSP, the FSS was performed for the entire subarea to demonstrate that the established guideline values for unrestricted release had been met. The results of the Subarea M FSS are presented in this FSSR as justification for release of this Subarea from License SNM-928 for unrestricted use.

2.0 BACKGROUND

Cimarron Corporation, a subsidiary of Kerr-McGee Corporation, operated two plants near Crescent, Oklahoma, for the manufacture of enriched uranium and mixed oxide reactor fuels. The 840-acre Cimarron Facility site was originally licensed under two separate SNM Licenses. License SNM-928¹ was issued in 1965 for the Uranium Plant (U-Plant) and License SNM-1174² was issued in 1970 for the Mixed Oxide Fuel Fabrication (MOFF) Facility. Both facilities operated through 1975, at which time they were shut down and decommissioning work was initiated.

Decommissioning efforts at the MOFF Facility were completed in 1990 and Cimarron Corporation applied to the NRC on August 20, 1990³ to terminate License SNM-1174. After confirmatory surveys, the NRC terminated the MOFF Facility License, SNM-1174, on February 5, 1993⁴.

Decommissioning efforts at the Cimarron U-Plant facility involving characterization, decontamination and remediation were initiated in 1976 and are nearing completion. The goal of the decommissioning effort is to release the entire 840-acre site for unrestricted use.

Based upon historic knowledge of site operations and the characterization work completed to date, Cimarron Corporation completed and submitted the 1994 Cimarron Radiological Characterization Report⁵ to the NRC. As discussed in that report, the site was divided into affected and unaffected areas. The affected and unaffected areas are shown on Drawing No. 95MOST-RF3 which is included in Appendix 1. For the final status survey the entire 840-acre site was divided into three major areas containing both affected and unaffected areas. Each of these three major areas are shown on Drawing No. 95MOST-RF3 and are designated by Roman Numerals I, II, and III (herein referenced as Phases I, II, and III). These three major areas were

then further subdivided into smaller "subareas" (i.e., A, B, C, D, etc.). The Phase I, II and III FSSP's have been approved by the NRC and are discussed briefly below:

2.1 Phase I Area

As presented in the Cimarron Decommissioning Plan⁶, the FSSP's (Phases I, II and III) were discussed in general terms, with the understanding that each of these three phases would be submitted to the NRC under separate cover for approval. The FSSP for the first of these three phases (Phase I⁷) was approved by the NRC by letter dated May 1, 1995⁸. By letter dated November 13, 1995⁹, Cimarron modified the southern boundary of two Phase I areas (i.e., Subareas C and E) and placed these portions of Subareas C and E into Phase II Subareas G and H. The Phase I FSSR¹⁰ was submitted to the NRC and confirmatory sampling for the Phase I Subarea was completed by the Oak Ridge Institute for Science and Education (ORISE). Cimarron Corporation received Amendment #13 which released all of the Phase I areas from License SNM-928; the amendment was forwarded to Cimarron by NRC letter dated April 23, 1996¹¹. This amendment reduced the licensed facility acreage from 840 to approximately 152 acres.

2.2 Phase II Area

The area designated as Phase II on Drawing No. 95MOST-RF3 contains both affected and some contiguous unaffected areas and represents approximately 122 of the remaining licensed 152-acres. The Phase II FSSP was submitted to the NRC in July 1995¹² and approved on March 14, 1997¹³. Phase II includes Subareas F, G, H, I and J. Included within Phase II is Burial Area #1 which was released in December 1992 by the NRC¹⁴, subsequently backfilled with clean soil, and then seeded. Also included in Phase II are the East and West Sanitary Lagoons, the MOFF Plant Building exterior and yard area, the Emergency Building, the Warehouse Building (Building #4) and surrounding yard, and numerous drainage areas. Cimarron has essentially completed all remediation in each of the Phase II Subareas and final status surveys are currently being completed.

The FSSR for Subarea J was the first Phase II Subarea to be submitted to the NRC for license release; it was submitted in September 1997¹⁵. Subarea J is West of Highway #74, and represents approximately 7 of the 122 acres in Phase II. The FSSR for Subarea J has been approved by the NRC¹⁶, and a confirmatory survey was performed by NRC staff during their site visit of September 21-23, 1998. By NRC letter dated December 4, 1998¹⁷, Cimarron was informed that NRC staff will approve the release of Subarea J as part of the license amendment incorporating Cimarron's decommissioning plan.

Subarea H is the second subarea included within Phase II where final status surveys have been completed. As discussed above, the East and West Sanitary Lagoons are included within Subarea H, which includes approximately 38.5 acres. The FSSR for Subarea H was submitted to the NRC on November 16, 1998¹⁸.

Also included in Phase II is the concrete previously surveyed for release and placed in a drainage way located within Subarea F. This concrete has been surveyed, with the results reported in the FSSR¹⁹ for the Concrete Rubble located in Subarea F. This FSSR was

submitted to the NRC in March 1998. Final Status Survey Reports for Subareas F, G, and I are pending.

2.3 Phase III Area

The area designated as Phase III on Drawing No. 95MOST-RF3 contains only affected and represents approximately 30 acres of the remaining licensed 152 acres. This area is designated as Phase III on Drawing No. 95MOST-RF3. The FSSP for release of this area from the site license, was submitted to the NRC for approval in June 1997²⁰. Phase III includes the former Uranium Processing buildings and yard area, Burial Areas #2 and #3, New Sanitary Lagoon, the NRC approved BTP Option 2 On-site Disposal Cell (Burial Area #4), and the Five Former Waste Water Ponds, consisting of Uranium Waste Ponds #1 and #2, the Plutonium Waste Pond, the Uranium Emergency Pond, and the Plutonium Emergency Pond. By letter dated September 11, 1998²¹, the NRC approved the Phase III Final Status Survey Plan.

