

WM-39

**NOTE:  
SUPPLEMENTAL  
STANDARDS**

**DEPARTMENT OF ENERGY  
ALBUQUERQUE OPERATIONS OFFICE  
CONTRACT NO. DE-AC04-83AL18796**

**Vicinity Property  
Completion Report**

**Remedial Actions  
Contractor  
for the  
Uranium Mill Tailings  
Remedial Actions  
Project**

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**MK-FERGUSON COMPANY**  
A MORRISON KNUDSEN COMPANY

URFO-6

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WM-39 PDR

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DUR 053

Vicinity Property No.

VICINITY PROPERTY COMPLETION REPORT

AT

DU-053

GREENMOUNT CEMETERY

DURANGO, COLORADO 81650

SEPTEMBER 28, 1967

FOR

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT OFFICE  
ALBUQUERQUE OPERATIONS OFFICE  
U.S. DEPARTMENT OF ENERGY  
ALBUQUERQUE, NM

BY

MK-FERGUSON COMPANY  
AND  
CHEM-NUCLEAR SYSTEMS, INC.

MK-Ferguson Company has been granted authorization to perform remedial action under the Uranium Mill Tailings Radiation Control Act of 1978, Public Law 95-604. Remedial action was done in accordance to the EPA Standards for Cleanup of Lands and Buildings Contaminated with Residual Radioactive Material from Inactive Uranium Processing Sites, 40 CFR 192.12, 192.20-23.

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Vicinity Property No. DU-053

1.0 SUMMARY

PROPERTY NUMBER:	DU-053
PROPERTY ADDRESS:	Greenmount Cemetery Durango, Colorado 81301
PROPERTY OWNER:	City of Durango PO Box 2428 Durango, Colorado 81301
PROPERTY CATEGORY:	Commercial
REMEDIAL ACTION CONTRACTOR:	MK-FERGUSON COMPANY
CONSTRUCTION SUBCONTRACTOR:	DURANGO UNITED CONSTRUCTION COMPANY
RADIOLOGICAL CONTRACTOR:	CHEM-NUCLEAR SYSTEMS, INC.
REA APPROVED:	December 28, 1987
REMEDIAL ACTION STARTED:	March 21, 1989
REMEDIAL ACTION COMPLETED (APPENDIX C SIGNED):	May 23, 1989
VOLUME OF MATERIAL REMOVED:	OUTDOOR: 3872 Cubic yards INDOOR: -N/A-



## 1.0 SUMMARY

Remedial action was completed on Vicinity Property DU-053. A total of 3,872 cubic yards of soil was removed from the property.

Radiological surveys conducted following removal of contaminated materials, but before property restoration, demonstrate that the majority of the property has been cleaned up to the EPA standards; supplemental standards will be applied to the remaining contamination. This completion report recommends that DOE review the radiological data provided for the property, and annotate the land record to reflect the application of supplemental standards.

## 2.0 OPERATIONS SUMMARY

### 2.1 Remedial Action Plan

The basic remedial action on this property was performed according to the Remedial Action Plan. A total of 3,872 cubic yards of soil was removed from the property, compared with an estimated excavation of 544 cubic yard of soil.

### 2.2 Previously Unidentified Contamination

No new areas of contamination were identified during remedial action. However, the depth and extent of contamination in many areas were greater than estimated.

### 2.3 Unanticipated Items During Remedial Action

No unanticipated items occurred during remedial action on this property.

## 3.0 VERIFICATION SUMMARY

### 3.1 Radiological Survey Data

All survey data were acquired according to approved procedures.

#### 3.1.1 Pre-Remedial Action Survey

The results of the survey defining the contaminated area requiring remedial action are presented on Drawings DU-053-030 through DU-053-040.

### 3.1.2 Pre-Restoration Survey

#### Exterior:

After removal of contamination, and prior to backfilling, a soil sample survey was conducted in the excavated areas. Soil samples were aliquoted from the 29 verification grids and analyzed by gamma spectroscopy with the opposed crystal system in accordance with Health Physics Procedure 015. The radium concentration in these soil samples ranged from less than 1.5 to 9.1 pCi/g, as described in Table 3.1. See Appendix 'A' for the radiological survey data.

Drawings DU-053-053, DU-053-054, DU-053-058, DU-053-060, DU-053-062 and DU-053-063 show the actual areas of excavation and the areas where supplemental standards apply.

These results confirm that exterior contamination has been reduced to levels below the EPA standards for radium in soil in the excavated areas. Background for the Durango site is 1.4 pCi/g Ra-226.

Several areas of contamination remain in place on the property as shown on the drawings.

#### Interior:

No remedial action was performed indoors on this property. A gamma scan in the structure prior to excavation showed gamma levels up to a maximum of 14 micro R/hr, which is less than the EPA standard of background plus 20 micro R/hr. These results are described in Table 3.2.

Long-term radon daughter concentration (RDC) measurements are being made.

### 3.1.3 Justification for Supplemental Standards

Application of Supplemental Standards (SS) is in accordance with 40 CFR 192.22, Subpart (x) (check appropriate Subpart):

- ☐ a) Risk injury to worker/public
- ☐ b) Environmental harm
- ☒ c) High cost relative to long-term benefits

- ☐ d) High cost of cleaning up building relative to benefits  
☐ e) No known remedial action  
☐ f) Radionuclides other than Ra-226 exist

Brief Condition Description and Justification:

Uranium mill tailings have been used as bedding material for water/sprinkler lines throughout the cemetery. Subsurface investigation of maintained grave areas for contamination were not conducted. Surface gamma readings, however, indicate that contamination may extend from five to ten feet from access roads into the grave areas.

This property is a cemetery and a generic application of Supplemental Standards is recommended for contaminated portions of the maintained grave areas, as referenced in the VIPMIM, section 3.2.3. Due to the nature of the property the public health hazard is low. Therefore, the high cost of remediation relative to the long term benefit is not justified.

Yes	No	If Supplemental Standards are Applied:
X		1. Open Land?
	X	2. Occupied Building?
	N/A	3. If yes to No. 2, is contaminated area beneath or within 10 feet of a building?
	X	4. Anticipated change of land use within the next 5 years?
	N/A	5. If yes to No. 4, then will land use produce health risk?
	X	6. Is contamination in a habitable area?
X		7. Have owners comments been solicited? (Attach comments or record of teleconference.). (See Appendix B).

Estimated volume of contaminated material to remain = 2,279 (cy).

Contaminated area to remain = 3,532 (sy).

Estimated gamma exposure range for contaminated areas = 14-72 (micro R/hr) [at 3 feet above surface].

Range at Ra226 concentration in soil in contaminated area = 2.6 to 506 (pCi/g).

If tailings are below or within 10 feet of the structure, radon daughter concentration = N/A (WL).

### 3.2 Recommendation for Certification

#### 3.2.1 Exterior:

Fifteen areas of contamination were identified and removed. Soil samples after excavation and prior to backfilling indicate that for a large portion of the property the limits of 5 pCi/g in the surface 15 cm. and 15 pCi/g in any 15 cm. layer below the surface are not exceeded. Supplemental Standards are applied to the remaining material.

#### 3.2.2 Interior:

No remedial action was conducted in the structure on this vicinity property. All gamma readings taken in the structure following remedial action were less than the 20 micro R/hr above background limit. Radon daughter concentrations are above the 0.01 WL limit. Based on this information, we recommend that the interior data be reviewed, with final certification pending the results of the Long Term RDC measurements.

Table 3.1  
VERIFICATION SOIL SAMPLE SURVEY  
Property DU-053

LOCATION	(GRID NO.)	DEPTH (cm.)	CONCENTRATION(pCi/g)
D-SV-12999	1	213	2.03
D-SV-13000	2	213	2.32
D-SV-13020	3	244	2.74
D-SV-13021	4	165	1.75
D-SV-13071	5	160	4.06
D-SV-13072	6	170	2.19
D-SV-13002	7	213	2.86
D-SV-13027	8	236	3.75
D-SV-13028	9	135	3.66
D-SV-13001	10	160	3.92
D-SV-13073	11	244	3.05
D-SV-13074	12	241	1.95
D-SV-13004	13	234	1.67
D-SV-13003	14	244	1.51
D-SV-13005	15	254	3.04
D-SV-13006	16	287	2.55
D-SV-13007	17	293	1.95
D-SV-13008	18	305	1.79
D-SV-13009	19	297	1.90
D-SV-13075	20	30	3.98
D-SV-13077	21	71	3.7

Table 3.1  
VERIFICATION SOIL SAMPLE SURVEY  
Property DU-053

LOCATION	(GRID NO.)	DEPTH (cm.)	CONCENTRATION(pCi/g)
D-SV-13078	22	60	5.02
D-SV-13093	23	15	3.54
D-SV-13104	24	15	3.55
D-SV-13130	25	15	<1.5
D-SV-13131	26	58	6.82
D-SV-13145	27	58	4.55
D-SV-19838	28	0-15	3.1
D-SV-19839	28	90	1.8
D-SV-19840	29	0-15	4.2
D-SV-19841	29	>15	1.8



Table 3.2  
INTERIOR SURVEY  
Property DU-053

LOCATION	RATE (MICRO R/hr)
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---

Building 1, Room 1

SW	13
SE	14
NE	14
NW	13
Center	13

Building 1, Room 2

SW	11
SE	11
NE	12
NW	12
Center	12

Building 2, Room 1

SW	12
SE	11
NE	12
NW	11
Center	11

Building 2, Room 2

SW	10
SE	9
NE	8
NW	10
Center	9

Building 2, Room 3

SW	10
SE	9
NE	9
NW	9
Center	9

Building 2, Room 4

SW	8
SE	9
NE	10
NW	9
Center	9



Table 3.2 - Cont'd.  
INTERIOR SURVEY  
Property DU-053

LOCATION	RATE (MICRO R/hr)
<u>Building 2, Room 5</u>	
SW	9
SE	10
NE	10
NW	9
Center	9
<u>Building 2, Room 6</u>	
SW	10
SE	10
NE	10
NW	9
Center	11
<u>Building 2, Room 7</u>	
SW	11
SE	10
NE	11
NW	10
Center	10
<u>Building 2, Room 8</u>	
SW	11
SE	11
NE	10
NW	11
Center	11
<u>Building 2, Room 9</u>	
SW	10
SE	10
NE	10
NW	10
Center	11
<u>Building 3, Room 1</u>	
SW	11
SE	12
NE	10
NW	9
Center	11

Table 3.2 - Cont'd.  
INTERIOR SURVEY  
Property DU-053

LOCATION	RATE (MICRO R/hr)
----------	-------------------

---

Building 3, Room 2

SW	12
SE	10
NE	11
NW	14
Center	11

Building 3, Room 3

SW	8
SE	9
NE	10
NW	10
Center	10

Building 3, Room 4

SW	9
SE	10
NE	10
NW	10
Center	10

Building 4

SW	11
SE	10
NE	9
NW	10
Center	11

Building 5

SW	9
SE	8
NE	10
NW	10
Center	10

Building 6

SW	11
SE	8
NE	9
NW	10
Center	10

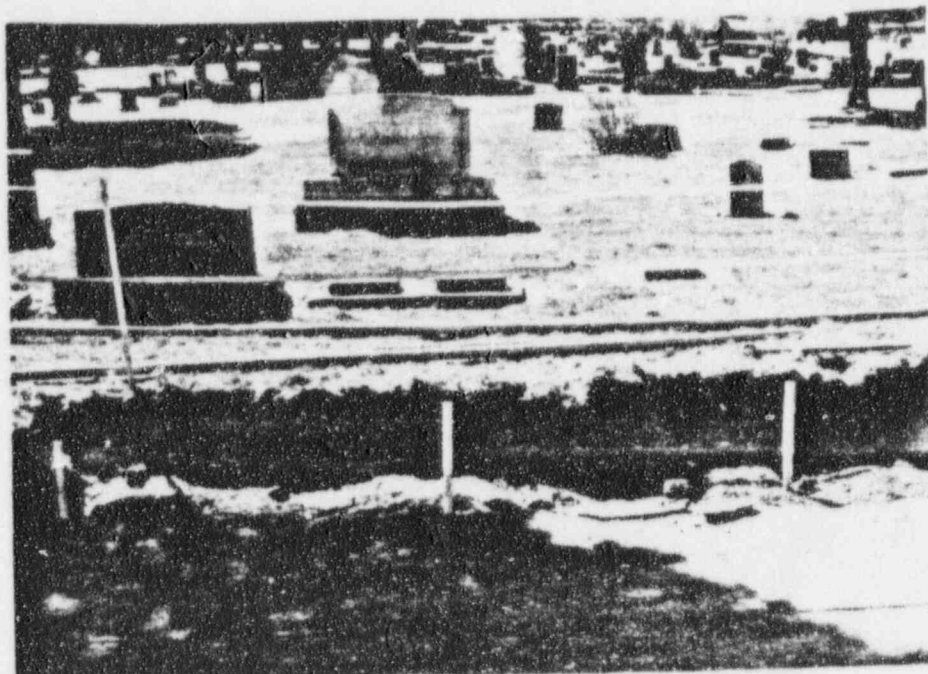
#### 4.0 REFERENCES

- 4.1 Results of the Radiological Survey of Property DU-053; Oak Ridge National Laboratory; Oak Ridge, Tennessee; December, 1983.
- 4.2 The Radiological Survey Assessment for Durango, Property DU-053; MK-Ferguson Company/Chem-Nuclear Systems, Inc.; Albuquerque, New Mexico; December 8, 1987.
- 4.3 Health Physics Procedures; Chem-Nuclear Systems, Inc., for MK-Ferguson Company, Remedial Action Contractor; Albuquerque, New Mexico; June 1986.
- 4.4 Vicinity Properties Management and Implementation Manual; UMTRAP, U.S. Department of Energy; Albuquerque, New Mexico; August 1986.
- 4.5 Title 40, Code of Federal Regulations, Part 192.12-23; U.S. Environmental Protection Agency; Washington, D.C.; July 1983.

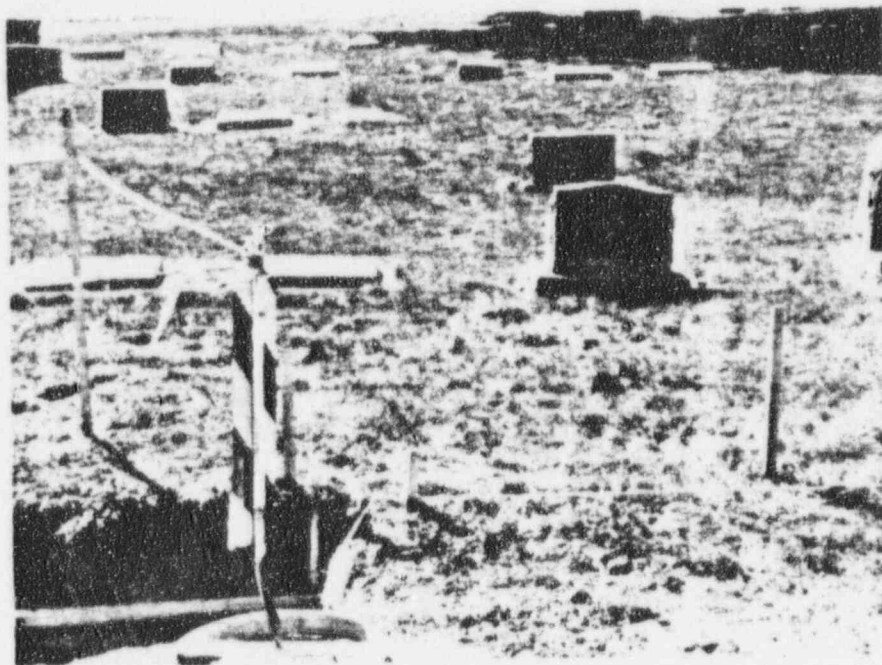


View of Area "A-West" During Excavation, Looking Southwest

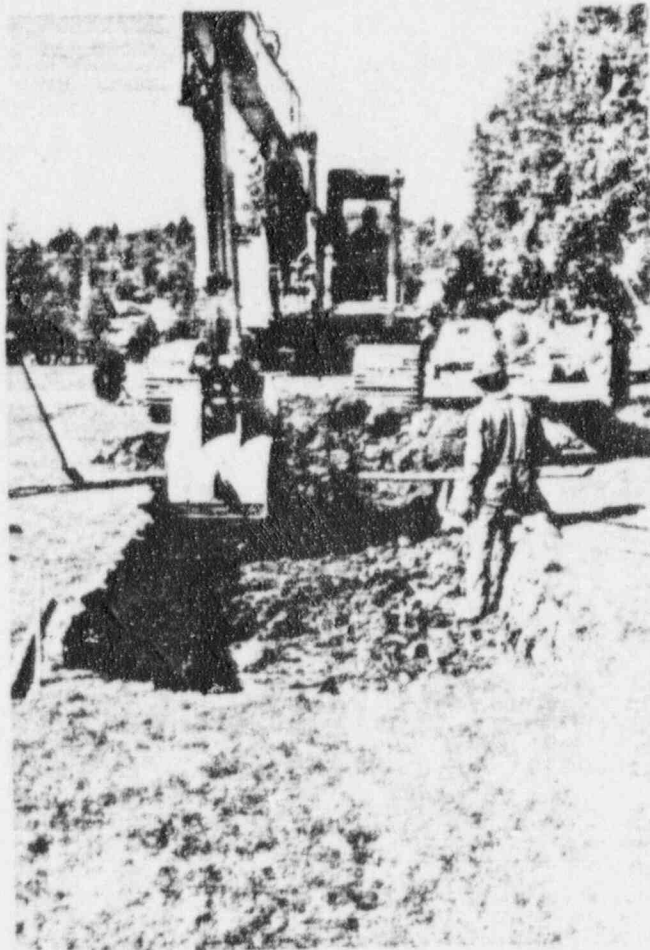




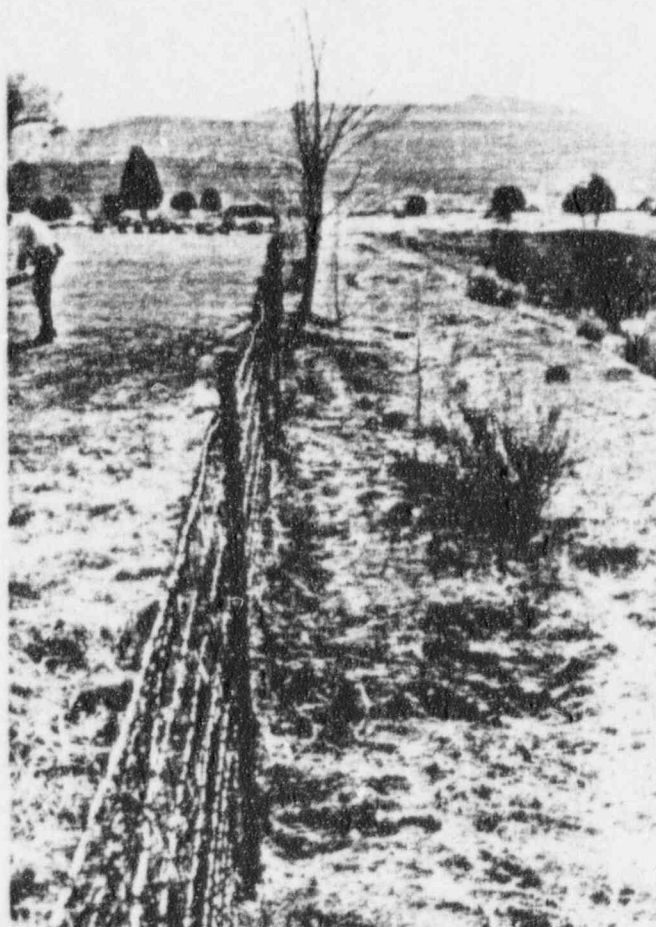
Standing on Gravel Road Near Sta 0+85, Looking West  
at Area "D" After Excavation



Standing on Gravel Road Near Sta 0+85, Looking West at  
Area "D" After Excavation



View of Excavation of Area "E-11", Looking North



View of Area "Q-South 46/47, Looking East After Excavation





View of Area "A-West" During Backfilling and Compaction Operations, Looking Southwest



View of Areas "E-10" and "E-11" with Topsoil and Aggregate Base Course in Place, Looking Southeast



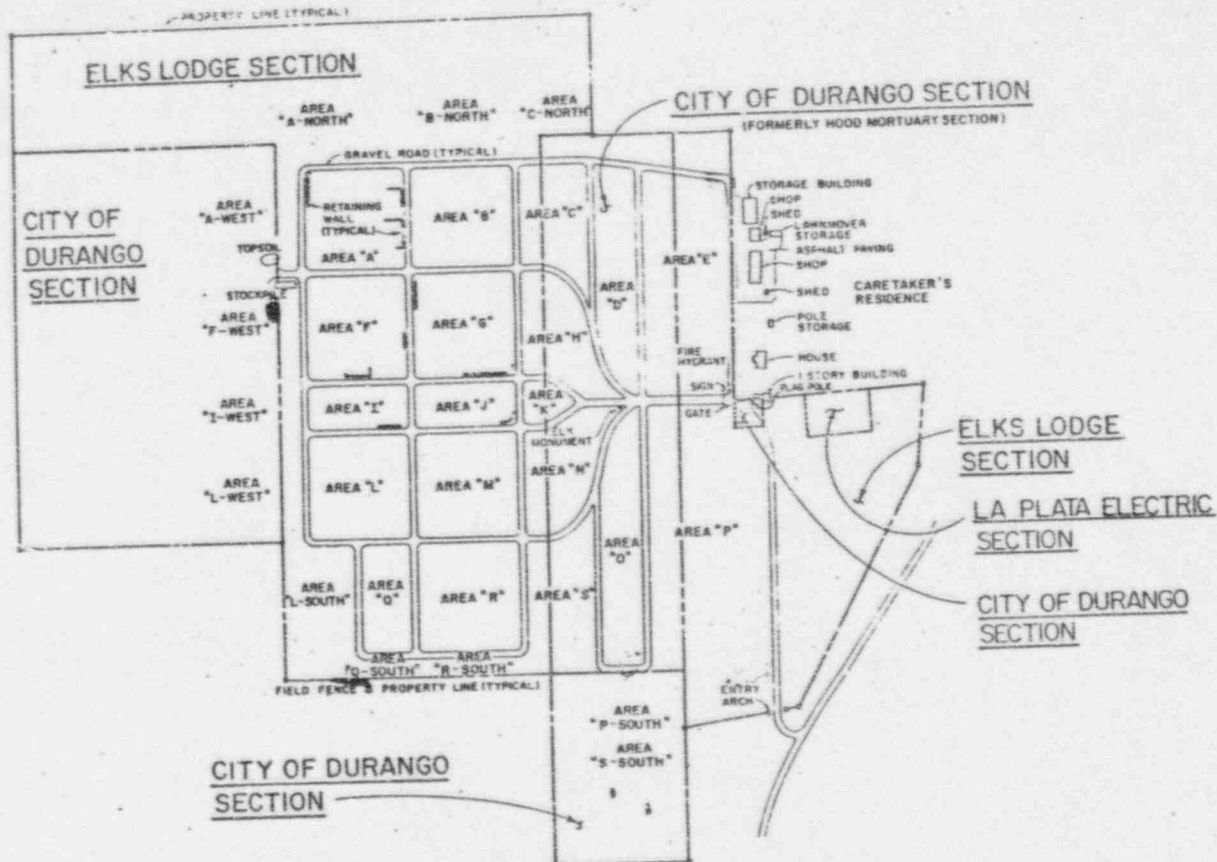
View of Area "P-South 62" After Remedial Action, Looking Northwest



View of Area "S-South 60/61" After Remedial Action  
Looking Northwest



View of Asphalt Entry Road Repaired, Looking North Towards  
Elk Monument



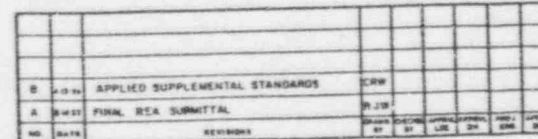
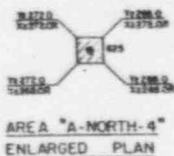
ADJACENT PROPERTY DU-059

0 100 200 300 400 FEET  
SCALE


# DRAWING LIST

AREA	DESCRIPTION
L-NORTH	DU-033-032
S-NORTH	DU-033-033
C-NORTH	DU-033-034
A-NORTH	DU-033-035
A	DU-033-036
B	DU-033-037
C	DU-033-038
D	DU-033-039
E	DU-033-040
F	DU-033-041
G	DU-033-042
H	DU-033-043
I	DU-033-044
J	DU-033-045
K	DU-033-046
L	DU-033-047
M	DU-033-048
N	DU-033-049
O	DU-033-050
P	DU-033-051
Q	DU-033-052
R	DU-033-053
S	DU-033-054
T	DU-033-055
U	DU-033-056
V	DU-033-057
W	DU-033-058
X	DU-033-059
Y	DU-033-060
Z	DU-033-061
AA	DU-033-062
AB	DU-033-063
AC	DU-033-064
AD	DU-033-065
AE	DU-033-066
AF	DU-033-067
AG	DU-033-068
AH	DU-033-069
AI	DU-033-070
AJ	DU-033-071
AK	DU-033-072
AL	DU-033-073
AM	DU-033-074
AN	DU-033-075
AO	DU-033-076
AP	DU-033-077
AQ	DU-033-078
AR	DU-033-079
AS	DU-033-080
AT	DU-033-081
AU	DU-033-082
AV	DU-033-083
AW	DU-033-084
AX	DU-033-085
AY	DU-033-086
AZ	DU-033-087
BA	DU-033-088
BB	DU-033-089
BC	DU-033-090
BD	DU-033-091
BE	DU-033-092
BF	DU-033-093
BG	DU-033-094
BH	DU-033-095
BI	DU-033-096
BJ	DU-033-097
BK	DU-033-098
BL	DU-033-099
BM	DU-033-100
BN	DU-033-101
BO	DU-033-102
BP	DU-033-103
BQ	DU-033-104
BR	DU-033-105
BS	DU-033-106
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BU	DU-033-108
BV	DU-033-109
BW	DU-033-110
BX	DU-033-111
BY	DU-033-112
BZ	DU-033-113
CA	DU-033-114
CB	DU-033-115
CC	DU-033-116
CD	DU-033-117
CE	DU-033-118
CF	DU-033-119
CG	DU-033-120
CH	DU-033-121
CI	DU-033-122
CJ	DU-033-123
CK	DU-033-124
CL	DU-033-125
CM	DU-033-126
CN	DU-033-127
CO	DU-033-128
CP	DU-033-129
CQ	DU-033-130
CR	DU-033-131
CS	DU-033-132
CT	DU-033-133
CU	DU-033-134
CV	DU-033-135
CW	DU-033-136
CX	DU-033-137
CY	DU-033-138
CZ	DU-033-139
DA	DU-033-140
DB	DU-033-141
DC	DU-033-142
DD	DU-033-143
DE	DU-033-144
DF	DU-033-145
DG	DU-033-146
DH	DU-033-147
DI	DU-033-148
DJ	DU-033-149
DK	DU-033-150
DL	DU-033-151
DM	DU-033-152
DN	DU-033-153
DO	DU-033-154
DP	DU-033-155
DQ	DU-033-156
DR	DU-033-157
DS	DU-033-158
DT	DU-033-159
DU	DU-033-160
DV	DU-033-161
DW	DU-033-162
DX	DU-033-163
DY	DU-033-164
DZ	DU-033-165
EA	DU-033-166
EB	DU-033-167
EC	DU-033-168
ED	DU-033-169
EE	DU-033-170
EF	DU-033-171
EG	DU-033-172
EH	DU-033-173
EI	DU-033-174
EJ	DU-033-175
EK	DU-033-176
EL	DU-033-177
EM	DU-033-178
EN	DU-033-179
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EP	DU-033-181
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ER	DU-033-183
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FY	DU-033-216
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GR	DU-033-235
GS	DU-033-236
GT	DU-033-237
GU	DU-033-238
GV	DU-033-239
GW	DU-033-240
GX	DU-033-241
GY	DU-033-242
GZ	DU-033-243
HA	DU-033-244
HB	DU-033-245
HC	DU-033-246
HD	DU-033-247
HE	DU-033-248
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HG	DU-033-250
HH	DU-033-251
HI	DU-033-252
HJ	DU-033-253
HK	DU-033-254
HL	DU-033-255
HM	DU-033-256
HN	DU-033-257
HO	DU-033-258
HP	DU-033-259
HO	DU-033-260
HR	DU-033-261
HS	DU-033-262
HT	DU-033-263
HU	DU-033-264
HV	DU-033-265
HW	DU-033-266
HX	DU-033-267
HY	DU-033-268
HZ	DU-033-269
IA	DU-033-270
IB	DU-033-271
IC	DU-033-272
ID	DU-033-273
IE	DU-033-274
IF	DU-033-275
IG	DU-033-276
IH	DU-033-277
II	DU-033-278
IJ	DU-033-279
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IO	DU-033-286
IR	DU-033-287
IS	DU-033-288
IT	DU-033-289
IU	DU-033-290
IV	DU-033-291
IW	DU-033-292
IX	DU-033-293
IY	DU-033-294
IZ	DU-033-295
JA	DU-033-296
JB	DU-033-297
JC	DU-033-298
JD	DU-033-299
JE	DU-033-300
JF	DU-033-301
JG	DU-033-302
JH	DU-033-303
JI	DU-033-304
IJ	DU-033-305
JK	DU-033-306
IL	DU-033-307
JM	DU-033-308
JN	DU-033-309
JO	DU-033-310
JP	DU-033-311
JO	DU-033-312
JR	DU-033-313
JS	DU-033-314
JT	DU-033-315
JU	DU-033-316
JV	DU-033-317
JW	DU-033-318
JX	DU-033-319
JY	DU-033-320
JZ	DU-033-321
KA	DU-033-322
KB	DU-033-323
KC	DU-033-324
KD	DU-033-325
KE	DU-033-326
KF	DU-033-327
KG	DU-033-328
KH	DU-033-329
KI	DU-033-330
KJ	DU-033-331
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KN	DU-033-335
KO	DU-033-336
KP	DU-033-337
KO	DU-033-338
KR	DU-033-339
KS	DU-033-340
KT	DU-033-341
KU	DU-033-342
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KW	DU-033-344
KX	DU-033-345
KY	DU-033-346
KZ	DU-033-347
LA	DU-033-348
LB	DU-033-349
LC	DU-033-350
LD	DU-033-351
LE	DU-033-352
LF	DU-033-353
LG	DU-033-354
LH	DU-033-355
LI	DU-033-356
LJ	DU-033-357
LK	DU-033-358
LM	DU-033-359
LN	DU-033-360
LO	DU-033-361
LP	DU-033-362
LO	DU-033-363
LR	DU-033-364
LS	DU-033-365
LT	DU-033-366
LU	DU-033-367
LV	DU-033-368
LW	DU-033-369
LX	DU-033-370
LY	DU-033-371
LZ	DU-033-372
MA	DU-033-373
MB	DU-033-374
MC	DU-033-375
MD	DU-033-376
ME	DU-033-377
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MG	DU-033-379
MH	DU-033-380
MI	DU-033-381
MJ	DU-033-382
MK	DU-033-383
ML	DU-033-384
MM	DU-033-385
MN	DU-033-386
MO	DU-033-387
MP	DU-033-388
MO	DU-033-389
MR	DU-033-390
MS	DU-033-391
MT	DU-033-392
MU	DU-033-393
MV	DU-033-394
MW	DU-033-395
MX	DU-033-396
MY	DU-033-397
MZ	DU-033-398
NA	DU-033-399
NB	DU-033-400
NC	DU-033-401
ND	DU-033-402
NE	DU-033-403
NF	DU-033-404
NG	DU-033-405
NH	DU-033-406
NI	DU-033-407
NJ	DU-033-408
NK	DU-033-409
NL	DU-033-410
NM	DU-033-411
NO	DU-033-412
NP	DU-033-413
NO	DU-033-414
NR	DU-033-415
NS	DU-033-416
NT	DU-033-417
NU	DU-033-418
NV	DU-033-419
NW	DU-033-420
NX	DU-033-421
NY	DU-033-422
NZ	DU-033-423
OA	DU-033-424
OB	DU-033-425
OC	DU-033-426
OD	DU-033-427
OE	DU-033-428
OF	DU-033-429
OG	DU-033-430
OH	DU-033-431
OI	DU-033-432
OJ	DU-033-433
OK	DU-033-434
OL	DU-033-435
OM	DU-033-436
ON	DU-033-437
OO	DU-033-438
OP	DU-033-439
OO	DU-033-440
OR	DU-033-441
OS	DU-033-442
OT	DU-033-443
OU	DU-033-444
OV	DU-033-445
OW	DU-033-446
OX	DU-033-447
OY	DU-033-448
OZ	DU-033-449
PA	DU-033-450
PB	DU-033-451
PC	DU-033-452
PD	DU-033-453
PE	DU-033-454
PF	DU-033-455
PG	DU-033-456
PH	DU-033-457
PI	DU-033-458
PJ	DU-033-459
PK	DU-033-460
PL	DU-033-461
PM	DU-033-462
PN	DU-033-463
PO	DU-033-464
PP	DU-033-465
PO	DU-033-466
PR	DU-033-467
PS	DU-033-468
PT	DU-033-469
PU	DU-033-470
PV	DU-033-471
PW	DU-033-472
PX	DU-033-473
PY	DU-033-474
PZ	DU-033-475
QA	DU-033-476
QB	DU-033-477
QC	DU-033-478
QD	DU-033-479
QE	DU-033-480
QF	DU-033-481
QG	DU-033-482
QH	DU-033-483
QI	DU-033-484
QJ	DU-033-485
QK	DU-033-486
QL	DU-033-487
QM	DU-033-488
QN	DU-033-489
QO	DU-033-490
QP	DU-033-491
QO	DU-033-492
QR	DU-033-493
QS	DU-033-494
QT	DU-033-495
QU	DU-033-496
QV	DU-033-497
QW	DU-033-498
QX	DU-033-499
QY	DU-033-500
QZ	DU-033-501
RA	DU-033-502
RB	DU-033-503
RC	DU-033-504
RD	DU-033-505
RE	DU-033-506
RF	DU-033-507
RG	DU-033-508
RH	DU-033-509
RI	DU-033-510
RJ	DU-033-511
RK	DU-033-512
RL	DU-033-513
RM	DU-033-514
RO	DU-033-515
RP	DU-033-516
RO	DU-033-517
RR	DU-033-518
RS	DU-033-519
RT	DU-033-520
RU	DU-033-521
RV	DU-033-522
RW	DU-033-523
RX	DU-033-





**NOTE:**  
SUPPLEMENTAL STANDARDS IN ACCORDANCE WITH  
42 CFR 1.71 (c) SHALL APPLY TO ELSE  
WHERE SECTIONS AS INDICATED ON THIS  
DRAWING.

U. S. DEPARTMENT OF ENERGY				
ALBUQUERQUE, NEW MEXICO				
DESIGNED BY	RADIOLOGICAL SURVEY DATA DU-053 AREAS: "A-NORTH" AND "A" DURANGO, COLORADO URBANUM MILL TAILINGS REMEDIAL ACTION PROJECT			
CHECKED BY				
REVIEWED BY				
RECOMMENDED BY				
DRAWN BY	DATE	REV. PROJECT NUMBER	DATE	LOG PROJECT ENGINEER
NR		NR		NR
 MORRISON KNUDSEN		PROJECT NO. DE-AC04 - 83AL1879 DRAWING NO. DU-053-031		



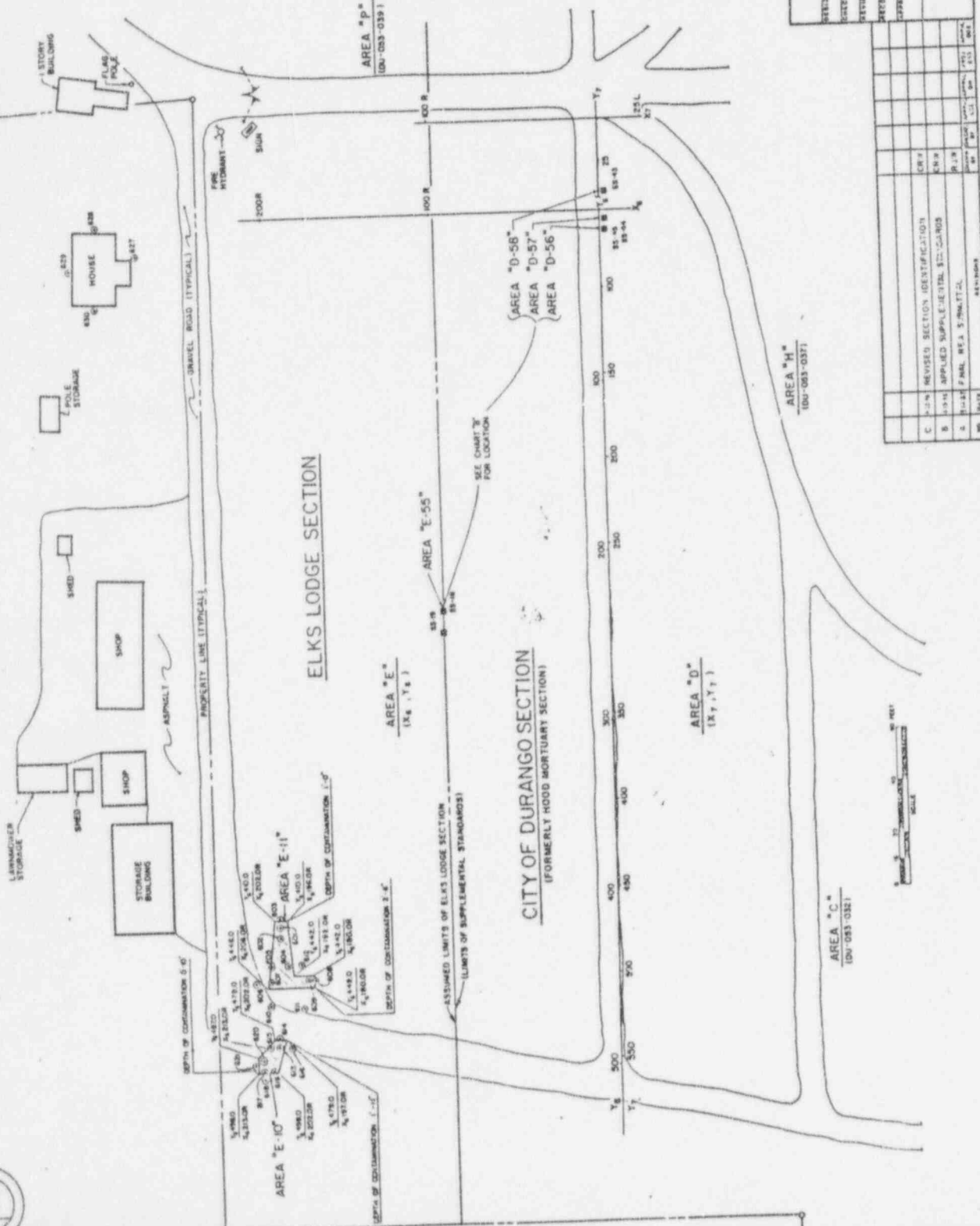
50% SAMPLE DEPOSIT: 30

## ESTIMATED DEPTH OF CONTAMINATION

AREA	DEPTH
"E-10"	0'-10" AT NORTHEAST END SLOPING TO 1'-11" AT SOUTHWEST END
"E-11"	0'-0" AT SOUTH END SLOPING TO 2'-5" AT NORTH END
"E-13"	0'-6"
"D-56"	0'-6"
"D-57"	0'-6"
"D-58"	0'-6"

40 CFR 101.11 (c) SHALL APPLY TO THIS  
LOOK SECTIONS AS INDICATED ON THIS  
DRAWING.

CHART "B"				
AREA	A	B	C	D
"E" 35"	255.0	96.08	285.0	100.04
"D" 36"	86.0	5.04	84.0	5.04
"D" 35"	82.0	5.04	76.0	4.04
"D" 36"	45.0	5.04	41.0	4.04



U. S. DEPARTMENT OF ENERGY  
WASHINGTON, NEW MEXICO

RADIOLOGICAL SURVEY DATA DU-053  
AREAS: CAPTAKER'S RESIDENCE, "E" AND "D"

DURANGO, COLORADO  
 1900-1901: ACTING MEXICAN

PROJECT NAME	DATE	STATUS	APPROVED BY
UPPER MERIDIAN	10/10/70	RECEIVED	10/10/70

NR	PROJECT 43.	E.A.
----	-------------	------

DE-AC04 - 83AL187

133M	00-000000	00-000000
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100

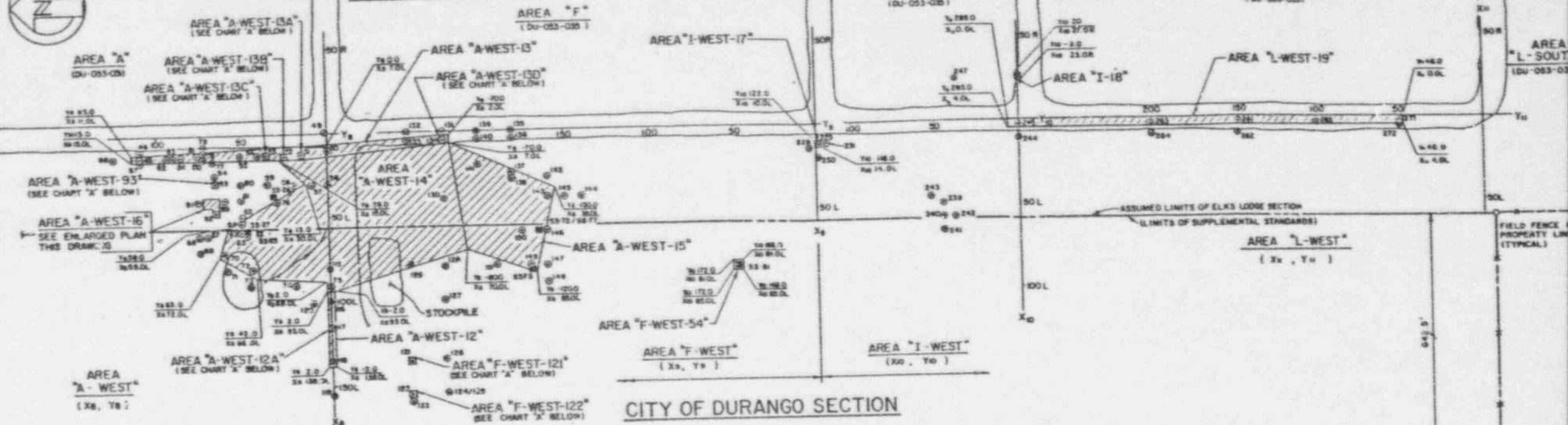
100

100

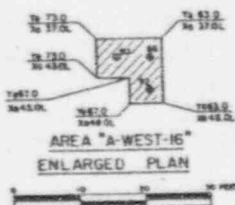




## ELKS LODGE SECTION



## CITY OF DURANGO SECTION



AREA	COORDINATES				AXIS	ADDITIONAL DEPTHS OF CONTAMINATION
	A	B	C	D		
A-WEST-12A	2.0	117.0L	-2.0	113.0L	Xa, Yb	1'-11"
A-WEST-13A	17.0	115.0L	13.0	111.0L	Xa, Yb	5'-0"
A-WEST-13B	27.0	115.0L	23.0	111.0L	Xa, Yb	5'-0"
A-WEST-13C	42.0	115.0L	38.0	111.0L	Xa, Yb	1'-0"
A-WEST-13D	272.0	7.0L	218.0	3.0L	Xa, Yb	1'-0"
A-WEST-93	67.0	3.0L	63.0	27.0L	Xa, Yb	2'-0"
F-WEST-121	244.0	137.0L	238.0	133.0L	Xa, Yb	5'-5"
F-WEST-122	244.0	137.0L	238.0	133.0L	Xa, Yb	4'-5"
TOTAL DEPTHS OF CONTAMINATION						



NOTES:  
SUPPLEMENTAL STANDARDS IN ACCORDANCE WITH  
AS CEN 192.21 (1) SHALL APPLY TO ELKS  
LODGE SECTION AS INDICATED ON THIS  
DRAWING.