The FSSR for Subarea L (subsurface) was the first Phase III FSS to be submitted to the NRC. The Subarea L FSSR (subsurface) was submitted to the NRC on May 29, 1996²². The NRC, by letter dated August 16, 1996²³, sent Cimarron comments concerning the Subarea L FSSR. Cimarron responded to the NRC comments by letters dated September 9, 1996²⁴ and October 17, 1996²⁵. Additionally, in order to resolve the NRC staff concerns pertaining to the potential presence of subsurface contamination, additional subsurface soil samples were collected for analysis within Subarea L. Cimarron provided the results for this additional subsurface sampling event to the NRC by letter dated November 4, 1996²⁶. Based upon the NRC staff review of these submittals and the additional subsurface sampling data, Cimarron's request to backfill Subarea L was approved by NRC letter dated November 8, 1996²⁷. Subarea L has been backfilled and contoured. Subsequently, the FSS for the Subarea L surface soils was completed and the Report was submitted to the NRC on July 27, 1998²⁸. Additionally, the FSSR for Subarea O (subsurface)²⁹ was submitted to the NRC in March 1998. The next subarea to be addressed by Cimarron personnel is Subarea M, which is shown on Drawing No. 95MOST-RF3 and represents approximately 2.5 acres. The Subarea M FSS has been completed and the results are presented in this Report. Final survey reports for Subareas K, N and O (surface) are pending.

3.0 DECOMMISSIONING ACTIVITIES

The purpose of this section is to discuss briefly the status of the site decommissioning activities for Subarea M and to present the radiological criteria and guideline values utilized throughout the remediation and final status survey. Also included in this section is a brief discussion of the results of the characterization and/or remediation work performed in Subarea M.

3.1 Identification of Contaminants

Based upon the knowledge of past site operations, the results of numerous characterization efforts to date, and other independent characterization efforts by regulatory agencies and their respective subcontractors, the radiological contaminants on

the Cimarron site have been determined to consist of U-234, U-235 and U-238, with an average enrichment above the naturally occurring level of approximately 2.7 weight percent. Thorium, although not considered the primary contaminant of concern for this subarea, has been included in the soil and sediment analyses and reported on the data summary sheets along with the total uranium sample results.

3.2 Site Background Levels

3.2.1 Soils

Natural background levels for uranium in soil have been established through numerous measurements by Cimarron personnel utilizing the on-site soil counter and through independent regulatory review and laboratory analysis. Analytical results from Cimarron Corporation's environmental sampling program are reported to the NRC annually in Environmental Monitoring Reports. These reports include results for soil samples collected from numerous off-site locations which are representative of background in surrounding soils.

Cimarron personnel collected and analyzed 30 surface soil samples from the perimeter of the Cimarron site during the first quarter of 1995 to further validate background levels. Total uranium ranged from 2.3 pCi/g to 6.6 pCi/g, with the average being 4.0 ± 2.6 (2σ) pCi/g. These values were obtained using the Cimarron on-site soil counter. This on-site soil counter is calibrated to assume an enrichment of 2.7 weight percent as this is the average uranium enrichment found throughout the site. When a correction factor (0.67/1.5) is applied to these results to convert the values from an assumed 2.7 weight percent enrichment to a natural enrichment, the converted results ranged from 1.0 pCi/g to 2.9 pCi/g with an average of 1.8 ± 1.0 (2σ) pCi/g total uranium. Based upon these results, the average value of 4 pCi/g total uranium for background was adopted³⁰ and applied when the on-site soil counter sample analytical results were compared to guideline values.

3.2.2 Exposure Rate

Background exposure rates have been established at the Cimarron site by taking micro-R readings and pressurized ion chamber (PIC) readings at off-site sample locations in addition to Cimarron site areas which are unaffected by past operations. Exposure rates of approximately 7 to 10 μ R/h have been observed in background areas by Cimarron personnel utilizing Ludlum micro-R survey meters. In addition, site background exposure rates were measured by ORAU (now ORISE) personnel utilizing a PIC³¹, and were determined to be 9 to 10 μ R/h. Based on the PIC measurements performed by ORISE, the site background was determined to be approximately 10 μ R/h. Thus, depending upon instrumentation utilized, the background exposure rate at the Cimarron site ranges from 7 to 10 μ R/h.

Cimarron personnel performed exposure rate measurements at background locations along the site boundary in 1995 using a Micro-R meter. Confirmatory measurements

were obtained at the same locations in 1997 using a Reuter-Stokes PIC. These data are tabulated below in Table 3.1. The average background as measured using the micro-R meter was 7.6 $\mu\text{R/h}$, and is about 15 percent less than the average for the PIC measurements of 9.0 $\mu\text{R/h}$. Cimarron has used 7 $\mu\text{R/h}$ as representative of the average background exposure rate for micro-R measurements. Recently, Cimarron began sending their micro-R-meters off-site for calibration by the manufacturer. With this change in calibration procedure, measurements at background locations were taken for comparison to the PIC. This data also is presented in Table 3.1 and illustrates an increase in the average measured background of approximately 2 $\mu\text{R/h}$. Based upon this data, Cimarron will now use 9 $\mu\text{R/h}$ as representative of background exposure rates for micro-R measurements taken with the off-site calibrated meters. Table 3.1 demonstrates good agreement between the micro-R measurements and the PIC measurements.

TABLE 3.1				
Sample ID No.	Grid Location	Micro-R Reading ($\mu\text{R/h}$)	PIC Reading ($\mu\text{R/h}$)	Micro-R Reading $\mu\text{R/h}^*$
UAF-BKG-1	819W-81N	9	9.8	10
UAF-BKG-7	1600E-120N	7	7.6	7.5
UAF-BKG-11	840W-700S	8	9.5	10
UAF-BKG-13	840W-288S	9	9.8	10.5
UAF-BKG-16	808W-282N	8	9.7	9.5
UAF-BKG-19	640W-700S	9	10.5	11
UAF-BKG-23	1610E-300S	5	7.8	7.5
UAF-BKG-25	1610E-69N	6	7.6	8
UAF-BKG-27	1610E-469N	7	7.8	8.5
UAF-BKG-28	1610E-634N	8	9.6	9.5
AVERAGE		$7.6 \pm 2.7 (2\sigma)$	$9.0 \pm 2.3 (2\sigma)$	$9.2 \pm 2.8 (2\sigma)$

*Background survey results taken with instruments now calibrated off-site by manufacturer.

3.3 Characterization Data

Throughout the decommissioning process at the Cimarron site, a survey unit was characterized, remediated (if required), and then a final status survey was performed. The description of the decommissioning activities and final status survey data were then submitted to the NRC for review and approval (i.e., FSSR). After review of the final status survey report, the NRC either released the unit or contracted with Oak Ridge Institute for Science and Education (ORISE was previously ORAU) to perform a confirmatory survey. Based upon the ORISE confirmatory survey (if requested by the NRC), the NRC would either release the unit or require additional characterization and/or remediation.

Subarea M includes former Burial Area #3, the incinerator location, and the small contiguous areas north and south of Burial Area #3. Burial Area #3 was originally constructed for disposal of non-radioactive solid waste materials. However, the 1990 characterization survey, which included a soil sampling program and gamma survey

completed within these areas, indicated that a small amount of radioactive waste material was present in the buried waste. As discussed in the next paragraph, the initial 1990 survey led to a more in-depth characterization of Subarea M Burial Area #3, removal of radioactive waste materials, and the need for additional characterization of this area in the future.

The soil sampling that was performed in 1990 on a 10 m x 10 m grid included Burial Area #3. This sampling was performed to a depth of 4 feet. The results of the sampling showed five locations exceeding the BTP³² Option #1 guideline value of 30 pCi/g total uranium above background. In March 1992, a 5 m x 5 m grid was established for this area and additional soil samples were collected (this included grid intersects not previously sampled) at depths from 0 to 6 feet. The soil samples were analyzed for total uranium and thorium; the second round of sampling showed several additional areas where soil uranium concentrations exceeded the BTP Option #1 limit of 30 pCi/g total uranium. Finally, a random soil sampling program consisting of 30 samples was conducted in this area to supplement the existing data. This round of sampling also showed soil samples exceeding the BTP Option #1 limit of 30 pCi/g total uranium. The soil analytical data for the two sampling events were presented in Section 9.0 of the Characterization Report⁵.

Also later in 1992, an investigative trench was constructed across the former Burial Area #3 and two investigation holes were constructed to further characterize the width of the impacted area and the types of debris present. These investigations uncovered several drums of resin that showed residual concentrations of total uranium up to approximately 5,000 pCi/g. A small percentage of recovered scrap metal and debris also showed the presence of residual contamination. Remediation at selected locations within Burial Area #3 was completed with the removal of approximately 100 ft³ of LLRW which was packaged for disposal off-site.

Further investigations in 1993 and 1994, uncovered several locations with soil concentrations of total uranium ranging up to 1,500 pCi/g, which were subsequently remediated. Additional sampling throughout former Burial Area #3 was complicated by the presence of metal and trash. Therefore, in 1996 the decision was made to excavate and separate from the burial area, soil and debris containing elevated concentrations of total uranium. In June 1996, remediation began at the north end of Burial Area #3 with the construction of a 10 foot wide trench located just beyond the outer bounds of the trench area. By working from west to east across the trench face and from north to south along the length of the former trench area, removal of contaminated soils, debris and scrap was undertaken.

Efforts were made to separate BTP Option #2 soils, Option #4 soils and metal/debris from the excavated backfill soils. BTP Option #2 soils were stockpiled for placement in the on-site disposal cell, Option #4 soils were transported to the soil stockpile located within the former Uranium Plant Yard (U-Yard), and the metal/debris was stockpiled in the U-Yard for possible separation sometime in the future. Subsequently, the decision was made to ship the entire stockpile of metal and debris off-site to a LLRW disposal

facility. A total of 40 drums and 41 inter-modal containers totaling approximately 13,500 ft³ of Option #4 soil and waste was packaged and shipped off-site to a LLRW facility.

The soils remaining in the trench area were subsequently graded and FSS soil sampling was performed in 1996 to a depth of 0 to 6 feet (or rock) with samples collected at one foot intervals. The soil sample analytical and survey results are discussed in Section 5.0.

The trash incinerator was utilized for the incineration of non-radioactive materials released for unconditional use from restricted areas during site operations. It was located just south of Burial Area #3. Due to significant concentrations of materials caused by incineration, uranium concentrations above BTP Option #1 levels were present in the ash. The ash materials were surveyed, and placed in drums and shipped off-site to a commercial LLRW disposal facility in 1992. The concentration of total uranium in the incinerator ash ranged up to 130 pCi/g. The incinerator was dismantled in 1992. The fire brick and other internals were surveyed for alpha and beta/gamma during the disassembly process. After dismantlement of the incinerator, five soil samples were taken from locations beneath the incinerator and counted on-site. The highest soil sample concentration was 12 pCi/g total uranium. This area along with the remaining subarea was included in the surface and subsurface FSS completed for Subarea M; the survey data is discussed in Section 5.0.

3.4 Environmental Monitoring Data

As previously discussed with the NRC's staff, Cimarron Corporation has committed to address groundwater for the site in a separate report. This report is titled, "Decommissioning Plan - Groundwater Evaluation Report", and was submitted to the NRC in July 1998³³. This Groundwater Evaluation Report summarizes the site environmental data, presents trending analyses and a dose assessment, and commits to a plan for resolving the issues associated with elevated residual groundwater radionuclide concentrations. There are no monitoring wells located within Subarea M.

4.0 FINAL STATUS SURVEY PROCEDURE

The purpose of this section is to discuss the methodology utilized for the collection of the survey and soil sampling data presented as FSS data in this report. The FSS data were used to demonstrate that the applicable radiological parameters (i.e., guideline values) were satisfied for release of Subarea M from License SNM-928. The guideline values utilized for comparison to the FSS data are described in this section.

In general, for Phase III areas, Cimarron Corporation has committed to follow the methodology prescribed in NUREG/CR-5849³⁴ and as approved in the Phase III FSSP for performing the FSS. This report includes all necessary data to support the FSS for the surface and subsurface soils contained within Subarea M and the release for unrestricted use of Subarea M from License SNM-928.

4.1 Survey Method

In general, survey and soil sampling data were collected utilizing established methods that have been demonstrated through the release of other areas at the Cimarron site. The instrumentation available for use by site personnel as well as the minimum detectable activity (MDA) and typical efficiency for those instruments are listed in Table 4.1. The survey methods are discussed further below:

4.1.1 Grid Areas

Subarea M was subdivided into the 100 m x 100 m grid pattern shown on Drawing No 95MOST-RF3. The 100 m x 100 m grids were further subdivided for affected area surveys into 10 m x 10 m grids. For systematic surveys the 10 m grids were further subdivided into 5 m x 5 m grids. The 5 m x 5 m grids were utilized for locating survey and soil sampling points for this FSS. Cimarron employs a Global Positioning Survey (GPS) unit to check pre-established grid points and to locate sample collection and survey positions in the field. This GPS unit is accurate to within less than ± 1 m. The 0.0 grid point is located just south and slightly west of the main Uranium Building and has been tied into a permanent marker for future reference.