### LEGEND

- 228 BOREHOLE DESIGNATION
- 228R SOIL SAMPLE DESIGNATION

### ESTIMATED DEPTH OF CONTAMINATION

AREA	DEPTH
A-WEST-12	6'-6"
A-WEST-13	1'-0"
A-WEST-14	1'-0" ALONG EAST EDGE SLOPE TO 6'-0" ALONG WEST EDGE
A-WEST-15	1'-3"
A-WEST-16	1'-6" ALONG SOUTH EDGE SLOPE TO 3'-5" ALONG NORTH EDGE
I-WEST-17	1'-3"
I-WEST-18	5'-0"
L-WEST-19	1'-3"
F-WEST-54	0'-2"
SEE CHART "X" FOR ADDITIONAL AREAS	

U. S. DEPARTMENT OF ENERGY  
ALBUQUERQUE, NEW MEXICO

REVIEWED BY	DATE	REVIEWED BY	DATE
APPROVED	DATE	APPROVED	DATE
PROJECT NO.	DE-AC04-83AL18	DRAWN BY	DU-053-0

C-100	APPLIED SUPPLEMENTAL STANDARDS	CRW
B-100	REVISED DEPTH OF F-WEST-121	CRW
A-100	FINAL REA SUBMITTAL	RJW
NO. 100	REVISIONS	



AREA "B"  
(DU-053-032)

DEPTH OF CONTAMINATION 0'-6"

AREA "A"  
(DU-053-031)

DEPTH OF CONTAMINATION 3'-0"

DEPTH OF CONTAMINATION 1'-0"

DEPTH OF CONTAMINATION 1'-0"

DEPTH OF CONTAMINATION 1'-0"

DEPTH OF CONTAMINATION 1'-0"

DEPTH OF CONTAMINATION 1'-0"

DEPTH OF CONTAMINATION 1'-0"

DEPTH OF CONTAMINATION 1'-0"

# LEGEND

② 234 BOREHOLE DESIGNATION  
2350 SOIL SAMPLE DESIGNATION

## ESTIMATED DEPTH OF CONTAMINATION

AREA	ESTIMATED DEPTH OF CONTAMINATION
"F-20"	EAST-WEST LEG: 0'-6" AT EAST END SLOPING TO 3'-0" AT WEST END NORTH-SOUTH LEG: 1'-6"
"F-21"	1'-6" AT NORTH END SLOPING TO 3'-0" TO SOUTH END
"I-22"	1'-6"
"I-23"	0'-6"
"I-24"	1'-6"
"L-25"	EAST-WEST LEG: 1'-0" AT WEST END SLOPING TO 2'-6" AT EAST END NORTH-SOUTH LEG: 2'-6"
"L-26"	NORTH LEG: 2'-6" EAST LEG: 4'-6" AT NORTH END SLOPING TO 0'-6" AT SOUTH END SOUTH LEG: 1'-6"
AREA "Q" (DU-053-038)	2'-6" AT NORTH END SLOPING UP TO 1'-0" TOWARDS THE MIDDLE THEN SLOPING DOWN TO 2'-0" AT THE SOUTH END
"L-27"	1'-6"
"L-28"	1'-6"
"L-29"	1'-0"
"I-30"	2'-4"
"I-31"	2'-4"

NOTE:  
SUPPLEMENTAL STANDARDS IN ACCORDANCE WITH 40 CFR 163.23 (d) SHALL APPLY TO ELKS LODGE SECTION AS INDICATED ON THIS DRAWING.

DEPTH OF CONTAMINATION 1'-0"

AREA  
"L-SOUTH"  
(DU-053-038)

U. S. DEPARTMENT OF ENERGY  
ALBUQUERQUE, NEW MEXICO

RADIOLOGICAL SURVEY DATA DU-053

AREAS "F", "I" AND "L"

DURANGO, COLORADO

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT

APPROVED BY NR DATE PROJECT CLOSURE DATE DATE PROJECT SCHEDULE DATE

PROJECT NO. DE-AC04-83AL18796

DU-053-035

REV.

REV.

REV.

REV.

REV.

REV.

REV.

REV.

REV.

REV.

REV.

REV.

REV.

REV.

REV.

REV.

REV.

REV.

REV.

REV.

ELKS LODGE SECTION

ELKS LODGE SECTION

AREA	COORDINATES			
	A	B	C	D
"I-52"	92.0	30.0R	68.0	34.0R
"I-53"	72.0	14.0R	68.0	16.0R

0 10 20 30 40 50 60 70 80 90 100 FEET

NO.	REVISION	DATE	BY	CHKD.	APP'D.	REVISION
1	APPLIED SUPPLEMENTAL STANDARDS	CRW				
2	FINAL REA SUBMITTAL	R.2W				

MORRISON  
KNUDSEN

# LEGEND

© 197 BUREAU OF DESIGNATION

## ESTIMATED DEPTH OF CONTAMINATION

AREA	DEPTH
"G-30"	1'-0"
"G-31"	2'-0" AT WEST END SLOPING TO 2'-6" AT EAST END
"J-32"	NORTH-SOUTH LEG: 1'-0" EAST-WEST LEG: 1'-6" AT WEST END SLOPING TO 2'-6" AT EAST END
"M-33"	NORTH-SOUTH LEG: 1'-0" EAST-WEST LEG: 1'-6" AT EAST END SLOPING TO 3'-0" AT WEST END
"M-34"	2'-0"
"M-35"	2'-0"

NOTE:  
SUPPLEMENTAL STANDARDS IN ACCORDANCE WITH  
U.S. EPA 152.31 FOR RADIOLOGICAL SURVEY DATA  
DU-053-0331 ARE INDICATED ON THIS  
DRAWING.

## U.S. DEPARTMENT OF ENERGY ALBUQUERQUE, NEW MEXICO

### RADIOLOGICAL SURVEY DATA DU-053 AREA "G", "J", AND "M"

DURANGO, COLORADO

URABIAN HALL TAIL-25 RESEAL ACTION PROJECT

DATE: 10/15/78 BY: JESSE BUCHER

PROJECT NO. NR

DE - AC04 - 83AL18796

SECTION NO. DU-053-036

MORRISON  
KNUSEN

NO.	REV.	DESCRIPTION	DATE	BY	CHKD.
1	1	REVISED SECTION IDENTIFICATION	10/15/78	JESSE BUCHER	
2	2	APPLIED SUPPLEMENTAL STANDARDS	10/15/78	JESSE BUCHER	
3	3	FINAL AREA SUBMITTAL	10/15/78	JESSE BUCHER	

## CITY OF DURANGO SECTION (FORMERLY HOOD MORTUARY SECTION)

AREA "H"  
DU-053-0371

## ELKS LODGE SECTION

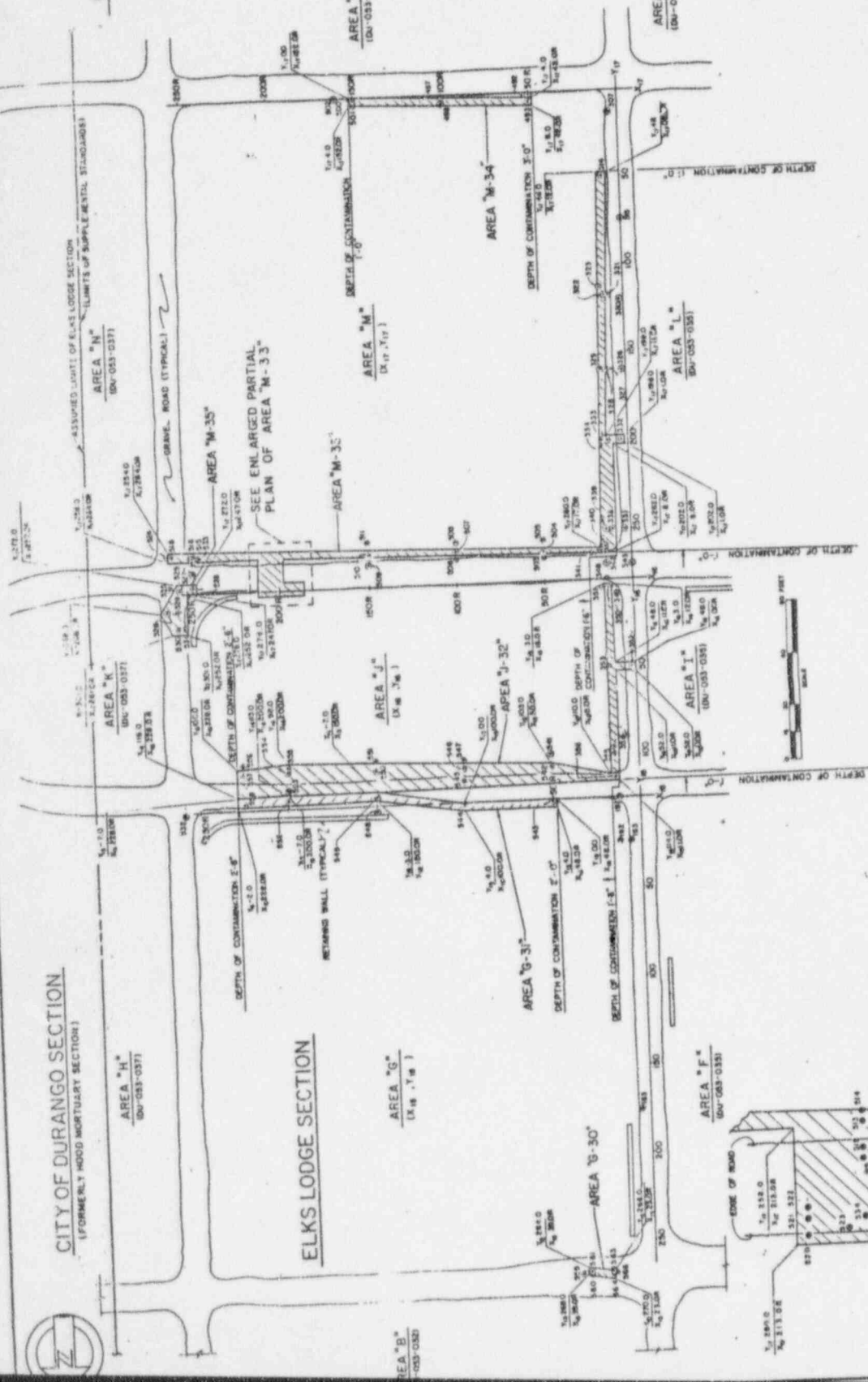
AREA "G"  
(18' x 18')

AREA "F"  
DU-053-0351

AREA "M-33"

## ENLARGED PARTIAL PLAN

SCALE: 1" = 10' (SEE DRAWING)







LEGEND

OFF. SOIL SAMPLE DESIGNATION

ESTIMATED DEPTH OF CONTAMINATION

AREA	DEPTH
"N-50"	0'-6"
"N-51A"	0'-6"
"N-51B"	0'-6"

NOTE:  
SUPPLEMENTAL STANDARDS IN ACCORDANCE WITH  
40 CFR 192.11, (c) SHALL APPLY TO ELKS  
LODGE SECTIONS AS INDICATED ON THIS  
DRAWING.

CHART "B"				
AREA	A	B	C	D
"N-50"	142.0	11.04	138.0	15.04
"N-51A"	132.0	13.04	148.0	17.04
"N-51B"	132.0	13.04	148.0	17.04

AREA "S"

AREA "N"  
(X 10<sup>-3</sup> is 1)

AREA "N-51A"  
(SEE CHART "B" THIS  
DRAWING)

AREA "N-51B"  
(SEE CHART "B" THIS  
DRAWING)

AREA "N-50"  
(SEE CHART "B" THIS  
DRAWING)

AREA "N"  
(DU-053-036)

AREA "J"  
(DU-053-036)

AREA "G"  
(DU-053-036)

CITY OF DURANGO SECTION  
(FORMERLY HOOD MORTUARY SECTION)

ELKS LODGE SECTION

ASSUMED LIMITS OF ELKS LODGE SECTION  
(LIMITS OF SUPPLEMENTAL STANDARDS)

RETAINING  
WALL (TYPICAL)



U. S. DEPARTMENT OF ENERGY  
ALBUQUERQUE, NEW MEXICO

RADIOLOGICAL SURVEY DATA DU-053

AREAS "N", "N" AND "N"

DURANGO, COLORADO

URANUS HILL TAILINGS REVEAL ACTION PROJECT

STATE OF NEW MEXICO

PROJECT NO.

DE-AC04-83AL8796

STATION NO. DU-053-037

MCRISEN  
KJENSEN

NO.	DATE	REVISION	BY	CHKD.	APP'D.
1	10/1/83	REVISED SECTION IDENTIFICATION			
2	10/1/83	APPLIED SUPPLEMENTAL STANDARDS			
3	10/1/83	REVISION			



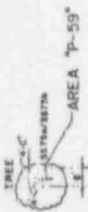


CARETAKERS RESIDENCE  
DU-053-0331

CITY OF DURANGO SECTION

PROPERTY LINE (TYPICAL)

ONE STORY BUILDING



AREA "P-59"

AREA "P"

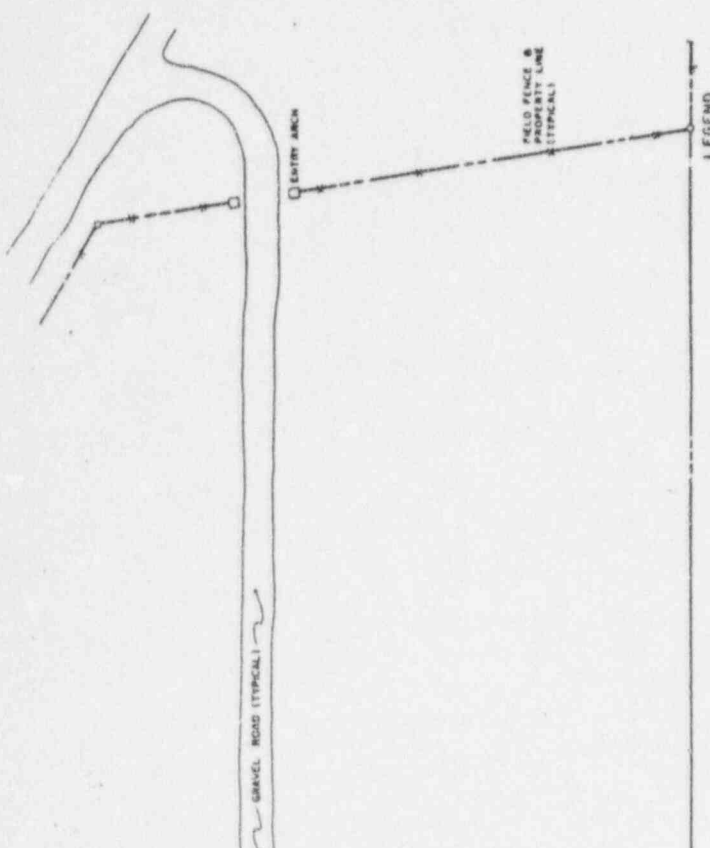
AREA "E"  
DU-053-0331

ELKS LODGE SECTION

ASSUMED LIMITS OF ELKS LODGE SECTION  
(LIMITS OF SUPPLEMENTAL STANDARDS)

CITY OF DURANGO SECTION  
(FORMERLY HOOD MORTUARY SECTION)

AREA "O"



LEGEND

WITHIN-AREA SOIL SAMPLE DESIGNATION

ESTIMATED DEPTH OF CONTAMINATION

AREA "P-30" 0'-4"

NOTE:  
CONTAMINATION ESTIMATED TO CORRELATE WITH  
AS OF 1971. ALL SOIL SAMPLES WERE  
LOOSE SECTION AS INDICATED ON THIS  
MAP.

U. S. DEPARTMENT OF ENERGY  
ALBUQUERQUE, NEW MEXICO

RADIOLOGICAL SURVEY DATA DU-053

AREA "P"

DURANGO, COLORADO  
URANUM AND THORIUM DETECTION ACTION PROJECT

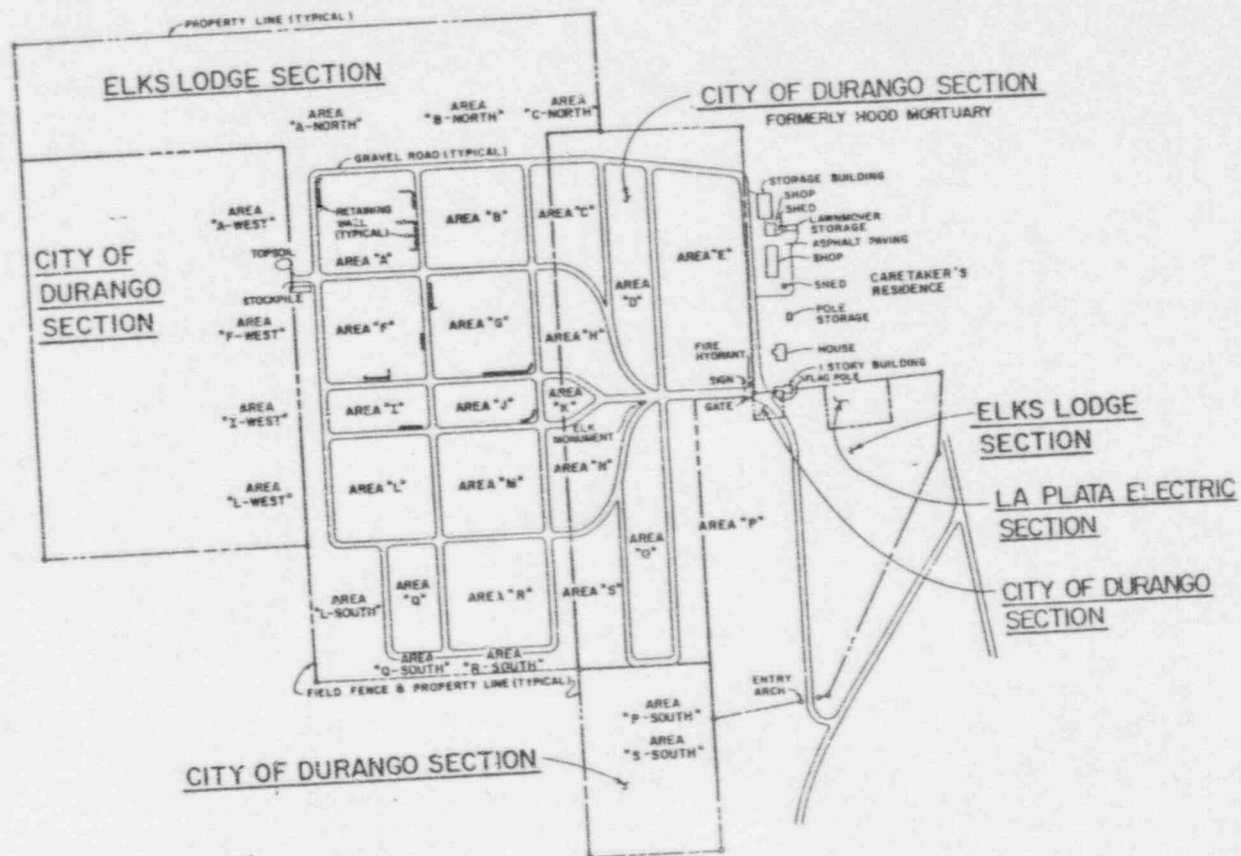
DATE: 10/1/76  
BY: NR  
CHECKED: NR  
APPROVED: NR

DE: AC04 - 81518796  
REVISION: DU-053-039

REVISION: DU-053-039







A horizontal graphic scale bar with alternating black and white segments. Numerical markings are placed above the bar at intervals of 60, starting from 0 and ending at 480. The word "FEET" is positioned to the right of the 480 mark.