4.1.2 Survey Locations (Open Land Areas)

In general, the Subarea M open land areas were 100% scanned utilizing a 3" x 1/2" shielded NaI detector. The specific instruments used were selected by the RSO/Health Physics Supervisor.

Each 5 m x 5 m grid was surveyed by technicians by traversing back and forth within the grid. Each traverse performed by the technician covered an area approximately 2 meters in width. The highest reading found within each grid area was recorded. Survey performance, documentation, and record retention was performed in accordance with the Cimarron Radiation Protection Program. In the event that any of the survey readings exceeded the limits discussed in Section 4.2.3, their location was flagged for additional surveys and/or soil sampling. The survey procedures followed were specified in Cimarron's Special Work Permit(s) and Work Plan(s) for this subarea.

Additionally, at the intersect of each 5 m x 5 m grid location, a systematic survey was completed at ground surface and at 1 m above the surface for ambient radiation using a micro-R meter. Also, a gamma survey at the ground surface, using a shielded 3" x 1/2" NaI detector was performed and documented.

4.1.3 Soil Sample Locations

The soil sampling frequency was specified in the Cimarron Special Work Permit(s) and Work Plan(s). Where practicable, systematic surface soil samples were collected at each 5 m x 5 m grid intersect location. Subsurface soil samples were collected to a depth of 6

TABLE 4.1

RADIATION MONITORING INSTRUMENTS

INSTRUMENT TYPE	NUMBER AVAILABLE	RADIATION DETECTED	SCALE RANGE	BKG	TYPICAL EFFICIENCY	TYPICAL MDA 95% CONFIDENCE LEVEL
Scintillation (Ludlum 2224) Scaler/Ratemeter	2	Alpha Beta	0-500,000 cpm	< 10 cpm < 300 cpm	20% 19%	100 dpm/100 cm ² 500 dpm/100cm ²
Micro-R Meter (Ludlum 12 & 19) 1" x 1" NaI Detector	3	Gamma	0 - 5,000 μ R/h	7 μ R/h- 9 μ R/h	N/A	2 μ R/h
Ion Chamber (Victoreen)	1	Gamma	0.1 - 300 mR/h	<0.1 mR/h	N/A	< 0.2 mR/h
3" x 1/2" NaI Scintillation (43-82) Digital Scaler (Ludlum 2220/2221)	3	Gamma	0 - 500,000 cpm	3,000 cpm avg shielded 9,000 cpm avg unshielded	N/A	250 cpm 500 cpm
100 cm ² gas flow (43-68) Digital Scaler (Ludlum 2220/2221)	2	Alpha	0 - 500,000 cpm	<10 cpm	20%	100 dpm/100 cm ²
60 cm ² gas flow (43-4) Digital Scaler	1	Alpha	0 - 500,000 cpm	<10 cpm	25%	200 dpm/100 cm ²
60 cm ² Count Rate Meter (PRM-6)	7	Alpha	0 - 500,000 cpm	<100 cpm	50%	350 dpm/100 cm ²
50 cm ² Personnel Room Monitor (Ludlum 177)	2	Alpha	0 - 500,000 cpm	<100 cpm	50%	500 dpm/100 cm ²
Tennelec LB5100 Computer Based Auto Sample Counter	1	Alpha Beta	0 - 99,999,999 cpm	<0.3 cpm 1.5 cpm	38% 42%	0.4 dpm 1.5 dpm
Soil Counter - Computer Linked 4" x 4" x 16" NaI (TI) Detector	1	Gamma	—	4 pCi/g Total U 1.5 pCi/g Th (Nat)	4% 15%	5 pCi/g U (5 min. count) 0.6 pCi/g Th (Nat) (5 min. count) 3 pCi/g U (15 min. count) 0.3 pCi/g Th (Nat) (15 min. count)
100 cm ² gas flow (43-68) Digital Scaler (Ludlum 2220/2221)	2	Beta, Gamma	0 - 10,000 cpm	<300 cpm	20	600 dpm/100 cm ²
*Reuter-Stokes PIC Model RSS-112	1	Gamma	0 - 100 mR/h	9 - 10 μ R/h	N/A	0.5 μ R/h (10 min. count)

*(Cushing Instrument available for Cimarron Use)

feet or to rock. All soil samples collected were analyzed for total uranium and natural thorium using the on-site soil counter. Any locations found exceeding the soil guideline values for affected areas as discussed in Section 4.2.2 were investigated further.

4.2 Radiological Guideline Values

The radiological guideline values discussed in this section were utilized for comparison with the FSS data in order to confirm that Subarea M can be released for unrestricted use from License SNM-928.

4.2.1 Equipment and Materials

The unconditional release limits for surface contamination on materials and equipment is in compliance with Facility License SNM-928, and is identical to the limits specified in Table 1 of the NRC's "Guidance for Decommissioning of Facilities and Equipment Prior to Release for Unrestricted Use"³⁵. Subarea M contains no buildings or equipment and therefore these types of surveys were not applicable.

4.2.2 Volumetric Activity of Soil

For Subarea M, the unrestricted release guideline value for residual concentrations of total uranium, which may remain in the soil is specified as BTP³² Option #1 material. For enriched uranium, as specified in Table 2 of the BTP, the Option #1 limit is 30 pCi/g total uranium above background. The average total uranium background concentration has been established at 4 pCi/g³⁰. The maximum enriched uranium soil concentration within any 10 m x 10 m grid area may not exceed three times the BTP Option #1 limit (i.e., 90 pCi/g total uranium) above background. Systematic soil sampling was performed within each 10 m x 10 m grid area to determine the average residual total uranium concentration. This systematic sampling equates to four surface samples per 100 m² area; which is the same sample frequency as one sample collected at the intersect of each 5 m x 5 m grid intersect. Areas of elevated activity were determined based upon discrete sampling within the grid or were assumed to have a constant value (e.g., 25 m² based upon 5 m x 5 m grid sampling frequency). The average value for the 10 m x 10 m grid then was compared to the BTP Option #1 guideline value of 30 pCi/g total uranium above background. Remediation or hot spot averaging was performed for each individual location which contained average total uranium concentrations in excess of 30 pCi/g above background as described in NUREG/CR-5849. Areas of elevated activity not remediated between one and three times the guideline value were tested to assure that the average concentration was less than $(100/A)^{1/2}$ times the guideline value, where "A" is the area of elevated activity in m².

The Option #1 unconditional release guideline value for residual concentrations of natural thorium, which may remain in soil per Table 2 of the BTP, is up to 10 pCi/g above background. The average background for natural thorium has been determined to be 1.5 pCi/g for soil analyzed with the on-site counter.

4.2.3 Gamma Surface Survey (Open Land Areas)

Cimarron personnel utilize a shielded or unshielded 3" X 0.5" sodium iodide (NaI) detector as a final screening device for qualitative identification of residual contamination in soil. Prior to the commencement of site-wide remediation, Cimarron evaluated several portable survey instruments for performing scan surveys including the 2" x 2" NaI detector. Based upon recommendations from Ludlum Instruments, Inc., Cimarron decided to use the 3" x 0.5" NaI detector for general area scans. This system is one of the more sensitive field detection instruments available to Cimarron.

Since the inception of Cimarron's site decommissioning, twice background has been used as the guideline for scan surveys when utilizing the 3" x 0.5" NaI detector. Survey reading above this guideline indicates an area requiring additional investigation. This guideline has been a standard in the nuclear industry for many years. With the submittal and approval by the NRC of numerous plans and reports, twice background also has become the accepted standard for the Cimarron Facility as a qualitative screening measure. This qualitative guideline was included in the Phase I Final Status Survey Plan⁷, Phase I Final Status Survey Report¹⁰, and the Phase II Final Status Survey Plan¹² just to name a few of the documents where this guideline was addressed and approved by NRC staff for this site.

Twice background (as noted in Section 6.4.2 of NUREG/CR-5849) is at the lower end of the range discernable for scanning instrumentation. During the scan survey the technician, upon noting a "discernable" difference in the audio output from the meter, will stop and attempt to locate the elevated area. It is difficult to discriminate low levels of residual uranium contamination when other naturally occurring isotopes are present which affect the gross count rate of the scan instrument. The guideline value of twice background provides a sufficient margin for technicians when conducting a scan to conclude that residual contamination may be present when a signal exceeds the twice background level (i.e., a discernable audible increase above background). This discernable audible response alerts the surveyor to momentarily stop moving the probe (i.e., 2 to 3 seconds) and to further investigate the area. The survey instruments utilized at Cimarron indicate changes in radioactivity levels via either a higher or lower pitch. These changes in pitch are easier to detect rather than simply noting an audible change in the count rate.

The shielded detector was utilized to perform the initial 100% surface scan survey for Subarea M to identify regions or areas of slightly elevated activity. Also, the shielded detector was utilized for systematic surveys at grid intersect to identify elevated areas. As stated above, these instruments are only utilized for qualitative measurements. Quantitative measurements of residual contamination levels in soil are performed with the Cimarron soil counter. Additionally, "daily" background surveys are taken prior to performing surveys within a survey unit. These average "daily" backgrounds are listed on the data tables and drawings and were used for comparison to the guideline (i.e., twice background).

4.2.4 Exposure Rate Survey (Open Land Areas)

The average exposure rate for Subarea M areas to be released for unrestricted use is 10 μ R/h above background, at 1 meter above the surface. Exposure rates may be averaged

over a 100 m² grid area as described in NUREG/CR-5849. The maximum exposure rate at any discrete location within a 100 square meter area cannot exceed 20 μ R/h above background. Any area with average exposure rates greater than 10 μ R/h above background and any discrete location within a 100 square meter area with an exposure rate greater than 20 μ R/h above background was delineated and remediated as required. Cimarron has in the past measured 7 μ R/h as the average background exposure rate. However, as discussed in Section 3.2.2, since sending their micro-R meters off-site for calibration by the manufacturer, Cimarron has demonstrated that 9 μ R/h is representative of the average background exposure rate for micro-R measurements. The tables and drawings included in the Appendices provide the average background for the micro-R meter used in developing the tabulated survey data. A background of 7 μ R/h indicates that the instrument utilized for performing the survey was calibrated on-site; and likewise a background of 9 μ R/h indicates calibration off-site.

4.3 Equipment Selection

Special Work Permits (SWP) and Work Plans (WP) were written and approved prior to commencement of the field work required for this FSS. The SWP and/or WP for Subarea M specified the type of instrumentation to be utilized in performing the FSS. The instrumentation utilized by Cimarron personnel is discussed further below:

4.3.1 Equipment and Instrumentation

The instrumentation utilized to generate the FSS data discussed herein was calibrated and maintained by site personnel in accordance with the Cimarron Radiation Protection Program procedures. These procedures utilize the guidance contained in ANSI N323-1978, "Radiation Protection Instrumentation Test and Calibration"³⁶. Specific requirements, as specified by the Cimarron procedures for instrumentation, include traceability of calibrations to NIST standards, field checks for operability, background radioactivity checks, operation of instruments within established environmental bounds, training of individuals, scheduled performance checks, calibration with isotopes of energies similar to those to be measured, quality assurance tests, data review, and recordkeeping. An explanation of how Cimarron's Radiation Protection Program procedures are implemented with respect to instrumentation was discussed in Cimarron's responses to the NRC letter dated May 13, 1998³⁷.

With the exception of the exposure rate instrumentation (ion chamber, PIC and micro-R meter), Cimarron health physics staff performs in-house calibration on each of the instruments listed in Table 4.1. Portable survey instruments are calibrated on a quarterly basis. The exposure rate instruments are sent off-site for vendor calibration on a semi-annual basis. Where applicable, activities of sources utilized for on-site calibration are corrected for decay. In addition to the periodic calibration requirements, source response checks are performed on a daily basis for all instruments being utilized during characterization, remediation and final status survey work.

All calibration and source check records are completed, reviewed, signed-off and retained in accordance with the Cimarron Quality Assurance Program. The instrumentation utilized by site personnel is discussed below:

4.3.1.1 Unshielded 3" x 0.5" NaI Gamma Detector

The 3" x 0.5" detector is a sodium iodide (NaI) crystal gamma detector which is unshielded around all sides. The NaI detector is utilized with a portable scaler/ratemeter that has single channel analyzer capability. Americium-241, Uranium-235, and Natural Thorium sources are utilized to set the instrumentation window and threshold to detect gamma energies in the range of 50 to 250 keV. This energy range corresponds to the energies of interest when surveying for uranium and natural thorium contamination. The instrument is normally operated in the window "out" mode, meaning that the instrument response is for the entire range of detectable energies.