AS-BUILT DRAWING

[illegible]

U. S. DEPARTMENT OF ENERGY  
ALBUQUERQUE, NEW MEXICO

EXCAVATION & RESTORATION PLAN DU-05  
KEY PLAN

DURANGO, COLORADO

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT

NR NR NR NR

PROJECT NO. DE-AC04-83AL18  
DRAWING NO. DU-053-05

MORRISON  
KNUDSEN



CARETAKER'S RESIDENCE

1. WINDMILL STORAGE

SHED

STORAGE BUILDING

SHOP

SHOP

POLE STORAGE

HOUSE

1 STORY BUILDING

FLAG POLE

PROPERTY LINE (TYPICAL)

GRAVEL ROAD (TYPICAL)

FIRE HYDRANT

POOR

SIGN

PLASTIC

100 R

AREA "P"

(UNDESIGNED)

AREA "E-55"

SEE CHART "E" FOR LOCATION

AREA "D"

AREA "H"

(DU-053-057)

CITY OF DURANGO SECTION  
FORMERLY HOOD MORTUARY

AREA "E"

(Y<sub>6</sub>, X<sub>4</sub>)

AREA "D"

(Y<sub>7</sub>, X<sub>7</sub>)

AREA "C"

(DU-053-062)



LEGEND

- W WATER LINE
- G GAS LINE
- GM GAS MAIN
- S SEWER LINE
- SM SEWER MAIN
- STN STORM SEWER
- E ELECTRICAL LINE
- T TELEPHONE LINE
- SECTION LINE
- PROPERTY LINE
- FENCE LINE
- METER
- VALVE
- PROPERTY PIN
- POWER POLE

OVERHEAD SERVICE DENOTED BY SOLID LINE.  
UNDERGROUND SERVICE DENOTED BY DASHED LINE.

CHART "B"

AREA	A	B	C	D
E-55	280.0	96.0R	280.0	400.0R
E-56	560.0	5.0L	560.0	1.0L
E-57	80.0	5.0L	560.0	4.0L
E-58	620.0	5.0L	560.0	1.0L

NOTE  
SEE DRAWING DU-053-062 FOR  
GENERAL NOTES.

AS-BUILT DRAWING

U. S. DEPARTMENT OF ENERGY  
ALBUQUERQUE, NEW MEXICO

EXCAVATION AND RESTORATION PLAN DU-053  
AREAS: CARETAKER'S RESIDENCE, "E" AND "D"

DURANGO, COLORADO

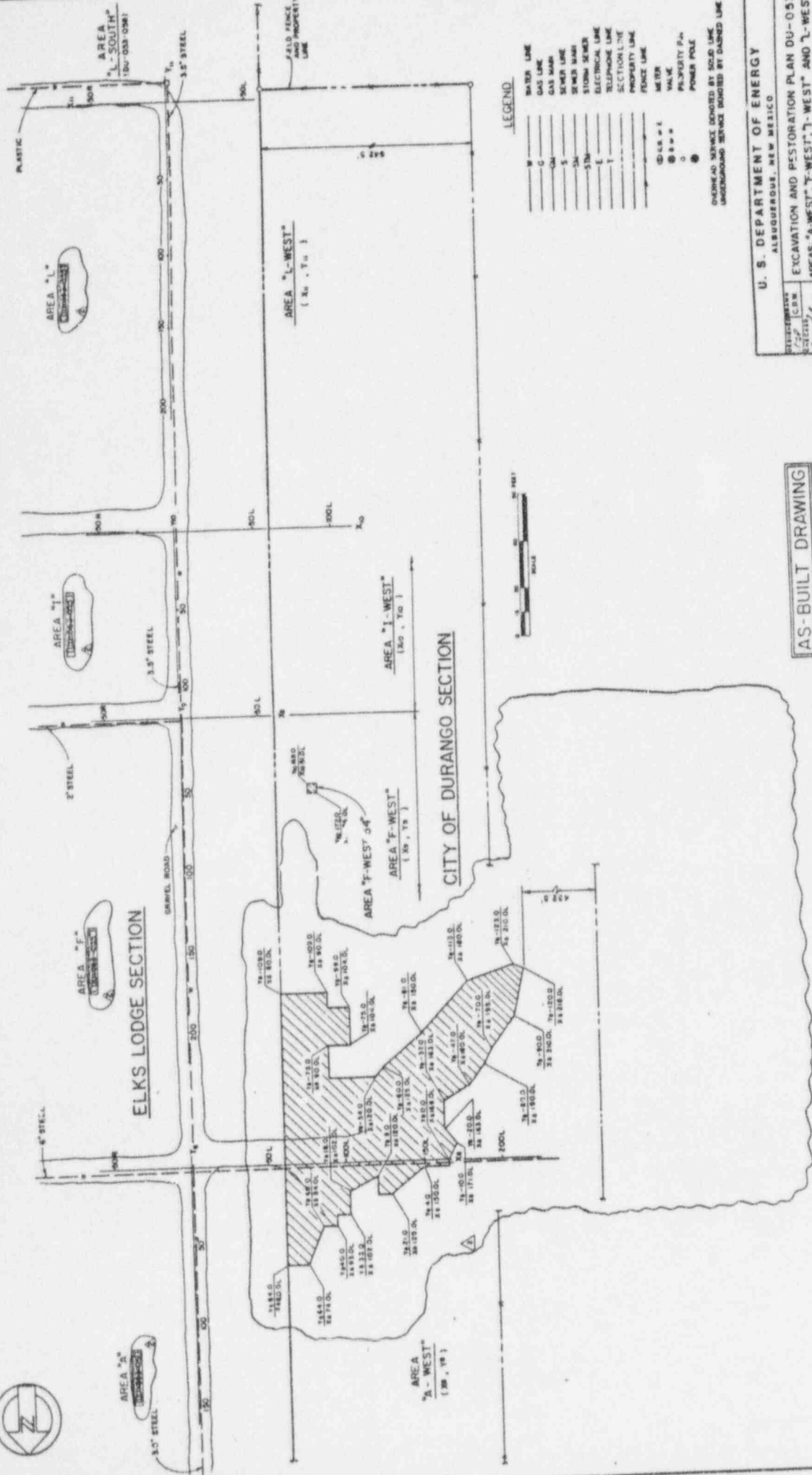
URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT

DATE	BY	CHKD	DATE	BY	CHKD	DATE	BY	CHKD
11/15/83	NR		11/15/83	NR		11/15/83	NR	
PROJECT NO.			PROJECT NO.			PROJECT NO.		
DE-AC04-83AL18796			DE-AC04-83AL18796			DE-AC04-83AL18796		
DRAWING NO.			DRAWING NO.			DRAWING NO.		
DU-053-053			DU-053-053			DU-053-053		
REV 4			REV 4			REV 4		

MK-FERGUSON  
A REGISTERED PROFESSIONAL ENGINEER



NO.	DATE	DESCRIPTION	BY	CHKD	DATE	BY	CHKD	DATE	BY	CHKD
4	11/15/83	AS-BUILT DRAWING	NRH	ABC	11/15/83	NRH	ABC	11/15/83	NRH	ABC
5	7/1/84	REVISED SECTION LINES	DJM	NRH	7/1/84	DJM	NRH	7/1/84	DJM	NRH
2	4/1/84	REVISED SECTION IDENTIFICATION	DJM	NRH	4/1/84	DJM	NRH	4/1/84	DJM	NRH
1	4/1/84	REVISED AREAS OF EXCAVATION	CRW	NRH	4/1/84	CRW	NRH	4/1/84	CRW	NRH
0	4/1/84	ISSUED FOR CONSTRUCTION	NRH	NRH	4/1/84	NRH	NRH	4/1/84	NRH	NRH



AS-BUILT DRAWING

U. S. DEPARTMENT OF ENERGY

ALBUQUERQUE, NEW MEXICO

EXCAVATION AND RESTORATION PLAN DU-053  
AREAS "A-WEST", "T-WEST", "Y-WEST" AND "Z-WEST"

DURANGO, COLORADO  
URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT

PROJECT NO. NR  
PROJECT DO NR

DE AC04 - 83AL18796  
REVISED NO. DU-053-054 2

REVISED FOR CONSTRUCTION



REVISIONS

DATE

BY

CHKD

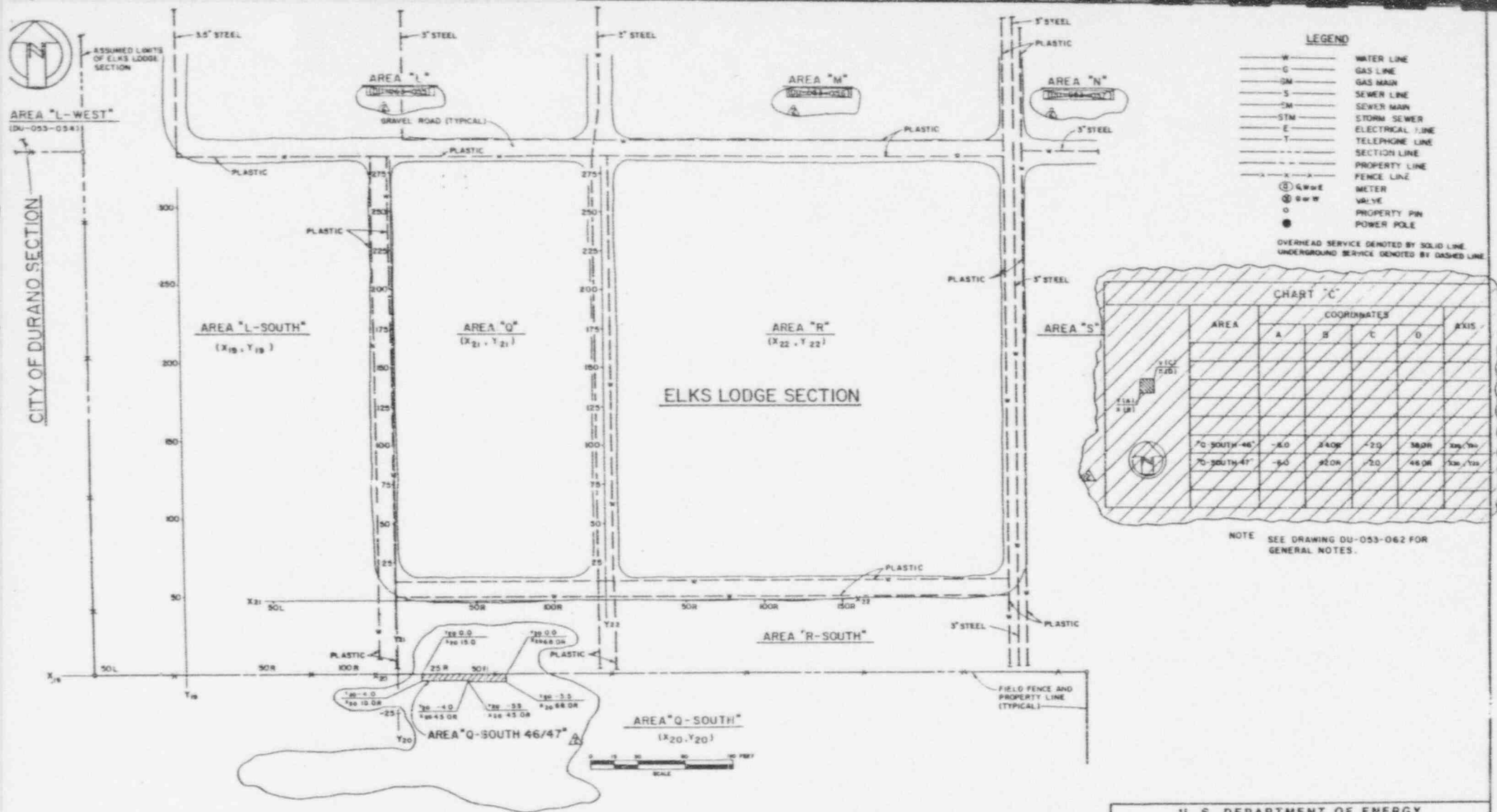
APP'D

DATE

BY

CHKD

APP'D



**AS-BUILT DRAWING**



NO.	DATE	REVISION	BY	CHK	APP	DATE
2	10/1/78	AS-BUILT DRAWING	CRW	FR	NR	10/1/78
1	10/1/78	REVISED AREAS OF EXCAVATION	CRW	FR	NR	10/1/78
0	10/1/78	ISSUED FOR CONSTRUCTION	CRW	FR	NR	10/1/78

U. S. DEPARTMENT OF ENERGY ALBUQUERQUE, NEW MEXICO			
EXCAVATION AND RESTORATION PLAN DU-053			
AREAS: "L-SOUTH", "Q", "R", "Q-SOUTH", AND "R-SOUTH"			
DURANGO, COLORADO			
URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT			
DATE	BY	DATE	BY
NR	NR	NR	NR
PROJECT NO.		DE-AC04-83AL18796	
DRAWING NO.		DU-053-058	
REV		2	

**MK-FERGUSON**  
A HOKUSON COMPANY





# ELKS LODGE SECTION

ASSUMED LIMITS ELKS LODGE SECTION

AREA "P"

(DU-053-058)



GRAVEL ROAD

PLASTIC

AREA "O"

CITY OF DURANGO SECTION  
FORMERLY HOOD MORTUARY

PLASTIC

AREA "S"

ASSUMED LIMITS ELKS LODGE SECTION

# ELKS LODGE SECTION

STEEL

PLASTIC

AREA "K"

(DU-053-058)

PLASTIC

FIELD FENCE AND  
PROPERTY LINE  
(TYPICAL)

AREA "P-SOUTH-62"  
(SEE CHART "D" THIS DRAWING)

AREA "P-SOUTH"  
(X 25, Y 25)

AREA "S-SOUTH"  
(X 25, Y 25)

AREA "S-SOUTH-60/61"  
(SEE CHART "D" THIS DRAWING)



## LEGEND

W	WATER LINE
G	GAS LINE
GN	GAS MAIN
SM	SEWER MAIN
STM	STORM SEWER
E	ELECTRICAL LINE
T	TELEPHONE LINE
---	SECTION LINE
---	PROPERTY LINE
---	FENCE LINE
⊙	METER
⊙	VALVE
⊙	PROPERTY PIN
⊙	POWER POLE

OVERHEAD SERVICE DENOTED BY SOLID LINE  
UNDERGROUND SERVICE DENOTED BY DASHED LINE

NOTE: SEE DRAWING DU-053-062 FOR  
GENERAL NOTES.

## CHART "D"

		COORDINATES			
AREA		A	B	C	D
S-SOUTH-60/61	165.5	98.0R	158.0	112.0R	
S-SOUTH-62	167.0	108.0R	24.0	112.0R	
P-SOUTH-62	91.0	223.0R	85.5	233.0R	

AS-BUILT DRAWING

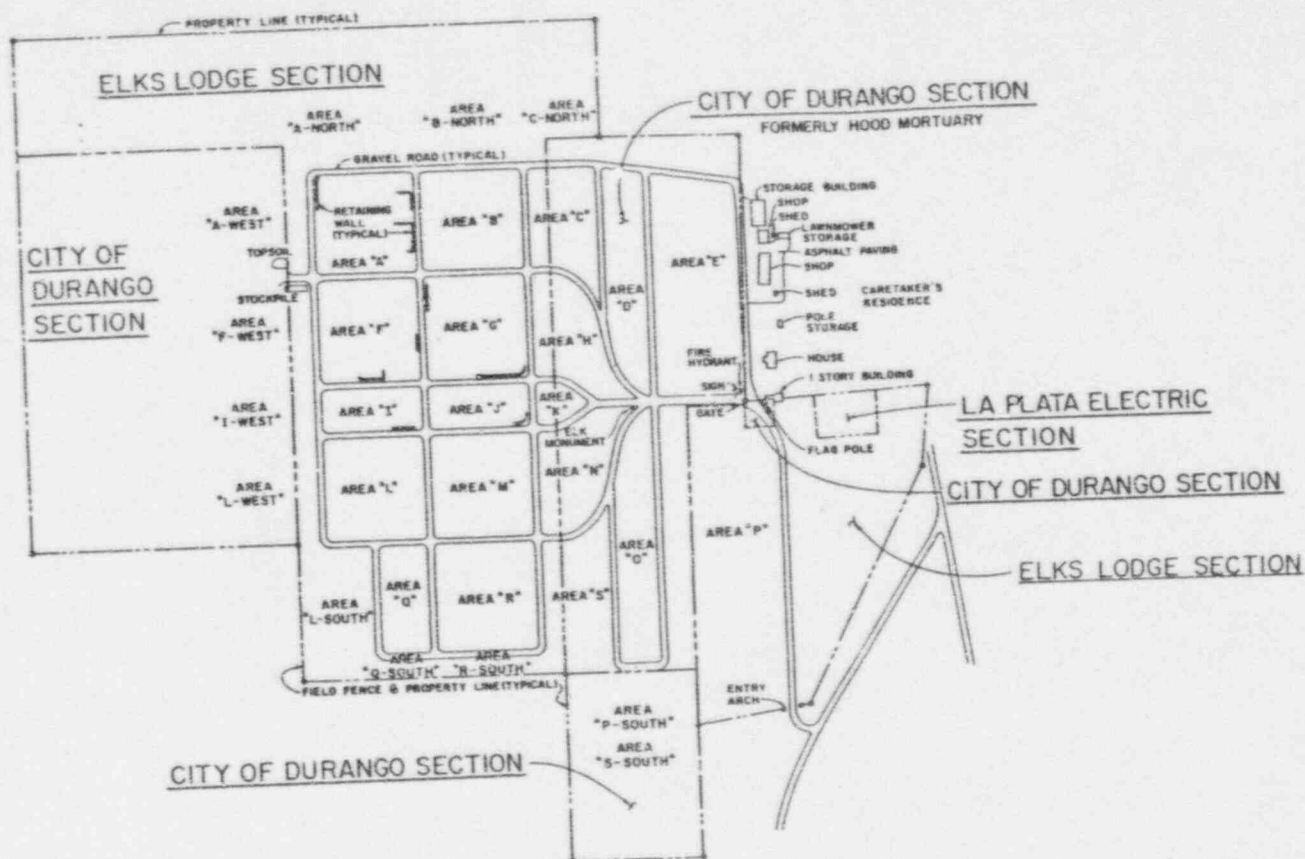


NO	DATE	REVISIONS
3	10/20/84	AS-BUILT DRAWING
2	11/1/84	REVISED SECTION IDENTIFICATION
1	11/1/84	REVISED AREAS OF EXCAVATION
0	10/20/84	ISSUED FOR CONSTRUCTION

U. S. DEPARTMENT OF ENERGY ALBUQUERQUE, NEW MEXICO	
EXCAVATION AND RESTORATION PLAN	
AREAS: "P-SOUTH" AND "S-SOUTH"	
DURANGO, COLORADO	
URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT	
PROJECT NO.	DE-AC04-83AL18796
DRAWING NO.	DU-053-060

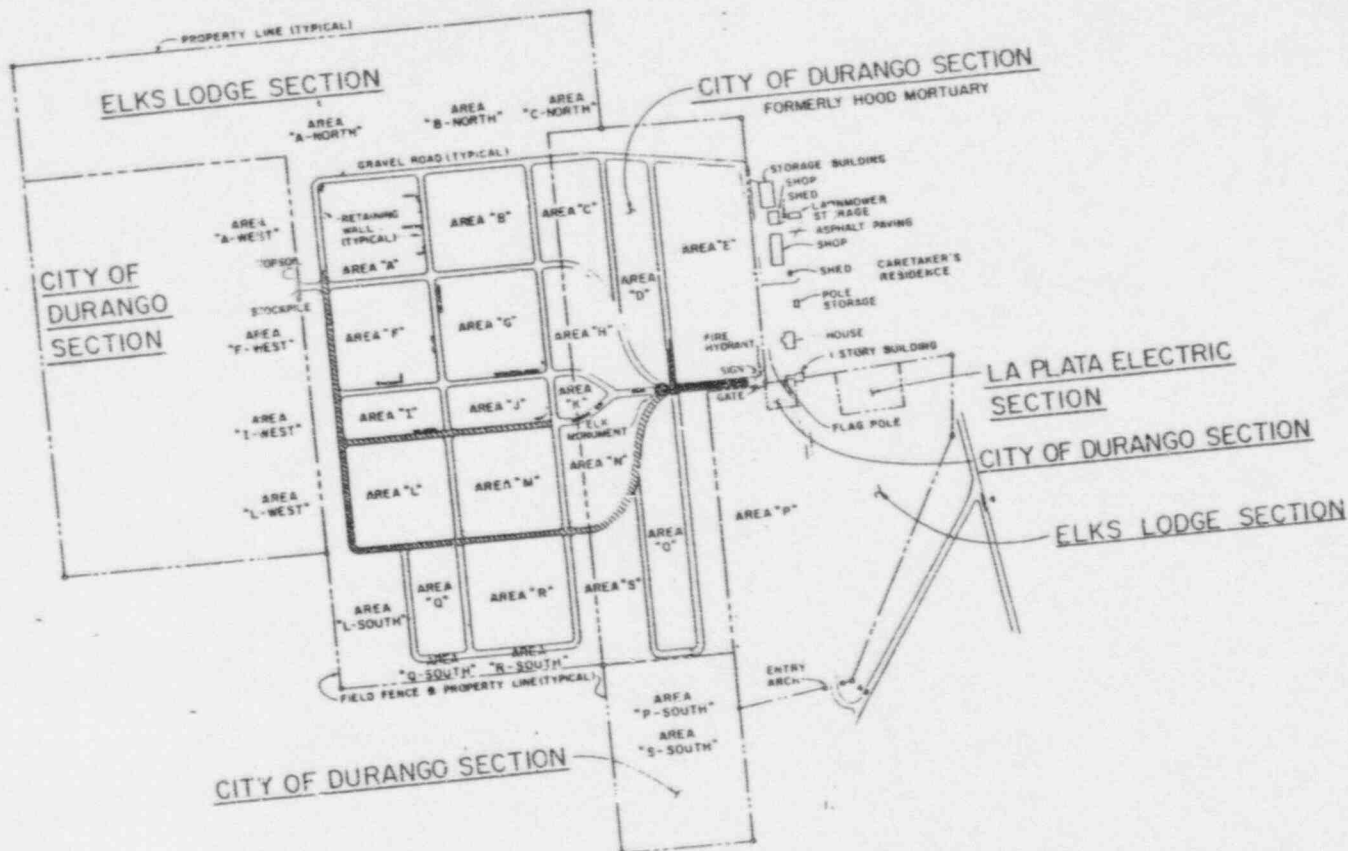






DRAWING LIST	
AREA	DRAWING NUMBER
"A" WEST	DU-081-074
"B"	DU-083-073
"C"	DU-083-071
"C" WEST	DU-082-073
"D" SOUTH	DU-073-080
"D" SOUTH	DU-063-078
"E" SOUTH	DU-083-080
SUPPLEMENTAL	DU-083-081

						U. S. DEPARTMENT OF ENERGY ALBUQUERQUE, NEW MEXICO							
						SUBMITTER JOB NO.		CERTIFICATION RADIOLOGICAL PLAN KEY PLAN DU-053 DURANGO, COLORADO URANUM MILL TAILINGS REMEDIAL ACTION PROJECT					
						CHECKED							
						REVISED							
						REVIEWED							
						EXPRESSO		DATE	USE PROJECT NUMBER	DATE	USE PROJECT NUMBER	DATE	
						NR			NR		NR		
						PROJECT NO. DE - AC04 - B3AL18796							
						DRAWING NO. DU - 053 - 070							
						REV A							



# LEGEND

- W WATER LINE
  - G GAS LINE
  - GM GAS MAIN
  - S SEWER LINE
  - SM SEWER MAIN
  - STM STORM SEWER
  - E ELECTRICAL LINE
  - T TELEPHONE LINE
  - TV CABLE TV
  - PROPERTY LINE
  - X-X-X- FENCE LINE
  - METER
  - VALVE
  - PROPERTY POLE
  - POWER POLE
- OVERHEAD SERVICE DENOTED BY SOLID LINE  
UNDERGROUND SERVICE DENOTED BY DASHED LINE

- CHIP SEAL SURFACING
- 2" ASPHALT SURFACING
- 4" ASPHALT SURFACING

NOTE:  
SEE DRAWING DU-053-062  
FOR GENERAL NOTES.

ADJACENT PROPERTY DU-059



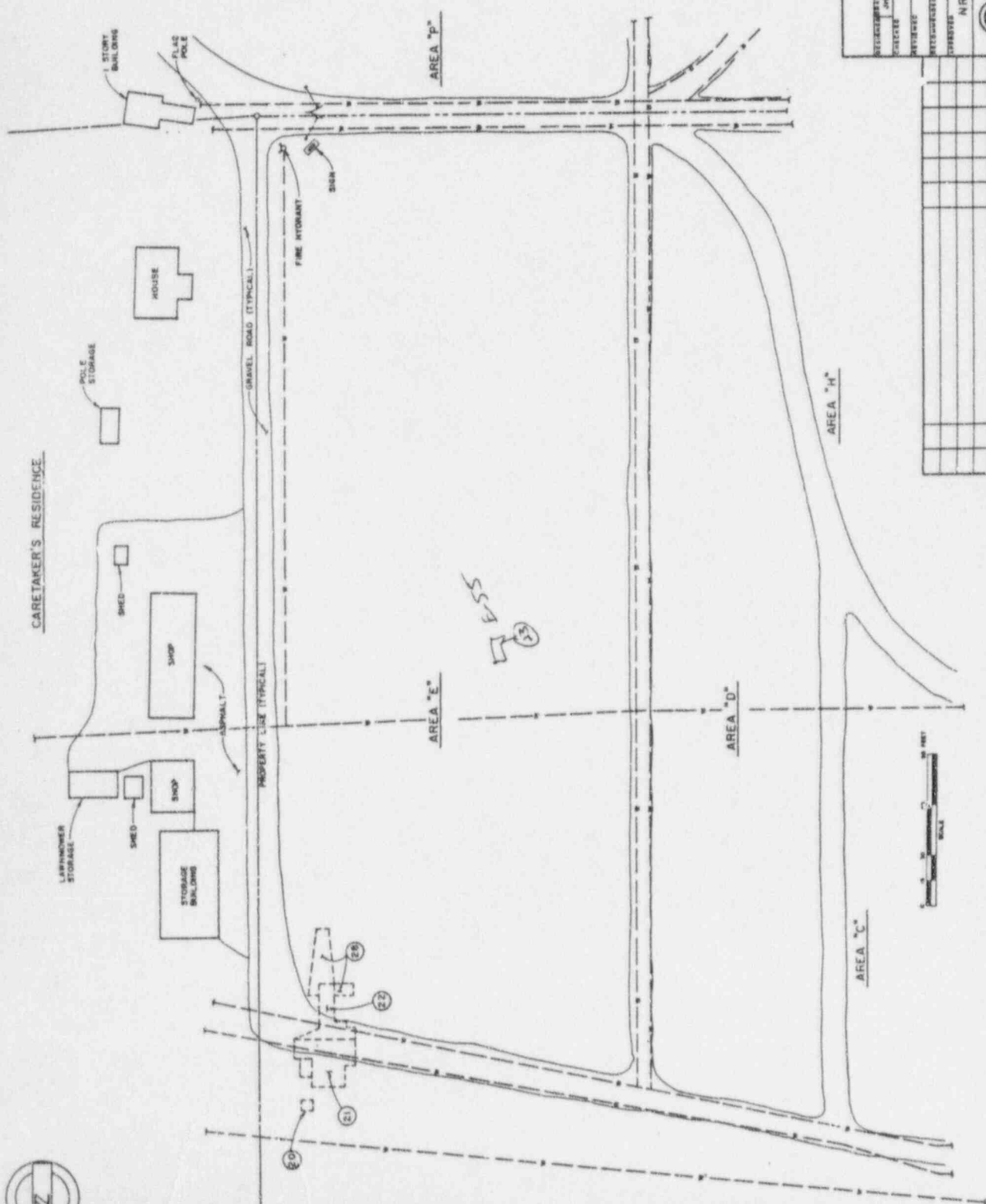
AS-BUILT DRAWING


U. S. DEPARTMENT OF ENERGY			
ALBUQUERQUE, NEW MEXICO			
EXCAVATION AND RESTORATION PLAN			
ROAD REPAIR			
DU-053			
DURANGO, COLORADO			
URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT			
DATE	NR	DATE	NR
PROJECT NO.		DE-AC04-83AL18796	
DRAWING NO.		DU-053-063	
MORRISON KNUDSEN			

[illegible]

LOCATION	SOIL SAMPLE NUMBER
20	D-SV-13078
	D-SV-13076
21	D-SV-13077
22	D-SV-13079
23	D-SV-13080
24	D-SV-13079

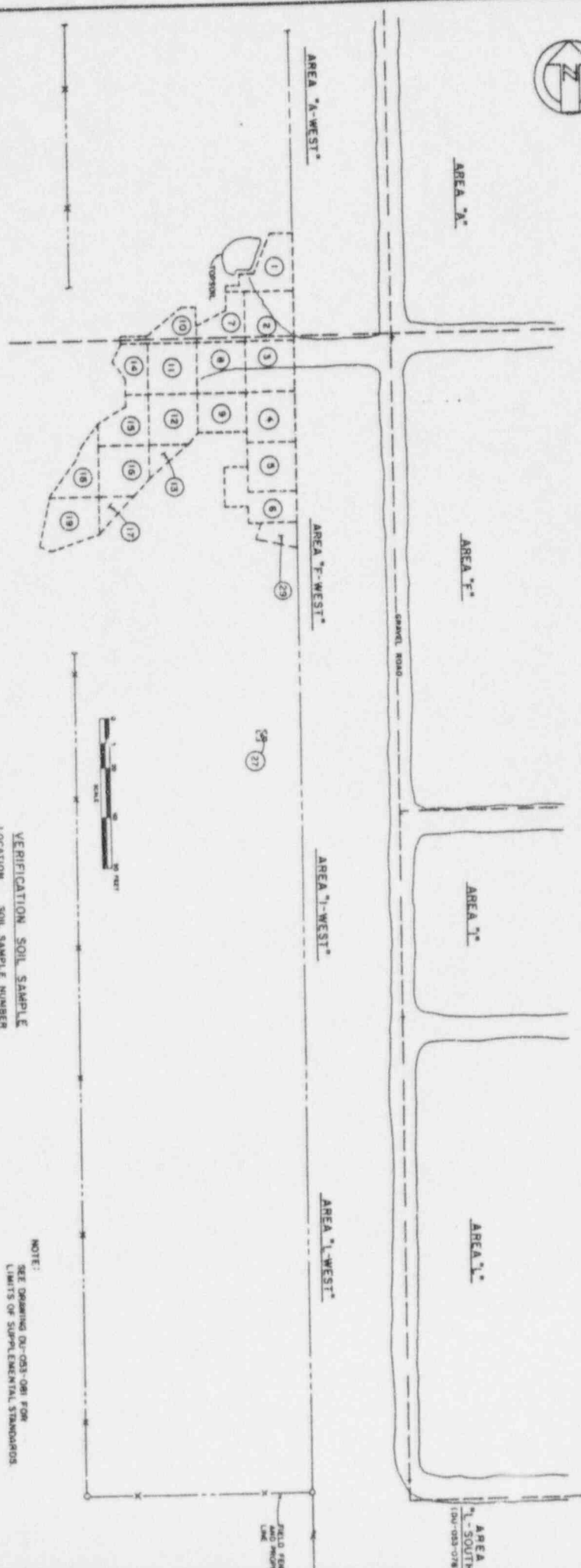
NOTE:  
1. SEE DRAWING DU-093-081 FOR LIMITS OF SUPPLEMENTAL STANDARDS



U. S. DEPARTMENT OF ENERGY		ALBUQUERQUE, NEW MEXICO	
CERTIFICATION RADIOLOGICAL PLAN			
DUJ-053			
DURANGO, COLORADO			
URANIUM MELL TAILINGS REMEDIAL ACTION PROJECT			
DATE	FOR PROJECT NUMBER	STATE	FOR PROJECT NUMBER
NR	NR	NR	NR
PROJECT NO.		PROJECT NO.	
DE-AC04-B3AL18796		DUJ-053-073	
 <b>MK-FERGUSON</b> <small>A CORPORATION INCORPORATED IN CALIFORNIA</small>		<small>FORM NO. 10-67</small>	

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GZ	HA	HB	HC	HD	HE	HF	HG	HH	HI	HJ	HK	HL	HM	HN	HO	HP	HQ	HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA	IB	IC	ID	IE	IF	IG	IH	II	IJ	IK	IL	IM	IN	IO	IP	IQ	IR	IS	IT	IU	IV	IW	IX	IY	IZ	JA	JB	JC	JD	JE	JF	JG	JH	JI	JJ	JK	JL	JM	JN	JO	JP	JQ	JR	JS	JT	JU	JV	JW	JX	JY	JZ	KA	KB	KC	KD	KE	KF	KG	KH	KI	KJ	KK	KL	KM	KN	KO	KP	KQ	KR	KS	KT	KU	KV	KW	KX	KY	KZ	LA	LB	LC	LD	LE	LF	LG	LH	LI	LJ	LK	LL	LM	LN	LO	LP	LQ	LR	LS	LT	LU	LV	LW	LX	LY	LZ	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	MK	ML	MM	MN	MO	MP	MQ	MR	MS	MT	MU	MV	MW	MX	MY	MZ	NA	NB	NC	ND	NE	NF	NG	NH	NI	NJ	NK	NL	NM	NN	NO	NP	NQ	NR	NS	NT	NU	NV	NW	NX	NY	NZ	OA	OB	OC	OD	OE	OF	OG	OH	OI	OJ	OK	OL	OM	ON	OO	OP	OQ	OR	OS	OT	OU	OV	OW	OX	OY	OZ	PA	PB	PC	PD	PE	PF	PG	PH	PI	PJ	PK	PL	PM	PN	PO	PP	PQ	PR	PS	PT	PU	PV	PW	PX	PY	PZ	QA	QB	QC	QD	QE	QF	QG	QH	QI	QJ	QK	QL	QM	QN	QO	QP	QQ	QR	QS	QT	QU	QV	QW	QX	QY	QZ	RA	RB	RC	RD	RE	RF	RG	RH	RI	RJ	RK	RL	RM	RN	RO	RP	RQ	RR	RS	RT	RU	RV	RW	RX	RY	RZ	SA	SB	SC	SD	SE	SF	SG	SH	SI	SJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST	SU	SV	SW	SX	SY	SZ	TA	TB	TC	TD	TE	TF	TG	TH	TI	TJ	TK	TL	TM	TN	TO	TP	TQ	TR	TS	TT	TU	TV	TW	TX	TY	TZ	UA	UB	UC	UD	UE	UF	UG	UH	UI	UJ	UK	UL	UM	UN	UO	UP	UQ	UR	US	UT	UU	UV	UW	UX	UY	UZ	VA	VB	VC	VD	VE	VF	VG	VH	VI	VJ	VK	VL	VM	VN	VO	VP	VQ	VR	VS	VT	VU	VV	VW	VX	VY	VZ	WA	WB	WC	WD	WE	WF	WG	WH	WI	WJ	WK	WL	WM	WN	WO	WP	WQ	WR	WS	WT	WU	WV	WW	WX	WY	WZ	XA	XB	XC	XD	XE	XF	XG	XH	XI	XJ	XK	XL	XM	XN	XO	XP	XQ	XR	XS	XT	XU	XV	XW	XX	XY	XZ	YA	YB	YC	YD	YE	YF	YG	YH	YI	YJ	YK	YL	YM	YN	YO	YP	YQ	YR	YS	YT	YU	YV	YW	YX	YY	YZ	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZH	ZI	ZJ	ZK	ZL	ZM	ZN	ZO	ZP	ZQ	ZR	ZS	ZT	ZU	ZV	ZW	ZX	ZY	ZZ	TOTAL	
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- 4 D-SV-12891
- 5 D-SV-12892
- 6 D-SV-12893
- 7 D-SV-12894
- 8 D-SV-12895
- 9 D-SV-12896
- 10 D-SV-12897
- 11 D-SV-12898
- 12 D-SV-12899
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- 14 D-SV-12901
- 15 D-SV-12902
- 16 D-SV-12903
- 17 D-SV-12904
- 18 D-SV-12905
- 19 D-SV-12906
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- 22 D-SV-12909
- 23 D-SV-12910
- 24 D-SV-12911
- 25 D-SV-12912
- 26 D-SV-12913
- 27 D-SV-12914
- 28 D-SV-12915
- 29 D-SV-12916

NOTE:  
SEE DRAWING DU-051-081 FOR  
LIMITS OF SUPPLEMENTAL STANDARDS

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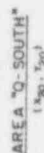
U.S. DEPARTMENT OF ENERGY  
ALBUQUERQUE, NEW MEXICO

CERTIFICATION RADIOLOGICAL PLAN  
DU-053

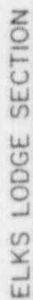
PARANCO, CO. ORANGE  
URANIUM MINE TAILINGS REMEDIAL ACTION PROJECT  
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DE - AC04 - 83AL187  
DU - 053 - 078

NOTE:  
SEE DRAWING DU-C53-081 FOR  
LIMITS OF SUPPLEMENTAL STANDARDS



A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GZ	HA	HB	HC	HD	HE	HF	HG	HH	HI	HJ	HK	HL	HM	HN	HO	HP	HQ	HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA	IB	IC	ID	IE	IF	IG	IH	II	IJ	IK	IL	IM	IN	IO	IP	IQ	IR	IS	IT	IU	IV	IW	IX	IY	IZ	JA	JB	JC	JD	JE	JF	JG	JH	JI	JJ	JK	JL	JM	JN	JO	JP	JQ	JR	JS	JT	JU	JV	JW	JX	JY	JZ	KA	KB	KC	KD	KE	KF	KG	KH	KI	KJ	KK	KL	KM	KN	KO	KP	KQ	KR	KS	KT	KU	KV	KW	KX	KY	KZ	LA	LB	LC	LD	LE	LF	LG	LH	LI	LJ	LK	LL	LM	LN	LO	LP	LQ	LR	LS	LT	LU	LV	LW	LX	LY	LZ	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	MK	ML	MM	MN	MO	MP	MQ	MR	MS	MT	MU	MV	MW	MX	MY	MZ	NA	NB	NC	ND	NE	NF	NG	NH	NI	NJ	NK	NL	NM	NN	NO	NP	NQ	NR	NS	NT	NU	NV	NW	NX	NY	NZ	OA	OB	OC	OD	OE	OF	OG	OH	OI	OJ	OK	OL	OM	ON
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- ASSUMED LIMITS OF ELKS LODGE SECTION

AREA "P"

AREA "O"

CITY OF DURANGO SECTION  
FORMERLY HOOD MORTUARY

AREA "S"

- ASSUMED LIMITS OF EL'S LODGE SECTION

ELKS LODGE SECTION

AREA "R"

PLASTIC

—FIELD FENCE AND  
PROPERTY LINE  
(TYPICAL)

AREA "P-SOUTH"

AREA "S-SOUTH"

CITY OF DURANGO SECTION

- steel.