4.3.1.2 Shielded 3" x 0.5" NaI Gamma Detector

The 3" x 0.5" detector is a NaI crystal gamma detector which is shielded with lead around the top socket and sides to improve the directional sensing capabilities of the equipment. Similar to the unshielded detector, the shielded detector is utilized with a portable scaler/rate meter that has single channel analyzer capacity. This instrument is normally utilized in areas where background may be elevated.

4.3.1.3 Micro-R Meters

The micro-R meter is a 1" x 1" NaI crystal gamma detector which measures exposure rates between 0 and 5,000 $\mu\text{R/h}$. Background readings are obtained daily at a defined location prior to placing each instrument into service. This instrument is utilized, in general, for determination of exposure rates at both systematic and random locations and at locations of elevated radiation identified by area scans.

Confirmatory measurements are obtained routinely to provide information concerning any measurement bias. These comparisons or confirmatory measurements are made using a pressurized ion chamber. Confirmatory measurements for Subarea M are included in Table 4.2 and show results indicative of site background for Micro-R meters calibrated off-site.

TABLE 4.2 CONFIRMATORY MEASUREMENTS (Readings 1 Meter Above Grade)		
Reading Location	Micro-R Reading (μR/h)	PIC Reading (μR/h)
245N-340E	9.0	9.4
235N-325E	9.0	9.6
225N-310E	9.0	9.1
200N-325E	9.0	9.1
275N-330E	8.0	9.5
285N-305E	9.0	9.5
310N-310E	8.0	9.5
350N-290E	9.0	9.4
355N-315E	9.0	9.4
335N-330E	9.0	9.5
Average	8.8	9.4

4.3.1.4 Soil Counter (Gamma Spectroscopy)

The Cimarron Soil Counter System consists of a 4" x 4" x 16" sodium iodide crystal housed in a shielded chamber which is computer linked to a multi-channel analyzer (MCA). Cimarron's counting system is programmed to determine the total uranium present in the soil sample by calculating the U-234 activity based upon the U-235 activity measured in the soil sample. The U-234 and U-235 activities are summed with the detected U-238 activity to obtain the total U activity. The counter also adjusts for system background. Calibration of this counting system is performed annually and is traceable to NIST standards through contractor laboratory evaluations of the on-site standards.

Established quality assurance measures for the soil counter include Cesium-137 centroid checks, Chi-square tests, background determinations, and the counting of soil standards. All of these quality assurance controls are recorded on control charts and are trended on a continuing basis.

Standards used for calibration and quality assurance checks for the soil counter have been analyzed by outside laboratories and are NIST traceable through these analyses. Comparisons have been made between the standards as counted using the soil counter and two off-site laboratories. The assigned values for the standards are the average of the results obtained from the off-site laboratories, when the standards were analyzed by more than one laboratory. The standards range in concentration from 4.5 pCi/g total uranium to 292 pCi/g total uranium. Additional information pertaining to these standards and typical MDA calculations for the counting system were included in Cimarron's responses to the NRC's comments on Subarea J³⁷.

Cimarron personnel determine uranium and thorium activities in soil based upon the evaluation of net counts from the soil counter. Activities are calculated through the use of efficiency and correction factors obtained using appropriate standards. Soil concentrations

are calculated by dividing the net activity by the soil mass. Soil masses are determined on a laboratory scale which is checked on a daily basis (when in use) utilizing NIST traceable standards. Corrections for soil moisture content are also made as necessary.

ORISE has been used by the NRC for verification of a majority of the decommissioning work completed to date at the Cimarron site. ORISE has conducted an evaluation of the Cimarron Soil Counting system's ability to measure accurately total uranium concentrations in soil samples. This was done by comparing ORISE sample analysis results obtained by alpha pulse height analysis and gamma spectroscopy with the results obtained from the use of the Cimarron Soil Counter. ORISE and Cimarron analysis results compared favorably at levels above background as demonstrated by the confirmatory analysis performed for the On-Site Disposal Cell, Pit #3 (NRC cover letter dated July 31, 1997)³⁸. NRC inspection Report #70-925/97-02, which accompanied this letter, states that "no significant bias or statistical errors between the license's soil results and the NRC's results were identified". Additionally, the confirmatory analysis performed on selected soil samples collected during ORISE's site visit to investigate the South U-Yard³⁹, and DAP-3 stockpile⁴⁰ verified previously that Cimarron's on-site counter results are statistically identical to ORISE's results.

A more recent inspection by the NRC also confirmed Cimarron's Soil Counting system's ability to accurately measure total uranium concentrations in soil samples. On September 24, 1998, the NRC collected twelve (12) soils and sediment samples from Subarea J. The samples were first counted on the On-Site Counter by Cimarron and then shipped by NRC to the Region III laboratory for analyses. The November 3, 1998 Inspection Report⁴¹ (i.e., Report No. 70-925/98-02) stated the following:

"Overall, the NRC measurements confirmed that Subarea J soil and sediment had less than 30 pCi/g uranium. No significant bias or statistical errors between the licensee's soil and sediment sample results and the NRC's results were identified. Licensee measurement methods and counting times were found to be acceptable."

4.4 Procedures/Plans

As discussed in Section 4.3, SWPs and WPs were written and approved prior to commencement of fieldwork required for this final status survey. These SWPs and WPs are an integral part of this site's radiation protection and quality assurance program. Project organization and responsibilities, which are a part of the site's quality assurance program, are discussed in this section.

4.4.1 Organization

The Subarea M FSS was performed by a survey team consisting of qualified personnel from the Cimarron Facility. The FSS team operated under the general direction of a Project Manager who reports directly to the Site Manager at the Cimarron Facility.

The selection of field measurement equipment and sample collection techniques was under the direction of the RSO/Health Physics Supervisor. Actual field measurements and sample collection were under the direction of the Project Manager. The Project Manager was responsible for developing the SWP and WP for Subarea M with input from the RSO/Health Physics Supervisor. The SWP and WP were reviewed and approved by the Cimarron Site Manager.

4.4.2 Training

Cimarron Corporation provides continuing training to Cimarron personnel and any other personnel (i.e., contractors, visitors, etc.) who are allowed access to the site. All members of the FSS team attended an in-house training session on the SWP and WP prior to commencement of work. All FSS procedures and quality assurance requirements were reviewed during this training session.

4.4.3 Radiation Protection Program

Cimarron Corporation maintains a radiation protection program that meets and/or exceeds all of the applicable regulatory requirements associated with activities conducted under Special Nuclear Materials License SNM-928. The Cimarron Radiation Protection Program currently in place for all decommissioning activities is administered through the use of the following documents:

- Cimarron Radiation Protection Procedures
- Cimarron Site Health and Safety Plan
- Cimarron Quality Assurance Plan and Procedures
- Cimarron Emergency Plan

It is the policy of Cimarron Corporation to perform all work in strict compliance with applicable regulatory and internal requirements. The goal of the Cimarron decommissioning effort is to conduct all operations at a level of excellence that exceeds regulatory requirements. Cimarron staff will continue to exercise appropriate radiation protection precautions throughout the remaining decommissioning work and final survey process.

Independent Kerr-McGee Corporate audits for regulatory and internal requirements are conducted on a periodic basis and include the review of the Cimarron Radiation Protection Program and associated programs. Assessments of program effectiveness are also performed periodically by the Cimarron RSO/Health Physics Supervisor. Additionally, the Cimarron Radiation Protection Program is inspected for compliance with applicable rules and regulations by NRC Region IV and NRC Headquarters staff.

4.4.4 Cimarron Quality Assurance Program (QAP)

The Cimarron Corporation QAP is an integral part of the Cimarron Radiation Protection Program. A principal component of the QAP is the confirmation of the quality of project work performed during decommissioning by assuring that all tasks are performed in a

quality manner by qualified personnel. The Program ensures that samples are collected, controlled, and analyzed in accordance with applicable quality controls to provide confidence in the resulting data accuracy and validity. Cimarron's QA/QC program is structured to generate data that can be verified through independent review should they desire to perform an audit of the data.

The Cimarron QAP is implemented and maintained in accordance with written policies, procedures, and instructions. This Program is administered under the direction of the Quality Assurance Manager. Periodic surveillance and reviews are conducted to ensure that all aspects of the Program are addressed. The Cimarron QAP satisfies the applicable requirements of ASME NQA-1⁴².

Written procedures designated as SWPs and WPs, are prepared, reviewed and approved for activities involved in carrying out the decommissioning process. The Subarea M Survey SWP and WP were written in accordance with the Cimarron QAP. These documents designate the type of surveys to be performed, samples to be collected, frequency of sample collection, and the type of field instrumentation required for the tasks required.

Selection, calibration and use of radiation detection instrumentation used for final status survey release at Cimarron are directed by the Radiation Safety Officer (RSO). The RSO is responsible for the calibration performed by Cimarron Health Physics staff or by contract services. The RSO maintains a file for each technician on staff as to their qualifications and training.

The facility performs its own radiological soil analysis in accordance with written procedures and QA/QC protocols. Field data are gathered and maintained in logs for all samples in accordance with the Cimarron QAP. Necessary data are transferred to the on-site laboratory sample log when the sample is brought to the on-site laboratory for analysis. The sample logs provide a record of sample collection and transport (chain of custody) and are incorporated into the facility quality assurance records.

In addition, off-site independent radiological analysis of split samples (samples are first counted on site and then sent to an off-site independent laboratory) is an integral part of the Cimarron QAP. Samples sent to an off-site independent laboratory for analysis are accompanied by a chain of custody form in accordance with the Cimarron QAP. These forms provide documentation for all aspects of sample control and are maintained by the Quality Assurance Manager as permanent records.

Sample and survey data are reviewed by the Health Physics Department for accuracy and consistency and to determine if further characterization or remediation is required or if the data is acceptable. Additionally, the data are compared to the guideline values on a regular basis. The data review process verifies that approved QA/QC procedures have been followed. When identified, corrections to recognized deficiencies are performed in accordance with the QAP.

5.0 SURVEY FINDINGS

As discussed in Section 1.0, FSS data were generated for Subarea M to justify the release from License SNM-928. The survey findings, including the statistical methodology employed to evaluate the data for Subarea M, are discussed in this section.

5.1 Data Evaluation

As discussed in NUREG/CR-5849, the guideline values for soil activity concentrations and exposure rates are average values (above background) established for areas of survey units. In order to compare the analytical and survey data developed for the final status survey with guideline values; data at each individual survey grid location were compared to the appropriate guideline values. The guideline value for leaving soil in place for unrestricted release is BTP Option #1 material (i.e., up to and including 30 pCi/g total uranium above background).

As discussed in Section 4.2.2., for an affected area, if an individual soil activity measurement (representing 25m²) exceeded the applicable guideline value, then the average was determined for the survey unit (100 m²). Areas of residual activity exceeding the guideline value (known as elevated areas) were acceptable provided they did not exceed the guideline value by greater than a factor of $(100/A)^{1/2}$, where A was the area of residual activity in m², and provided the activity level at any location did not exceed three times the guideline value. The average for each survey unit was compared to the guideline value. If the average was less than or equal to the guideline value plus background, further remediation was not required and the data was presented as FSS data.

5.2 Comparison With Guideline Values

The FSS data for Subarea M were compared to the guideline value criteria and are discussed separately in this section. This section evaluates the data collected from both the 100% scan and the systematic surveys performed at the grid intersects for Subarea M which is shown on Drawing No. 95MOST-RF3 (Appendix 1).

This subarea includes former Burial Area #3 and the trash incinerator area. As discussed in Section 3.3, the initial scoping survey identified several areas containing residual activity above the guideline value for affected areas. Thus, Cimarron decided to remediate Burial Area #3, which was accomplished during two different campaigns. Once remediated the entire area was graded to facilitate surveying and soil sampling.

After grading Burial Area #3, a 100% scan was performed on the entire Subarea M surface with the shielded NaI detector and any locations exceeding twice background were flagged. All locations identified were further investigated and subsequently remediated. For Subarea M, "daily" average NaI detector backgrounds were determined for comparing either scan or systematic survey results to the guideline value. The NaI detector average background value is listed for the systematic surveys on the data tables and on the drawings.

The soil sampling event for the FSS identified nine locations within Subarea M that contained soil concentrations exceeding the total uranium guideline value (i.e., 30 pCi/g total uranium above background, which is 34 pCi/g). These locations are tabulated below in Table 5.1 and were subsequently either remediated by removing additional impacted soils that were above the guideline value or "hot spot" averaging was performed. The remediated locations were again surveyed and if found to be acceptable the data was included as FSS data for this subarea.