PL 257102

NOTE

SEE DRAWING DU-053-081 FOR  
LIMITS OF SUPPLEMENTAL STANDARDS

LOCATION	SOIL SAMPLE NUMBER
VERIFICATION SOIL SAMPLES	

29 2 - 3v - 3.0e  
30 0 - 3v - 3.30

U. S. DEPARTMENT OF ENERGY  
ALBUQUERQUE, NEW MEXICO

CERTIFICATION RADIOLOGICAL PLAN

00-093

DURANGO, COLORADO

LIBRARIUM MILL TAILINGS REMEDIAL ACTION PROJECT

17.0	mg per mg 1.74 mg per mg	1.74	1.74
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	XZ		
	XZ		

95081 1918 - 1904 - 30

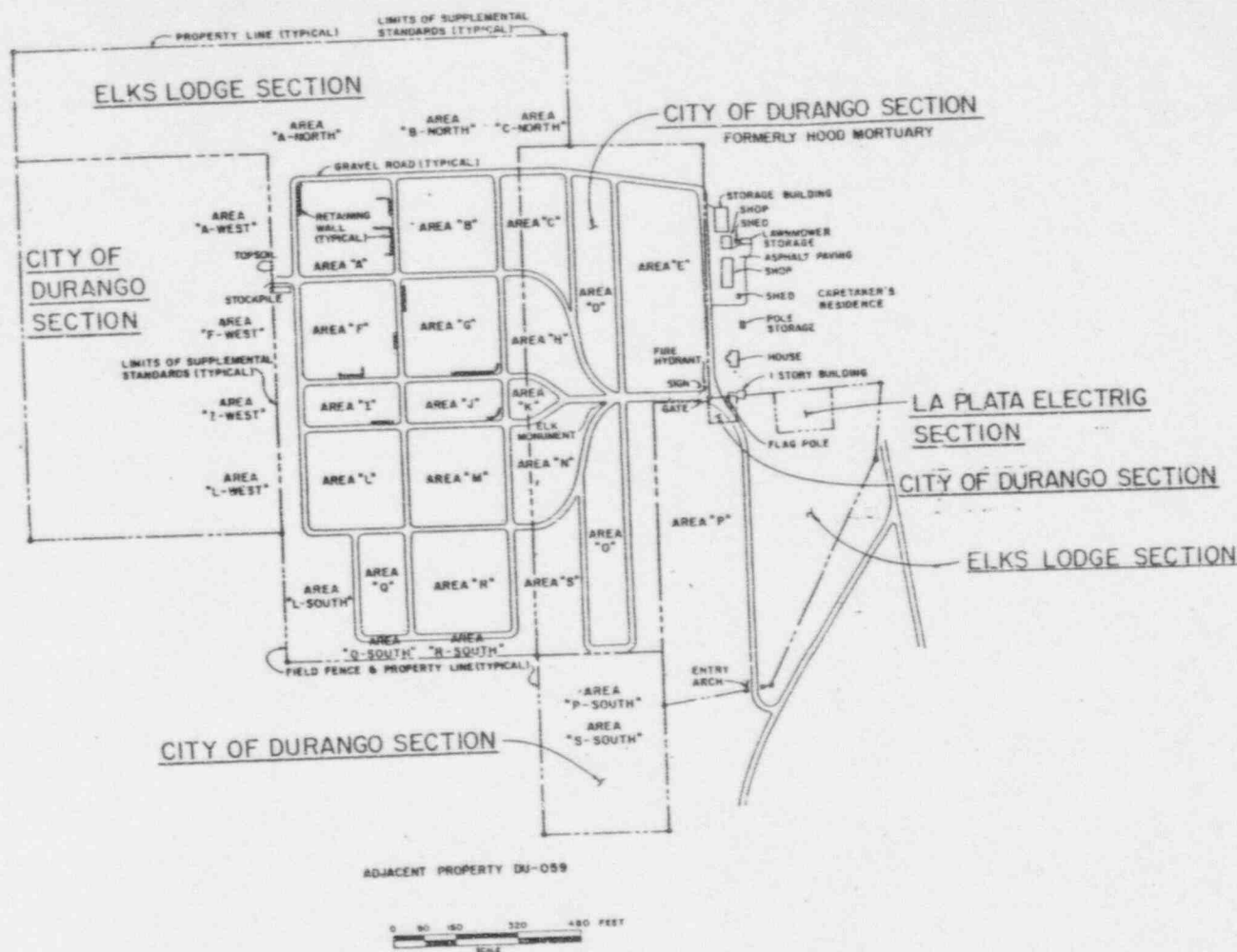
ERAGUSON

0U-053-030

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- NOTE:
1. THE CITY OF DURANGO SECTION, ELKS LODGE SECTION, CITY OF DURANGO SECTION (FORMERLY HOOD MORTUARY) AND LA PLATA ELECTRIC SECTION FORM WHAT IS KNOWN AS THE GREENMOUNT CEMETERY.
  2. SUPPLEMENTAL STANDARDS IN ACCORDANCE WITH 40 CFR 192.22 (C) SHALL APPLY TO LOW LEVEL RADIOACTIVE MATERIAL, REMAINING IN GREENMOUNT CEMETERY SITES FOR THOSE LOCATIONS COVERED BY VERIFICATION SOIL SAMPLES MEETING EPA STANDARDS FOR THE ULTRA PROJECT.
  3. SEE DRAWINGS DU-053-C71, DU-053-D74, DU-053-D78 AND DU-053-D80 FOR VERIFICATION SOIL SAMPLE LOCATIONS AND NUMBERS PERTAINING TO THIS PROJECT. NUMBERS SHALL AS DIRECTED BY THE CONTRACTOR'S REPRESENTATIVE.

U. S. DEPARTMENT OF ENERGY			
ALBUQUERQUE, NEW MEXICO			
DESIGNATION	CERTIFICATION RADIOLOGICAL PLAN		
PROJECT	SUPPLEMENTAL STANDARDS		
ATTACHES	DU-053		
RECOMMENDATIONS	DURANGO, COLORADO		
DISPOSAL	URANUM MILL TAILINGS REMEDIAL ACTION PROJECT		
NR	NR	NR	NR
ISSUED FOR CERTIFICATION SURVEY		CRW	
NO.	DATE	REVISIONS	BY
1	10/1/87	1	CRW
2	10/1/87	2	CRW
3	10/1/87	3	CRW
4	10/1/87	4	CRW
5	10/1/87	5	CRW
6	10/1/87	6	CRW
7	10/1/87	7	CRW
8	10/1/87	8	CRW
9	10/1/87	9	CRW
10	10/1/87	10	CRW
11	10/1/87	11	CRW
12	10/1/87	12	CRW
13	10/1/87	13	CRW
14	10/1/87	14	CRW
15	10/1/87	15	CRW
16	10/1/87	16	CRW
17	10/1/87	17	CRW
18	10/1/87	18	CRW
19	10/1/87	19	CRW
20	10/1/87	20	CRW
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97	10/1/87	97	CRW
98	10/1/87	98	CRW
99	10/1/87	99	CRW
100	10/1/87	100	CRW

MORRISON  
KNUDSEN

DE - ACO4 - 83AL187  
DU - 053 - 08



APPENDIX A  
RADIOLOGICAL SURVEY DATA

DU-053

OPERATION SUMMARY

On March 21, 1989, Durango United Construction Company began remedial action work on property DU-053. The original scope of work included excavation of 544 cubic yards of contaminated material, placement of 474 cubic yards of common fill and 46 cubic yards of topsoil. Other bid items were placement of 417 square yards of sod, 24 cubic yards of aggregate base coarse and replacement of 144 square yards of 3" asphalt, and 80 lineal feet of sprinkler piping.

Area 'A-West': Excavation in this area proved to be extensive and grew to encompass and extend beyond the limits of excavation of Areas 'A-West-12, A-West 12A, A-West-14, A-West-15, F-West-121, and F-West-122.' The actual depth of excavation of this area ranged from 4'5" to 10'0" as compared to 1'11" to 5'6" as shown on drawing DU-053-054.

In Area 'D' excavation of contaminated material was started and then stopped at the direction of MK-Ferguson construction engineers. The attached IOC dated April 20, 1989 (see page 30) and photographs (see pages 47 thru 58) further illustrate the situation. Excavation of Area 'D' grew to encompass and extend beyond the limits of excavation for Areas 'D-56, D-57, and D-58.' When excavation was stopped, the depth of excavation had ranged from 2'0" to 3'0" as compared to 0'6" as shown on drawing DU-053-053.

Area 'E': The actual limits of excavation for Areas 'E-10 and E-11' occurred approximately 30' north of the areas shown on drawing DU-053-053. Area 'E-10': Excavation was within the limits of excavation and was found to be as deep as shown on the drawing. The actual depth of excavation was 1'0" as compared to 0'10" to 1'11" as shown on the drawing. Area 'E-11': Excavation extended beyond the limits of excavation and was found to be as deep as shown on the drawing. The actual average depth of excavation ranged from 2'0" to 2'4" as compared to 1'0" to 2'6" as shown on the drawing. Area 'E-55': Excavation was within the limits of excavation and was found to be as deep as shown on drawing DU-053-053. The actual average depth of excavation was 0'6".

Area 'F-West-54': Excavation was within the limits of excavation and was found to be as deep as shown on drawing DU-053-054. The actual average depth of excavation was 0'6".

DU-053  
Operation Summary  
Page Two

Area 'P-South-62': Excavation extended beyond the limits of excavation and was found to be deeper than shown on drawing DU-053-060. The actual average depth of excavation was 0'6" as compared to 0'4" as shown on the drawing.

Area 'Q-South-46/47': Excavation in this area grew to encompass areas 'Q-South-46' and 'Q-South-47'. Excavation extended beyond the limits of excavation and was found to be deeper than shown on drawing DU-053-058. The actual average depth of excavation was 1'11" as compared to 0'6" as shown on the drawing.

Area 'S-South-60/61': Excavation in this area grew to encompass Area 'S-South-60' and 'S-South-61'. Excavation extended beyond the limits of excavation and was found to be as deep as shown on drawing DU-053-060. The actual average depth of excavation was 0'6".

Extensive excavation was necessary to remediate DU-053; primarily in Area 'A-West.' Contamination in this area appeared to follow an old ravine which had been backfilled through the years with cemetery garbage. Consequently, the total quantity of excavation for DU-053 grew from 544 cubic yards to 3872 cubic yards - an increase of 3328 cubic yards.

As a result of the aforementioned excavation, extensive damage occurred to cemetery roads which were not designed to handle this type of heavy construction traffic. Subcontract modification no. 04 (Subcontract No. DUR-88-04) was issued to repair the damaged roads.

DU-053

## SOIL VERIFICATION DATA

Ed	Coordinates	Sample #	Approx. Depth	Ra-226 (pCi/g) Concentration		Comments
				Initial	- Final	
1	30.0,102.0L; 33.0,102.0L 33.0,93.0L; 40.0,93.0L 40.0,84.0L; 64.0,74.0L 64.0,60.0L; 30.0,60.0L	D-SV-12999	7'0"	1.17	2.03	Area A-West
2	0.0,90.0L; 30.0,90.0L 30.0,90.0L; 0.0,60.0L	D-SV-13000	7'0"	1.10	2.32	Area A-West
3	-30.0,90.0L; 0.0,90.0L 0.0,60.0L; -30.0,60.0L	D-SV-13020	8'0"	1.47	2.74	Area A-West
4	-60.0,90.0L; -30.0,90.0L -30.0,60.0L; -60.0,60.0L	D-SV-13021	5'5"	<1.5	1.75	Area A-West
5	-90.0,90.0L; -60.0,90.0L -60.0,60.0L; -90.0,60.0L	D-SV-13071	5'3"	2.84	4.06	Area A-West
6	-99.0,104.0L; -75.0,104.0L -75.0,90.0L; -90.0,90.0L -90.0,60.0L; -109.0,60.0L -109.0,90.0L; -99.0,90.0L	D-SV-13072	5'7"	1.56	2.19	Area A-West
7	0.0,120.0L; 9.0,120.0L 18.0,102.0L; 30.0,102.0L 30.0,90.0L; 0.0,90.0L	D-SV-13002	7'0"	1.02	2.86	Area A-West
8	-30.0,120.0L; 0.0,120.0L 0.0,90.0L; -30.0,90.0L	D-SV-13027	7'9"	1.86	3.75	Area A-West
9	-54.0,120.0L; -30.0,120.0L -30.0,90.0L; -54.0,90.0L	D-SV-13028	4'5"	1.92	3.66	Area A-West
10	0.0,166.0L; 4.0,166.0L 4.0,150.0L; 21.0,129.0L 21.0,120.0L; 0.0,120.0L	D-SV-13001	5'3"	1.92	3.92	Area A-West
11	-30.0,150.0L; 0.0,150.0L 0.0,120.0L; -30.0,120.0L	D-SV-13073	8'0"	1.74	3.05	Area A-West
12	-60.0,150.0L; -30.0,150.0L -30.0,120.0L; -54.0,120.0L -60.0,125.0L	D-SV-13074	7'11"	1.24	1.95	Area A-West
13	-81.0,150.0L; -60.0,150.0L -60.0,125.0L	D-SV-13004	7'8"	<1.5	1.67	Area A-West
1	-30.0,163.0L; -20.0,163.0L -10.0,171.0L; 0.0,166.0L 0.0,150.0L; -30.0,150.0L	D-SV-13003	8'0"	1.5	1.51	Area A-West



DU-053

## SOIL VERIFICATION DATA

id	Coordinates	Sample #	Approx. Depth	Ra-226 (pCi/g) Concentration Initial - Final		Comments
15	-47.0,180.0L; -47.0,180.0L -37.0,163.0L; -30.0,163.0L -30.0,150.0L; -60.0,150.0L	D-SV-13005	8'4"	1.59	3.04	Area A-West
16	-90.0,180.0L; -60.0,180.0L -60.0,150.0L; -81.0,150.0L -90.0,159.0L	D-SV-13006	9'5"	<1.5	2.55	Area A-West
17	-113.0,180.0L; -90.0,180.0L -90.0,159.0L	D-SV-13007	9'6"	1.14	1.95	Area A-West
18	-90.0,210.0L; -70.0,195.0L -60.0,190.0L; -47.0,180.0L -90.0,180.0L	D-SV-13008	10'0"	<1.5	1.79	Area A-West
19	-120.0,216.0L; -90.0,210.0L -90.0,180.0L; -113.0,180.0L -123.0,210.0L	D-SV-13009	9'9"	<1.5	1.90	Area A-West
20	511.0,205.0R; 517.0,205.0R 517.0,212.0R; 511.0,212.0R	D-SV-13075 D-SV-13076	1'0"	2.41 5.42	3.98 9.09	Area E-10 Duplicate
21	475.0,179.0R; 491.0,179.0R 491.0,186.0R; 503.0,186.0R 503.0,205.0R; 486.0,205.0R 486.0,216.0R; 475.0,216.0R	D-SV-13077	2'4"	2.78	3.70	Area E-11
22	442.0,192.0R; 466.0,192.0R 466.0,184.0R; 469.0,184.0R 469.0,179.0R; 475.0,179.0R 475.0,216.0R; 469.0,201.0R 442.0,201.0R	D-SV-13078	2'0"	2.22	5.02	Area E-11
23	285.0,96.0R; 289.0,96.0R 289.0,100.0R; 289.0,100.0R	D-SV-13093	0'6"	<1.5	3.54	Area E-55
X	0.0,4.0L; 54.0,4.0L 54.0,5.5L; 79.0,5.5L 79.0,3.0L; 82.0,3.0L 82.0,0.0L; 0.0,0.0L		2'0" to 3'0"	Not verified See IOC page 30		Area D
24	85.5,223.0R; 93.0,223.0R 93.0,233.0R; 85.5,223.0R	D-SV-13104	0'6"	2.03	3.55	Area P-South-62
25	158.0,98.0R; 165.5,98.0R 165.5,112.0R; 158.0,112.0R	D-SV-13130	0'6"	<1.5	<1.5	Area S-South-60/61
26	-5.5,68.0R; -5.5,45.0R -4.0,45.0R; -4.0,15.0R 0.0,15.0R; 0.0,68.0R	D-SV-13131	1'11"	2.64	6.82	Area Q-South-46/47

DU-053

SOIL VERIFICATION DATA

Grid	Coordinates	Sample #	Approx. Depth	Ra-226 (pCi/g) Concentration		Comments
				Initial	Final	
27	168.0,85.0L; 172.0,85.0L 172.0,81.0L; 168.0,81.0L	D-SV-13145	1'11"	2.85	4.55	Area F-West-54





## INTERIOR SURVEY DATA LOG/EXPOSURE

SURVEY CREW B. O'Connor  
C. Begley  
P. Trujillo

SHEET 4173 OF <sup>199</sup>~~5~~ PAGE 173  
DATE 4-30-85  
PROPERTY ID # PU-053  
PROJECT <sup>B2</sup>~~100~~

## EXPOSURE DATA

SURVEY METHOD: ☒ 2220INST. ID # PU R-01☐ PICINST. ID# \_\_\_\_\_ CALIBRATION DATE due 9-14-85

ROOM: <u>Build 3 Rm 1</u>		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
<u>SW</u>	<u>1293</u>	
<u>SE</u>	<u>1487</u>	
<u>NE</u>	<u>1204</u>	
<u>NW</u>	<u>1145</u>	
<u>CTR</u>	<u>1295</u>	
TOTALS =		
AVE. =		

ROOM: <u>Build 3 Rm 2</u>		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
<u>SW</u>	<u>1479</u>	
<u>SE</u>	<u>1189</u>	
<u>NE</u>	<u>1337</u>	
<u>N.W</u>	<u>1695</u>	
<u>CTR</u>	<u>1367</u>	
TOTALS =		
AVE. =		

ROOM: <u>Build 3 Rm 3</u>		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
<u>SW</u>	<u>1021</u>	
<u>SE</u>	<u>1091</u>	
<u>NE</u>	<u>1233</u>	
<u>NW</u>	<u>1157</u>	
<u>CTR</u>	<u>1246</u>	
TOTALS =		
AVE. =		

ROOM: <u>Build 3 Rm 4</u>		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
<u>SW</u>	<u>1069</u>	
<u>SE</u>	<u>1169</u>	
<u>NE</u>	<u>1173</u>	
<u>NW</u>	<u>1254</u>	
<u>CTR</u>	<u>1165</u>	
TOTALS =		
AVE. =		

ROOM:		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
TOTALS =		
AVE. =		

ROOM:		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
TOTALS =		
AVE. =		

COMMENTS: SEE PAGE 196 FOR LOCATIONS





## INTERIOR SURVEY DATA LOG/EXPOSURE

SURVEY CREW B. O'Connor  
C. Begley  
P. Trujillo

SHEET 5174 OF 5199 PAGE 174  
DATE 4-30-85  
PROPERTY ID # 04-053  
PROJECT \_\_\_\_\_

## EXPOSURE DATA

SURVEY METHOD: ☒ 2220INST. ID # 04R-01☐ PICINST. ID# \_\_\_\_\_ CALIBRATION DATE 04R 9-19-85

ROOM: <u>Bldg 4</u>		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
<u>SW</u>	<u>1347</u>	
<u>SE</u>	<u>1185</u>	
<u>NE</u>	<u>1149</u>	
<u>NW</u>	<u>1248</u>	
<u>CTR</u>	<u>1276</u>	
TOTALS =		
AVE. =		

ROOM: <u>Bldg 5</u>		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
<u>SW</u>	<u>1137</u>	
<u>SE</u>	<u>931</u>	
<u>NE</u>	<u>1218</u>	
<u>N.W</u>	<u>1221</u>	
<u>CTR</u>	<u>1263</u>	
TOTALS =		
AVE. =		

ROOM: <u>Bldg 6</u>		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
<u>SW</u>	<u>1352</u>	
<u>SE</u>	<u>938</u>	
<u>NE</u>	<u>1035</u>	
<u>NW</u>	<u>1234</u>	
<u>CTR</u>	<u>1205</u>	
TOTALS =		
AVE. =		

ROOM:		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
TOTALS =		
AVE. =		

ROOM:		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
TOTALS =		
AVE. =		

ROOM:		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
TOTALS =		
AVE. =		

COMMENTS: see page 17-198 for locations



## INTERIOR SURVEY DATA LOG/EXPOSURE

SURVEY CREW

B. O'Connor

SHEET

170

OF

<sup>199</sup>5

PAGE

170

DATE

4-30-85

PROPERTY ID #

DU-053

PROJECT

## EXPOSURE DATA

SURVEY METHOD: ☒ 2220INST. ID # DUR-01☐ PIC

INST. ID #

CALIBRATION DATE

DUE 9-14-85

ROOM: <u>Bldg 1 Rm 1</u>		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
<u>SW</u>	<u>1531</u>	
<u>SE</u>	<u>1704</u>	
<u>NE</u>	<u>1684</u>	
<u>NW</u>	<u>1551</u>	
<u>CTR</u>	<u>1360</u>	
TOTALS =		
AVE. =		

ROOM: <u>Bldg. 1 Rm 2</u>		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
<u>SW</u>	<u>1276</u>	
<u>SE</u>	<u>1352</u>	
<u>NE</u>	<u>1459</u>	
<u>NW</u>	<u>1462</u>	
<u>CTR</u>	<u>1458</u>	
TOTALS =		
AVE. =		

ROOM:		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
TOTALS =		
AVE. =		

ROOM:		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
TOTALS =		
AVE. =		

ROOM:		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
TOTALS =		
AVE. =		

ROOM:		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
TOTALS =		
AVE. =		

COMMENTS: see pages 194-198<sup>nw</sup> for of property sketch  
for locations:



## INTERIOR SURVEY DATA LOG/EXPOSURE

SURVEY CREW

B. O'ConnorSHEET 171 <sup>199</sup> 2 OF 8 PAGE 171C. BESLEYDATE 4-30-85P. TRUJILLOPROPERTY ID # DU-053

PROJECT \_\_\_\_\_

## EXPOSURE DATA

SURVEY METHOD: ☒ 2220INST. ID # DUR-01☐ PIC

INST. ID# \_\_\_\_\_

CALIBRATION DATE DUR 9-14-85

ROOM: <u>Bldg 2 Rm 1</u>		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
<u>SW</u>	<u>1423</u>	
<u>SE</u>	<u>1341</u>	
<u>NE</u>	<u>1405</u>	
<u>NW</u>	<u>1315</u>	
<u>CTR</u>	<u>1317</u>	
TOTALS =		
AVE. =		

ROOM: <u>Bldg 2 Rm 2</u>		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
<u>SW</u>	<u>1198</u>	
<u>SE</u>	<u>1066</u>	
<u>NE</u>	<u>1017</u>	
<u>NW</u>	<u>1176</u>	
<u>CTR</u>	<u>1102</u>	
TOTALS =		
AVE. =		

ROOM: <u>Bldg 2 Rm 3</u>		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
<u>SW</u>	<u>1193</u>	
<u>SE</u>	<u>1084</u>	
<u>NE</u>	<u>1075</u>	
<u>NW</u>	<u>1137</u>	
<u>CTR</u>	<u>1131</u>	
TOTALS =		
AVE. =		

ROOM: <u>Bldg 2 Rm 4</u>		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
<u>SW</u>	<u>953</u>	
<u>SE</u>	<u>1037</u>	
<u>NE</u>	<u>1236</u>	
<u>NW</u>	<u>1031</u>	
<u>CTR</u>	<u>1049</u>	
TOTALS =		
AVE. =		

ROOM: <u>Bldg 2 Rm 5</u>		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
<u>SW</u>	<u>1092</u>	
<u>SE</u>	<u>1172</u>	
<u>NE</u>	<u>1166</u>	
<u>NW</u>	<u>1076</u>	
<u>CTR</u>	<u>1034</u>	
TOTALS =		
AVE. =		

ROOM: <u>Bldg 2 Rm 6</u>		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
<u>SW</u>	<u>1171</u>	
<u>SE</u>	<u>1194</u>	
<u>NE</u>	<u>1248</u>	
<u>NW</u>	<u>1130</u>	
<u>CTR</u>	<u>1308</u>	
TOTALS =		
AVE. =		

COMMENTS: see pages <sup>145</sup> ~~154~~ ~~158~~ for locations on property  
survey sketch





## INTERIOR SURVEY DATA LOG/EXPOSURE

SURVEY CREW

B. O'ConnorC. BegleyP. Trujillo

SHEET

2172 OF 5

PAGE

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DATE

4-30-85

PROPERTY ID #

DU-053

PROJECT

## EXPOSURE DATA

SURVEY METHOD: ☒ 2220

INST. ID #

DUK-01☐ PIC

INST. ID#

CALIBRATION DATE

DUK-9-14-85

ROOM: <u>Bldg 2 Rm 7</u>		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
<u>SW</u>	<u>1309</u>	
<u>SE</u>	<u>1247</u>	
<u>NE</u>	<u>1288</u>	
<u>NW</u>	<u>1165</u>	
<u>CTR</u>	<u>1170</u>	
TOTALS =		
AVE. =		

ROOM: <u>Bldg 2 Rm 8</u>		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
<u>SW</u>	<u>1341</u>	
<u>SE</u>	<u>1351</u>	
<u>NE</u>	<u>1229</u>	
<u>NW</u>	<u>1306</u>	
<u>CTR</u>	<u>1274</u>	
TOTALS =		
AVE. =		

ROOM: <u>Bldg 2 Rm 9</u>		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
<u>SW</u>	<u>1261</u>	
<u>SE</u>	<u>1259</u>	
<u>NE</u>	<u>1201</u>	
<u>NW</u>	<u>1167</u>	
<u>CTR</u>	<u>1299</u>	
TOTALS =		
AVE. =		

ROOM:		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
TOTALS =		
AVE. =		

ROOM:		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
TOTALS =		
AVE. =		

ROOM:		
READING LOCATION	COUNTS /0.1MIN	RATE uR/h
TOTALS =		
AVE. =		

COMMENTS:



# OUTDOOR GAMMA SCREENING SURVEY DATA SHEET

# BOREHOLE LOG

LOGGING CREW: Derek J. Workman

SHEET \_\_\_\_\_ OF \_\_\_\_\_ PAGE \_\_\_\_\_

DATE: 4-9-90

PROPERTY ID: DU-053

INSTRUMENT ID NO. L-2220\*31975/L-44-40\*054967 AREA: A-West-15 Grid #28

- NOTES: 1. ALL HOLES ARE 4" DIA. UNLESS OTHERWISE NOTED.  
2. RECORD UNUSUAL CONDITIONS, SUCH AS THE PRESENCE OF WATER IN BOREHOLES AND DEPTH, CASING TYPE AND THICKNESS IF USED, CONCRETE CORES AND THICKNESS, OBSTRUCTIONS, UTILITIES, ETC., IN THE REMARKS SECTION.