During the surface and subsurface sampling, soil samples were collected at each 5 m x 5 m grid location. Samples were collected and composited at intervals of 0-6", 6"-1', 1'-2', 2'-3', 3'-4', 4'-5' and 5'-6', or to rock. The sample analytical results are listed in tables included in Appendix 2. The soil sample locations and analytical results for total uranium are shown on Drawing Nos. 98POAMSS-0 thru 98POAMSS-6. These drawings are also included in Appendix 2.

Grid Location	Depth	Total - U Original (pCi/g)	Corrective Action	"Hot Spot" Average (pCi/g)	Final Status Survey Data (pCi/g)
315E - 240N	0-6"	37	Hot Spot Evaluation	17.1	17.1
315E - 240N	6"-1'	38	Hot Spot Evaluation	16.0	16.0
315E - 255N	2'-3'	125	Remediated	NA	9
315E - 255N	3'-4'	60	Remediated	NA	11
315E - 265N	6"-1'	35	Hot Spot Evaluation	13.8	13.8
320E - 240N	2'-3'	253	Remediated	NA	10
320E - 265N	1'-2'	47	Hot Spot Evaluation	20.1	20.1
330E - 255N	2'-3'	39	Hot Spot Evaluation	19.6	19.6
335E - 270N	0-6"	34	Hot Spot Evaluation	18.5	18.5

A total of 2,224 FSS soil samples were collected for analysis; with soil sample analytical results ranging from 1 to 47 pCi/g total uranium. The mean value for all surface and subsurface samples was 7.9 pCi/g total uranium, with a standard deviation of 3.6 pCi/g. As discussed above, "hot spot" averaging was performed at the six locations noted in Table 5.1. The statistical analysis for the soil data including the "hot spot" averaging is included in Appendix 2. The 95% confidence level value was 8.1 pCi/g, which is below the guideline value for total uranium. Also, the soil sample analytical results for this subarea showed natural thorium ranging from 1 pCi/g to 3 pCi/g. The mean value was 1.4 pCi/g

natural thorium, with a standard deviation of 0.5 pCi/g thorium. The statistical analyses for the natural thorium soil sample data also are included in Appendix 2.

Systematic surveys were performed during the FSS at the 405 grid intersects with 3" x 0.5" shielded NaI detectors and the μ R meter. The exposure rates at the surface and at one meter above the surface, as measured using a μ R/h meter, ranged from 5 to 13 μ R/h, with the mean being 7 μ R/h and from 5 μ R/h to 12 μ R/h, with a mean of 7 μ R/h, respectively. All measured exposure rates were below the guideline value of 17 μ R/h (i.e., 10 μ R/h above the average background of 7 μ R/h). The exposure rates are presented on Drawing Nos. 98POAMUR-0 and 98POAMUR-1. These drawings are included in Appendix 2. The ground level shielded NaI detector survey results for the grid intersect sample locations ranged from 2,370 to 5,790 CPM. All survey results were less than twice background with the exception of the two locations at 320N-320E and 375N-330E. Further investigation at these two locations showed the soils were both at a concentration of 7 pCi/g total uranium. The survey results are presented on Drawing No. 98POAM3D-0 included in Appendix 2.

Drawing No. 98POAMSS-6 illustrates that rock was encountered at numerous locations and depths as subsurface samples were collected. This drawing is included in Appendix 2. As shown on the drawings and tables, all FSS sample analytical results (including the "hot spot" average locations) were less than the guideline value of 30 pCi/g total uranium above background. All FSS sample results are presented as total uranium and include background.

5.3 QA/QC Procedures

Cimarron Corporation's Quality Assurance Plans and Procedures are an integral part of the overall site decommissioning program and include off-site independent isotopic analysis of split samples. For the soil activity ranges that apply to this final status survey and for soil samples collected during the time frame that the survey data was being generated, a total of sixteen soil samples were split and sent off-site for analysis. The soil samples were first analyzed using the on-site counter prior to being packaged and sent off site for analysis at an independent laboratory. The independent laboratory for this project was Core Laboratories and they participate in a national inter-comparison. The results for both off-site and on-site analysis are listed in Table 5.2. These sample results show good agreement.

TABLE 5.2		
Sample ID No.	Off-Site Lab Results Core Lab (pCi/g U)	On-Site Results Cimarron (pCi/g U)
SC-06	1.5 ± 0.7	2.1 ± 1.7
FA-542	1.0 ± 0.5	5.1 ± 1.4
MISC-21	27.9 ± 4.0	31.6 ± 1.6
MISC-29	17.7 ± 2.7	20.5 ± 1.9
OWP-1-106	30.0 ± 4.4	29.8 ± 1.7
AO-4026	42.0 ± 5.4	36.8 ± 1.9
HD-45	50.1 ± 8.6	47.0 ± 5.0
HD-52	64.2 ± 11.4	64.6 ± 5.0
HD-99	11.4 ± 2.6	20.0 ± 6.0
HU-08	4.8 ± 1.4	4.9 ± 2.8
HU-26	3.1 ± 0.8	8.8 ± 6.8
HA-1740	26.7 ± 6.5	21.4 ± 5.9
HP-370	62.7 ± 11.1	52.3 ± 2.3
HP-382	26.0 ± 5.5	29.0 ± 2.9
HA-1437	80.8 ± 13.5	70.7 ± 3.0
HA-1531	112.6 ± 15.9	124.0 ± 3.1
HA-1532	105.2 ± 16.1	82.9 ± 2.7
HC-1	2.0 ± 2.3	3.7 ± 1.8
HC-6	3.1 ± 2.6	6.0 ± 1.7
HC-9	5.1 ± 3.8	7.4 ± 1.4
HU-70	15.1 ± 3.8	14.5 ± 1.9
HU-73	15.1 ± 6.1	17.7 ± 1.9

6.0 SUMMARY

A FSS was performed in accordance with the NRC approved Phase III FSSP and the SWP and WP approved by Cimarron Management for Subarea M. This report presents a comparison of the results of the FSS to the guideline values for affected areas at the Cimarron site. The comparison presented herein demonstrates that all guideline values for unrestricted release have been met and thus Subarea M can now be released from License SNM-928. Therefore, this report is being submitted to the NRC in conjunction with a request to release Subarea M from License SNM-928 for unrestricted use.

7.0 APPENDICES

- Appendix 1 Drawing 95 MOST-RF3
- Appendix 2 Data Tabulation Sheets, Statistical Analyses, "Hot Spot" Evaluation and Drawings