HOLE ID: <u>BH #1-18/278</u>	HOLE ID: _____	HOLE ID: _____	HOLE ID: _____
TIME DRILLED: _____	TIME DRILLED: _____	TIME DRILLED: _____	TIME DRILLED: _____
TIME LOGGED: _____	TIME LOGGED: _____	TIME LOGGED: _____	TIME LOGGED: _____
SOIL TYPE: _____	SOIL TYPE: _____	SOIL TYPE: _____	SOIL TYPE: _____

DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN
SURFACE	<u>1913</u>	SURFACE		SURFACE		SURFACE	
0"	<u>2020</u>	0"		0"		0"	
6"	<u>2036</u>	6"		6"		6"	
12"	<u>1986</u>	12"		12"		12"	
18"		18"		18"		18"	
24"		24"		24"		24"	
30"		30"		30"		30"	
36"		36"		36"		36"	
42"		42"		42"		42"	
48"		48"		48"		48"	
54"		54"		54"		54"	
60"		60"		60"		60"	
66"		66"		66"		66"	
72"		72"		72"		72"	
78"		78"		78"		78"	
84"		84"		84"		84"	
90"		90"		90"		90"	
96"		96"		96"		96"	

REMARKS: This borehole was hand dug & this area calls for an excavation of 1'3". Soil samples were taken in conjunction with this borehole.  
DU-SV-19840 + DU-SV-19841 (See OCS log)

# BOREHOLE LOG

LOGGING CREW: Derek J. Workman

SHEET \_\_\_\_\_ OF \_\_\_\_\_ PAGE \_\_\_\_\_

DATE: 4-9-90

PROPERTY ID: DU-053

INSTRUMENT ID NO. L-2220\*31975-7/L-44-40<sup>II</sup>054967

AREA: E-11 Grid #28

- NOTES: 1. ALL HOLES ARE 4" DIA. UNLESS OTHERWISE NOTED.  
2. RECORD UNUSUAL CONDITIONS, SUCH AS THE PRESENCE OF WATER IN BOREHOLES AND DEPTH, CASING TYPE AND THICKNESS IF USED, CONCRETE CORES AND THICKNESS, OBSTRUCTIONS, UTILITIES, ETC., IN THE REMARKS SECTION.

HOLE ID: <u>RH#2-43300</u>	HOLE ID: _____	HOLE ID: _____	HOLE ID: _____
TIME DRILLED: _____	TIME DRILLED: _____	TIME DRILLED: _____	TIME DRILLED: _____
TIME LOGGED: _____	TIME LOGGED: _____	TIME LOGGED: _____	TIME LOGGED: _____
SOIL TYPE: _____	SOIL TYPE: _____	SOIL TYPE: _____	SOIL TYPE: _____

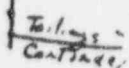
DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN
SURFACE	<u>1434</u>	SURFACE		SURFACE		SURFACE	
0"	<u>1487</u>	0"		0"		0"	
6"	<u>1954</u>	6"		6"		6"	
12"	<u>2567</u>	12"		12"		12"	
18"	<u>2591</u>	18"		18"		18"	
24"	<u>2749</u>	24"		24"		24"	
30"	<u>2649</u>	30"		30"		30"	
36"	<u>AR</u>	36"		36"		36"	
42"		42"		42"		42"	
48"		48"		48"		48"	
54"		54"		54"		54"	
60"		60"		60"		60"	
66"		66"		66"		66"	
72"		72"		72"		72"	
78"		78"		78"		78"	
84"		84"		84"		84"	
90"		90"		90"		90"	
96"		96"		96"		96"	

REMARKS: Two soil samples were taken in conjunction with this borehole.

DU-SV-19838 + DU-SV-19839.



4  
N



DU-053  
CDH COPY  
-24-

Note: (1m) - 1 meter Reading  
Shallow Stone Pits  
on East Side of Excavation.



# AREA F-WEST-54

Du-SV-27 # 13145



1897

4'

4/10/89

XDF + D<sup>3</sup>U

44-10 # 1270

W/2220 # 2626

1906

2000

1859

1816

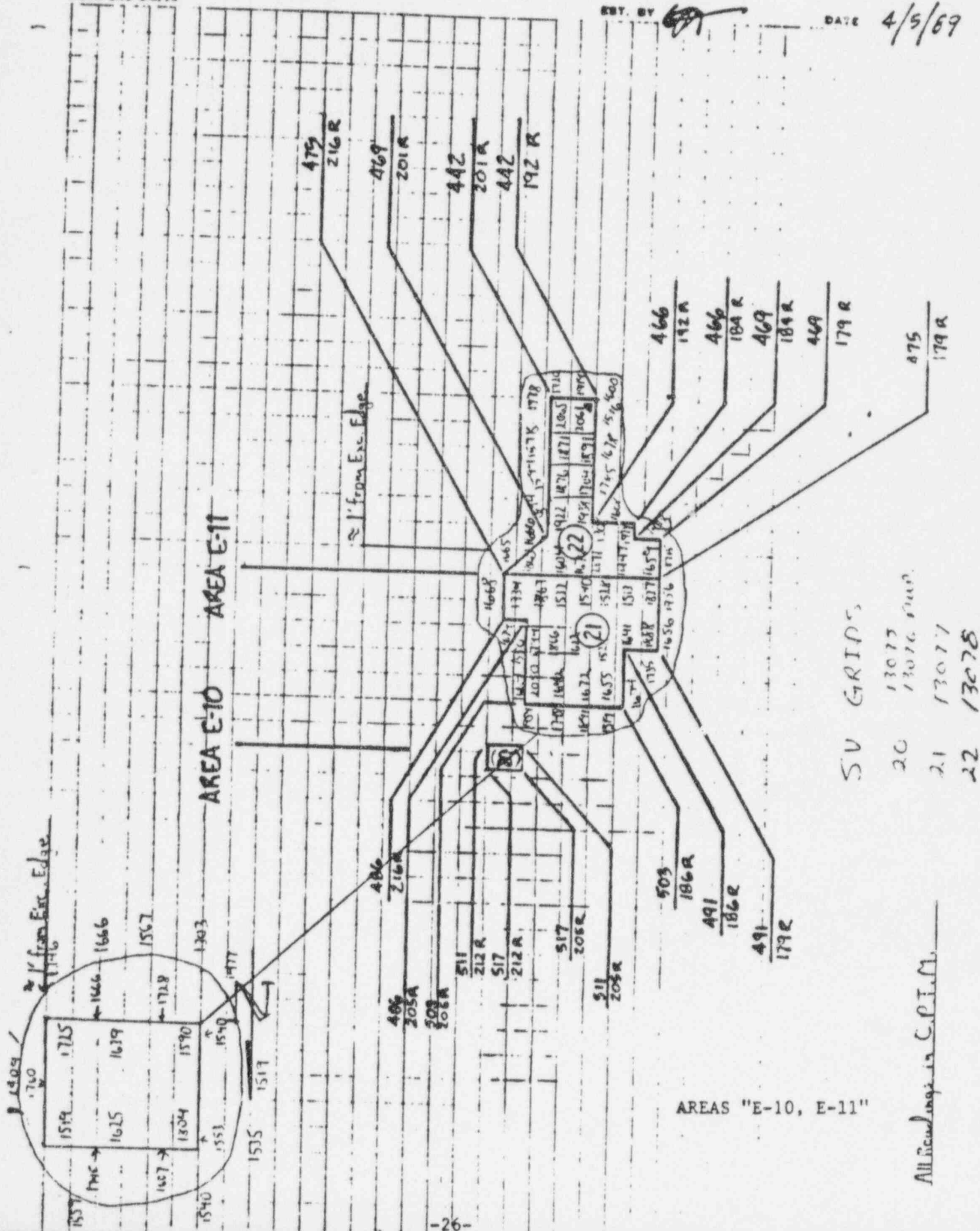
4' 1885-

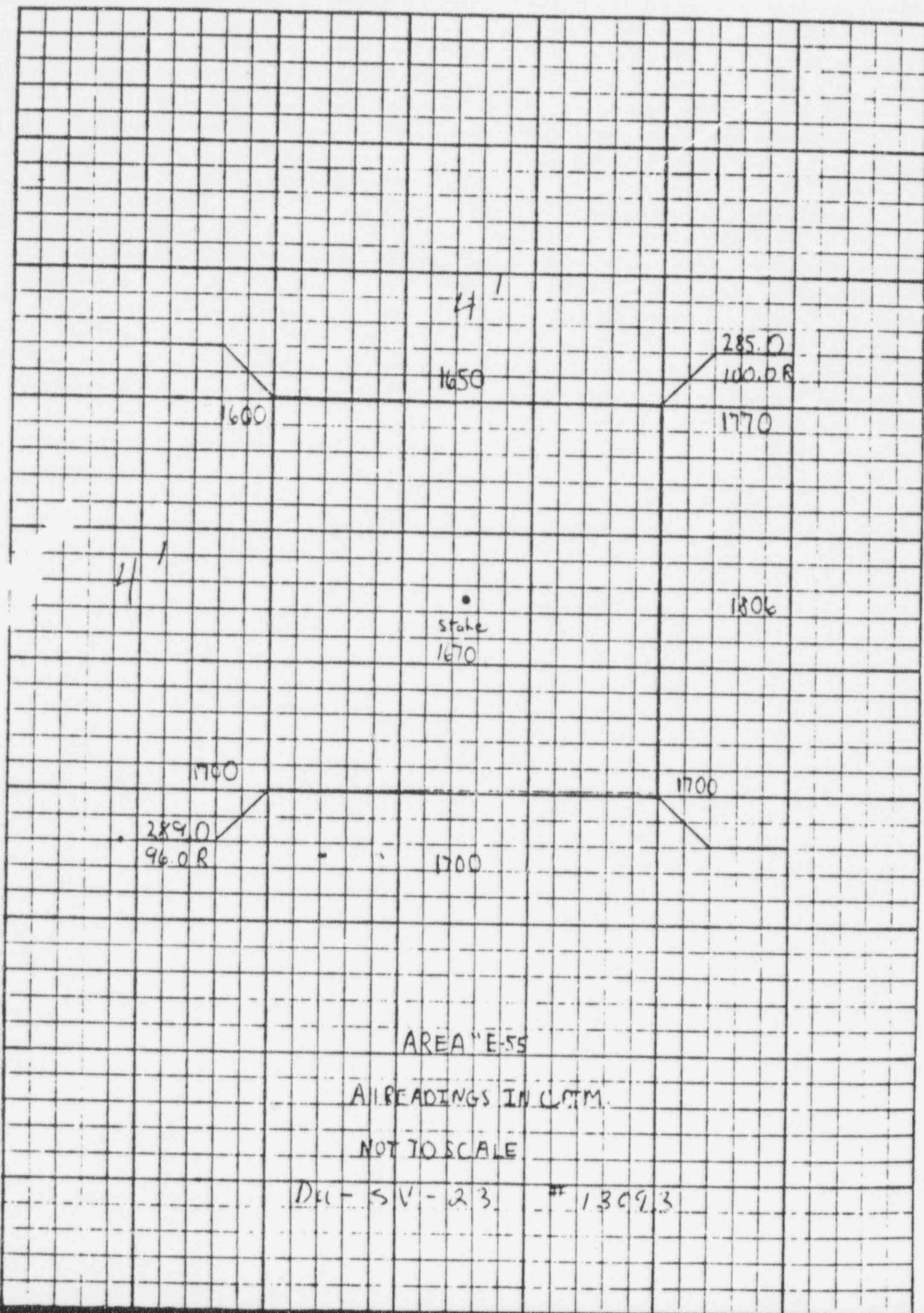
1877

2010

1920

ALL Readings are CPTM





- WATER LINE
- GAS LINE
- GAS MAIN
- SEWER LINE
- SEWER MAIN
- STORM SEWER
- ELECTRICAL LINE
- TELEPHONE LINE
- SECTION LINE
- PROPERTY LINE
- FENCE LINE
- METER
- VALVE
- PROPERTY PIN
- POWER POLE

OVERHEAD SERVICE DENOTED BY SOLID LINE.  
UNDERGROUND SERVICE DENOTED BY DASHED LINE

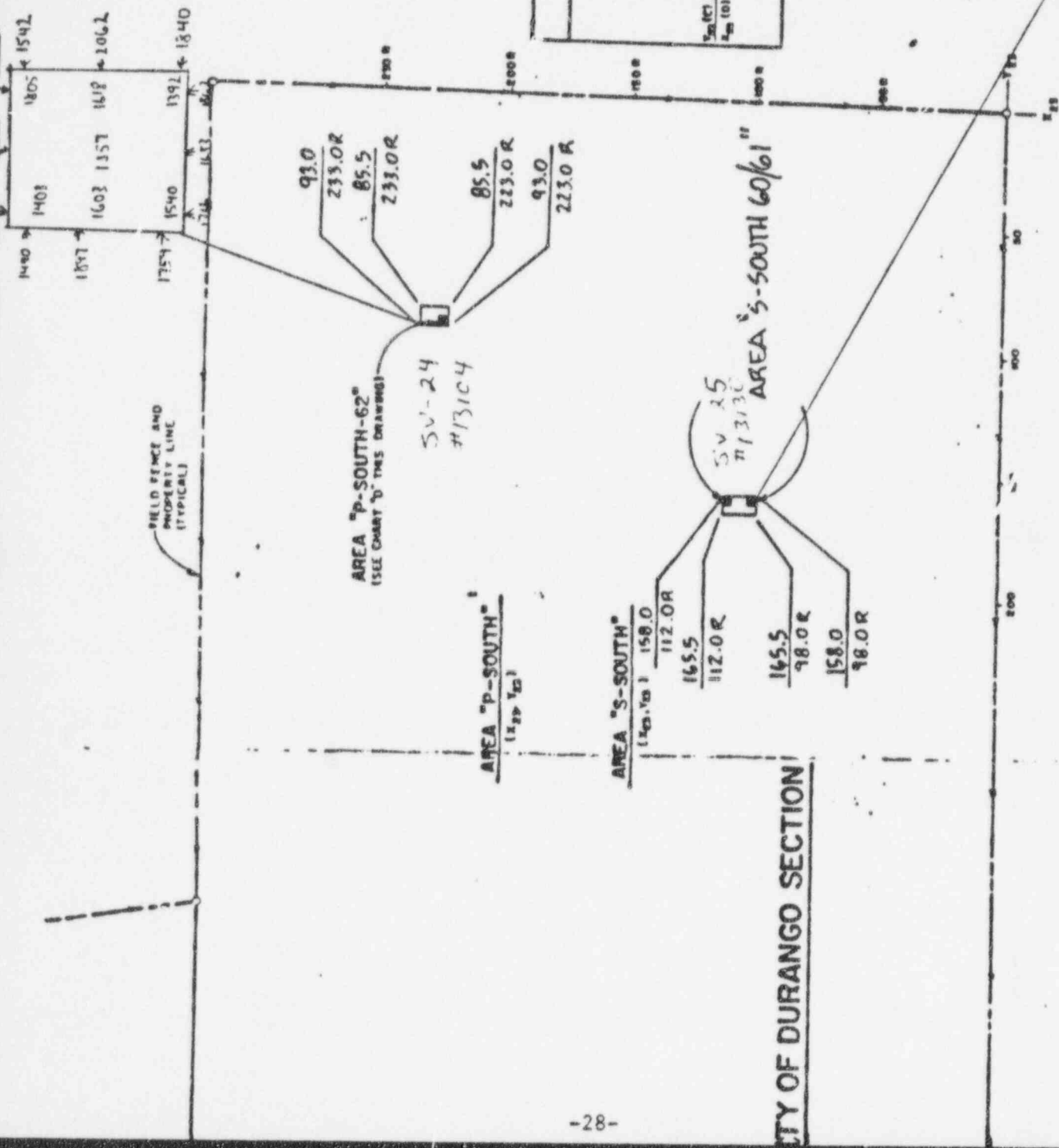
NOTE: SEE DRAWING DU-053-042 FOR  
GENERAL NOTES.

CHART 'D'

AREA	COORDINATES		
	A	B	C
3 SOUTH-60°	152.0	98.0R	138.0
5 SOUTH-60°	152.0	108.0R	158.0
7 SOUTH-60°	93.0	223.0R	89.0
			27°

ALL READINGS IN C.F.T.M.

1640	1729	1910
1470	1372	1448
1450	1379	1475
1450	1422	1443
1634	1640	1664





4  
N

23R

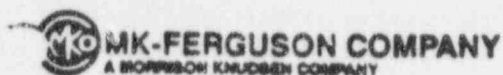
23R

15	1832	1417	0781	1791	1000	1711	8541	1073	1634
1835	1441	1134	5702	1906	1317	1591	1507	1207	1829
0591	9711	1677	1411	1750	1110	8191	8451	7791	1811

ALL READINGS IN CFTM

AREA "Q-SOUTH"

AREA "Q-South 46/47"



INTER-OFFICE CORRESPONDENCE

TO: Rob Pommerening  
LOCATION: Albuquerque  
SUBJECT: Contaminated Material Removal, DU-053 Greenmount Cemetery,  
Area D, Durango, Colorado

DATE: April 20, 1989

FROM: K. Seaton/P. Teague *[Signature]*

LOCATION: Durango

On April 4, 1989, excavation was begun on Areas D-56, D-57 and D-58 of DU-053, Greenmount Cemetery. These areas were shown on drawing DU-053-053 as being 4 x 4 foot areas to be excavated to a depth of 6 inches. When excavation began, it was discovered that tailings had been used to bed an underlying sprinkler line at a depth of 8 to 12 inches. Approximately 4 to 6 inches of tailings were noted beneath the sprinkler line. Additionally, contamination had migrated below the sprinkler lines resulting in 'hot' readings for the soils beneath the line. Excavation of the areas was extended to a single area extending from 0+00 to 0+82 along the sprinkler line and to a depth varying from 2 to 3 feet. This depth of excavation did not remove all of the contaminated materials. Excavation was discontinued at this point on April 5, 1989 for the following reasons:

1. We were informed by the cemetery staff that excavation below a depth of 2.5 feet would bring us near to vault depth.
2. The excavation of the sprinkler line would be through private property (the burial plots) for a portion of the area along the roadway, rather than city property. See photographs 5 through 26.
3. Excavation of the sprinkler head laterals would intrude on private property.
4. Public comment of the work that had been accomplished was extremely negative.
5. Where our excavation was beyond the area within 8 feet of the headstones, there was question by the cemetery staff as to whether there were any baby graves at the feet of the mother.
6. Discussion with Stan Cundiff and Rich Roskowinski of the City of Durango on April 5, 1989, produced no objection to stopping excavation.

The area was characterized by CNSI personnel as detailed on the attached letter. Initial grab sample readings of the soil varied from 1.26 pCi/g to 6.94 pCi/g. Gamma scan readings varied from 1810 cpm to 6750 cpm. Counts in hand excavated holes were elevated from those at the bottom of the excavation.

KS/PT/kw

Photo Log  
DU-053 Area D

Photo #	Description
1.	View of excavation in progress Areas D-56, D-57 and D-58.
2.	Close up of tailings beneath sprinkler line, Area D-56.
3.	View of completed excavation, Areas D-56, D-57 and D-58 from center looking north.
4.	View of completed excavation, Areas D-56, D-57 and D-58 looking south.
5.	View of Area D showing proximity of sprinkler line to 8' mark from headstones from south to north, from 0+00 to 0+85.
6.	View of Area D showing proximity of sprinkler line to 8' mark from headstones from south to north, from 0+85 to sprinkler head 1+31.
7.	View of Area D showing proximity of sprinkler line to 8' mark from headstones from south to north from sprinkler head at 1+31 to 1+92.
8.	View of Area D showing proximity of sprinkler line to 8' mark from headstones from south to north, from sprinkler head at 1+92 to 2+53.
9.	View of Area D showing proximity of sprinkler line to 8' mark from headstones from south to north from sprinkler head at 2+53 to 3+14.
10.	View of headstones at 8' mark with assumed sprinkler line from Sta. 3+14 to Sta. 0+00 working north to south.
11.	"
12.	"
13.	"
14.	"
15.	"
16.	"
17.	"
18.	"
19.	View of headstones and 8' mark with assumed sprinkler line from Sta. 3+14 to Sta. 0+00 working north to south, note stone by bush.
20.	Close up of headstone by bush, note 54" off of sprinkler line.
21.	View of headstones and 8' mark with assumed sprinkler line from Sta. 3+14 to Sta. 0+00 working north to south.
22.	"
23.	"
24.	"
25.	"
26.	"

Explanation of Photographs:

Photographs 1 through 4 are of excavation of Area D. Photographs 5 through 26 are of the proximity of the private grave plots to the sprinkler line. The sprinkler line is shown by a ribbon of flagging stretched between 3 foot off sets of the sprinkler heads. Sprinkler heads are shown by 4 foot lath with flagging. The 2 foot stakes indicate an 8 foot measurement off of the headstones which, according to cemetery personnel, is the approximate limit of the burial plots.

See Photo Section  
Pages 47 through 58

To: Bud Franz

From: Earl Sorrels

Subject: DU-053/Radiological Survey Results for Area D

Date: April 18, 1989

Location: CDH/Grand Junction

Location Durango/Utah

Verification per RAC-015 in Area D on vicinity property DU-053 was not accomplished.

Because the area of excavation was in close proximity to graves, (within 1-2 ft) and contamination was suspected to extend towards the graves, further excavation was suspended.

A detailed radiological survey was performed in the excavated area consisting of soil samples (grab) on 10 ft. centers from the bottom of the trench and a gamma scan (open probe and open delta).

CHEM-NUCLEAR SYSTEMS, INC.





MH-F

COMPANY

FORM ENG 5-A/74

ITEM NO.

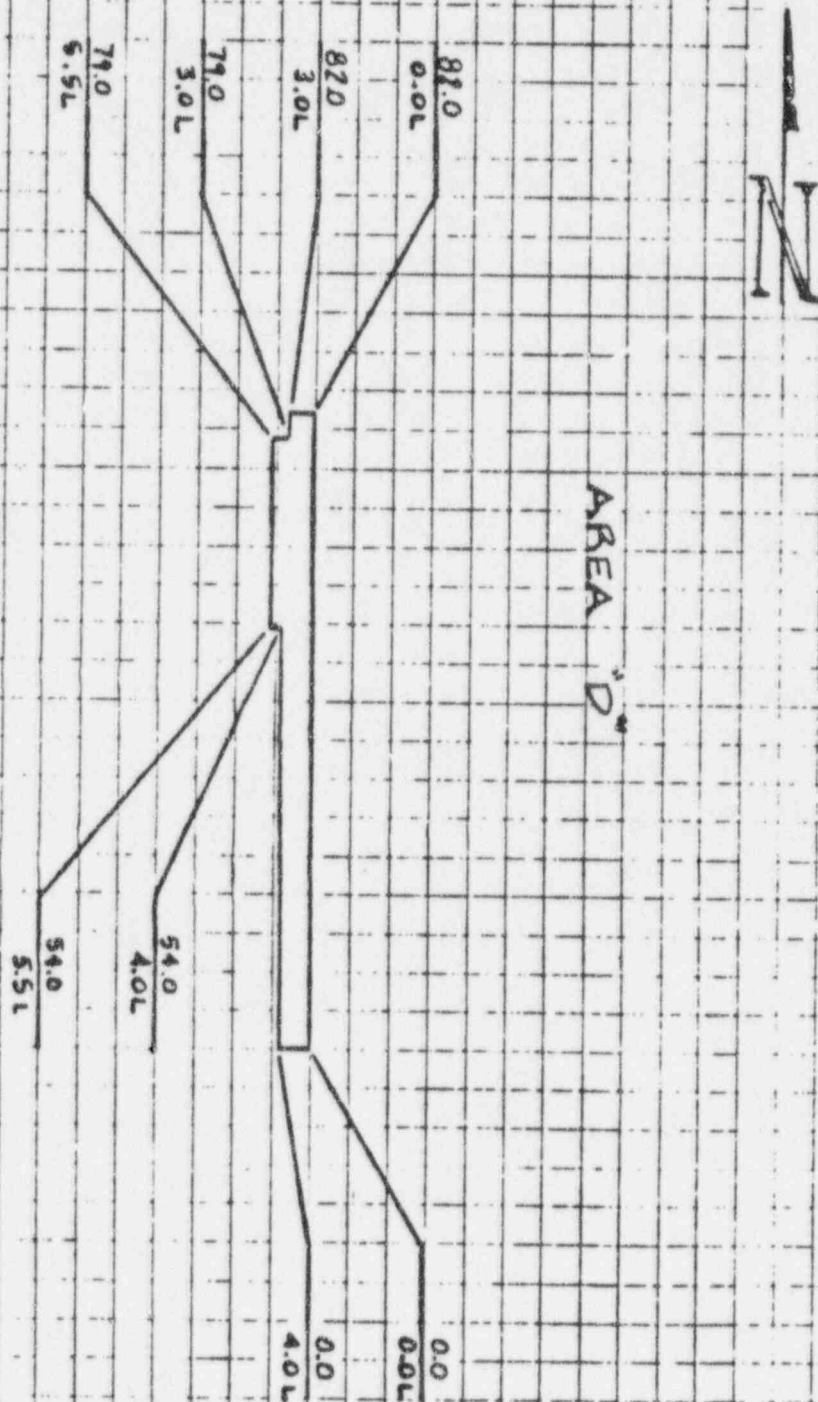
JOB DU-093

EST. BY

SHEET OF PAGE

DATE

4/6/89



AREA D

G  
N  
M  
L  
K  
J  
I  
H  
G  
F  
E  
D  
C  
B

4

N



54.0

# OUTDOOR GAMMA SCREENING SURVEY DATA SHEET

LOGGING CREW: DEREK J. WORKMAN

SHEET \_\_\_\_\_ OF \_\_\_\_\_ PAGE \_\_\_\_\_

DATE: 4-7-89

PROPERTY ID: NU-053

INSTRUMENT ID NO.: #202437/#1709

BACKGROUND CALCULATION:

#1 \_\_\_\_\_ + #2 \_\_\_\_\_ + #3 \_\_\_\_\_ = \_\_\_\_\_ - 3 = \_\_\_\_\_ COUNTS/.1MIN

AREA: <u>D</u>		AREA: _____		AREA: _____		AREA: _____	
POINT ID	READING COUNTS/.1MIN	POINT ID	READING COUNTS/.1MIN	POINT ID	READING COUNTS/.1MIN	POINT ID	READING COUNTS/.1MIN
A. East	<u>A 568</u> <u>OP 2130</u>						
A. West	<u>A 783</u> <u>OP 2340</u>						
A. Bottom	<u>A 663</u> <u>OP 2280</u>						
B. East	<u>A 465</u> <u>OP 2170</u>						
B. West	<u>A 569</u> <u>OP 2310</u>						
B. Bottom	<u>A 634</u> <u>OP 2030</u>						
C. East	<u>A 458</u> <u>OP 2020</u>						
C. West	<u>A 500</u> <u>OP 1970</u>						
C. Bottom	<u>A 554</u> <u>OP 2180</u>						
D. East	<u>A 606</u> <u>OP 2140</u>						
D. West	<u>A 784</u> <u>OP 2710</u>						
D. Bottom	<u>A 659</u> <u>OP 2120</u>						
E. East	<u>A 630</u> <u>OP 2320</u>						
E. West	<u>A 716</u> <u>OP 2040</u>						
E. Bottom	<u>A 910</u> <u>OP 2580</u>						
F. East	<u>A 936</u> <u>OP 2000</u>						
F. West	<u>A 634</u> <u>OP 2060</u>						
F. Bottom	<u>A 877</u> <u>OP 2640</u>						

REMARKS: \_\_\_\_\_





# OUTDOOR GAMMA SCREENING SURVEY DATA SHEET

LOGGING CREW: Derek J. Workman

SHEET \_\_\_\_\_ OF \_\_\_\_\_ PAGE \_\_\_\_\_

DATE: 4-7-89

PROPERTY ID: DU-053

INSTRUMENT ID NO.: \*20343/\*1709

BACKGROUND CALCULATION:

#1 \_\_\_\_\_ + #2 \_\_\_\_\_ + #3 \_\_\_\_\_ = \_\_\_\_\_ - 3 = \_\_\_\_\_ COUNTS/.1MIN

AREA: <u>D</u>		AREA: _____		AREA: _____		AREA: _____	
POINT ID	READING COUNTS/.1MIN	POINT ID	READING COUNTS/.1MIN	POINT ID	READING COUNTS/.1MIN	POINT ID	READING COUNTS/.1MIN
G. East	A 413 OP 1940						
G. West	A 477 OP 2010						
G. Bottom	A 473 OP 2010						
H. East	A 466 OP 1810						
H. West	A 518 OP 1810						
H. Bottom	A 492 OP 1940						
I. East	A 554 OP 1820						
I. West	A 545 OP 1800						
I. Bottom	A 752 OP 2500						
J East	A 613 OP 1450						
J East	A 539 OP 1800						
J Bottom	A 827 OP 2100						
K East	A 644 OP 2040						
K West	A 600 OP 1870						
K Bottom	A 804 OP 2200						
L East	A 587 OP 1450						
L West	A 607 OP 1800						
L Bottom	A 700 OP 2340						

REMARKS: \_\_\_\_\_





LOGGING CREW: Derek J. Workman

SHEET \_\_\_\_\_ OF \_\_\_\_\_ PAGE \_\_\_\_\_

DATE: 4-7-89

PROPERTY ID: 104-053

INSTRUMENT ID NO.: # 20343 / \* 1709

BACKGROUND CALCULATION:

#1 \_\_\_\_\_ + #2 \_\_\_\_\_ + #3 \_\_\_\_\_ = \_\_\_\_\_ - 3 = \_\_\_\_\_ COUNTS/1MIN

AREA: D		AREA:		AREA:		AREA:	
POINT ID	READING COUNTS/.1MIN	POINT ID	READING COUNTS/.1MIN	POINT ID	READING COUNTS/.1MIN	POINT ID	READING COUNTS/.1MIN
M. East	A 654 OP 1290						
M. West	A 630 OP 1103						
M. Bottom	A 600 OP 1250						
N. East	A 587 OP 1400						
N. West	A 565 OP 1200						
N. Bottom	A 560 OP 2030						
O. East	A 667 OP 2140						
O. West	A 670 OP 3690						
O. Bottom	A 670 OP 6750						
At water line							

REMARKS:

MR-21PC0018/PC0019-NUCLEAR  
OFFSHORE CRISTAL SYSTEM RECORD

OCS #1 Serial #984369  
OCS #2 Serial #283411

8112 NAME DUEWAGO  
SITE DATA 04 05 3

COURSE DATA	THERMAL 20 DAY	SAMPLE NUMBER	SAMPLE LOCATION	DATE SAMPLED	DATE SEALED	TAG NO INITIAL 20 DAY	FUNCTION NO.		NABB MEZ DOF	Pa 336 INITIAL 20 DAY		GC UNIT	LABORATORY RESULT		DEPTH 115 cm 115 cm	VECS INITIAL 20 DAY	REMARKS
							INITIAL	20 DAY		INITIAL	20 DAY		Pa 336	Pa 336			
4-5-89		DU-55-13041	DITCH AREA D 053	4/5/89		3		8.04 E02	540.2		1.36					KM	BOTTOM OF DITCH AT 50' ENO OPEN 2230 Δ 6530 10' FROM 50' EN.
4-5-89		DU-55-13042	DITCH AREA D 053	4/5/89		4		1.42 E03	560.2		2.53					KM	OPEN 230 Δ 589 CM 20' FROM 50' EN.
4-5-89		DU-55-13043	DITCH AREA D 053	4/5/89		3		8.31 E02	560.9		1.48					KM	OPEN 2120 Δ 6590 30' FROM 50' EN.
4-5-89		DU-55-13044	DITCH AREA D 053	4/5/89		4		4.03 E03	580.3		6.94					KM	OPEN 2690 Δ 8770 40' FROM 50' EN.
4-5-89		DU-55-13050	DITCH AREA D 053	4/5/89		4		5.68 E02	450.8		1.26					KM	OPEN 2010 Δ 4730 50' FROM 50' EN.
4-5-89		DU-55-13049	DITCH AREA D 053	4/5/89		3		7.32 E02	440.9		1.66					KM	OPEN 2500 Δ 758 CM 60' FROM 50' EN.
4-5-89		DU-55-13048	DITCH AREA D 053	4/5/89		4		1.85 E03	550.5		3.36					KM	OPEN 2200 Δ 804 CM 70' FROM 50' EN.
4-10-89		DU-55-13K3	DITCH AREA D 053	4/5/89		3		1.09 E03	621.0		1.76					KM	OPEN 2080 Δ 660 CM
		DU-															
		DU-SV															
		DU-															
		DU-SV															
		DU-															
		DU-SV															
		DU-															
		DU-SV															
		DU-															
		DU-SV															

NOTE: All cell sample results are in pCi/gm

REVISED BY

Site Correction factor = 1.31(x) + 4.749 (10/21/87) VP Correction Factor = 1.33(x) + 3.03 for MDA-3pCi/g (2/3/88)  
1.90(x) - 1.40 for 5-15pCi/g (2/3/88)

Vicinity Property No. DU-053

APPENDIX B  
NRC/DOE/STATE/OWNER COMMENTS TO  
APPLICATION OF SUPPLEMENTAL STANDARDS



UNITED STATES  
**NUCLEAR REGULATORY COMMISSION**  
 REGION IV  
 URANIUM RECOVERY FIELD OFFICE  
 BOX 25325  
 DENVER, COLORADO 80225

JUL 12 1988

URFO: RSH  
 Docket No. 40-WM039  
 040WM039160E

MK-FERGUSON CO.  
 ALBUQUERQUE

JUL 20 1988

RECEIVED

W. John Arthur, III, Project Manager  
 Albuquerque Operations Office  
 U.S. Department of Energy  
 P.O. Box 5400  
 Albuquerque, New Mexico 87115

Dear Mr. Arthur:

We have completed our review of the Radiological and Engineering Assessment dated May 20, 1988, for the commercial vicinity property DU-053 located at Durango, Colorado.

Based on our review, we conclude that the potential for long-term harm has been minimized to the extent practicable. Therefore, we concur with the proposed remedial action for the vicinity property which includes the application of supplemental standards to the vicinity properties as authorized by Criterion "c" of 40 CFR 192.21.

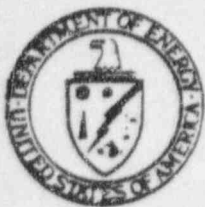
Should you have any questions on this concurrence, please contact Mr. Ralph S. Heyer of my staff on FTS 776-2811.

Sincerely,

REP	INFO	DIST	REP	INFO	DIST
	✓ JGO				PDC
	✓ RES				MMH
	✓ JEW		✓ RAP		
	JBH/GW				HRM
	CDW				ISL/MB
	JDH				GG/PD
	JJD				ISJ
	JRP				TES
	JGP				KMG
	JPB				JV/S
	SS/DC				WAZ
ORIG. FILE 10 1					
WORK FILE DU 100					

*R. Dale Smith*  
 R. Dale Smith, Director  
 Uranium Recovery Field Office  
 Region IV





3050-88-528

FILE

**Department of Energy**  
Albuquerque Operations Office  
P.O. Box 5400  
Albuquerque, New Mexico 87115

Vicinity Property No. DU-053

Location:

Greenmount Cemetery

Durango, Colorado

**MK-FERGUSON CO.**  
**ALBUQUERQUE**

James G. Oldham  
Project Director  
MK-Ferguson Company  
P.O. Box 9136  
Albuquerque, NM 87119

MAY 06 1988

**RECEIVED**

Dear Jim,

The Department of Energy (DOE) has reviewed the request for Supplemental Standards on the subject property. The DOE concurs with the application of Supplemental Standards to that portion of the property owned by the Elks, since the Elks have indicated that they wish to leave the grave sites undisturbed.

Since the City of Durango wishes to have the "hot spots" remediated from their portion of the property, the DOE also concurs with remedial action on the City's portion of the cemetery.

If you have any questions concerning this matter, please contact Carol Moore of the Technical Assistance Contractor at 846-4030.

Sincerely,

W. John Arthur, III  
Project Manager  
Uranium Mill Tailings Project Office

cc:

J. Garcia, UMTRA

C. Moore, JEG

R. Pommerening, MK-E

FILE

# STATE OF COLORADO

## COLORADO DEPARTMENT OF HEALTH

4210 East 11th Avenue  
Denver, Colorado 80220  
Phone (303) 320-8333

October 15, 1987

MK-FERGUSON CO.  
ALBUQUERQUE

OCT 19 1987

RECEIVED



Roy Romer  
Governor

Thomas M. Vernon, M.D.  
Executive Director

Mr. James R. Anderson  
Project Manager  
U.S. Department of Energy  
Albuquerque Operations Office  
P. O. Box 5400  
Albuquerque NM 87115

RE: Location Number DU-053 (20370) - Greenmount Cemetery, Durango CO 81301

Dear Mr. Anderson:

A review of the REA submitted by DOE for the above noted location has been completed. Based on the information provided, we concur that this location is in need of remedial action.

The basic design for remedial action as defined in the REA is acceptable. The following information and comments were noted as a result of our review of the Draft REA (September 1, 1987) and are provided for your consideration and appropriate inclusion as needed into the basic plan of this location's RAA. If you need more specific information, please contact our Grand Junction staff.

The State concurs with this application of supplemental standards, but is concerned with any future excavation in these areas. There exists a high probability for the spread of contamination each time materials are excavated on this site. The owner must understand that all possible steps be taken to preclude the spread of contamination from this site in the future.

Should you or Morrison-Knudsen require additional information regarding our review, please contact Chuck Thornberg in our Grand Junction office.

Sincerely,

Albert J. Hazle, Director  
Radiation Control Division

AJH:sk

cc: Richard Sena, DOE, Albuquerque  
J. G. Oldham, Morrison-Knudsen Company, Inc.  
Location File

*Bob Sommering*

ENGINEERS  
AND  
CONSTRUCTORS



**MK-FERGUSON COMPANY**  
A MORRISON KNUDSEN COMPANY

HEADQUARTERS OFFICE  
CINE ERIE VIEW PLAZA  
CLEVELAND, OHIO U.S.A. 44114  
PHONE (216) 523 5600/TELEX 985542

REPLY TO MK FERGUSON COMPANY  
REMEDIATION ACTIONS  
CONTRACTOR UMTRA PROJECT  
PO BOX 9136  
ALBUQUERQUE, NEW MEXICO U.S.A. 87119

February 20, 1987

Mr. Robert F. Ledger, Jr.  
City Manager  
City of Durango  
949 Second Avenue  
Durango, CO 81301

SUBJECT: Use of Supplemental Standards - DU-053

Dear Mr. Ledger:

The Radiological and Engineering Assessment (REA) performed on the Greenmount Cemetery in Durango has revealed that minor amounts of radioactive materials were found in maintained grave areas. This conclusion is derived from surface gamma readings taken in that area. Subsurface radiological investigation of the maintained grave areas was not conducted because we did not find it prudent to auger in these areas. Because of the economic impact involved in cleaning up this material, coupled with the very low public health hazard, we are recommending leaving the radioactive materials in place. This action is authorized under Title 40, Code of Federal Regulations, Sections 192.21 and 22. Basically, these sections of the EPA standards, which are established for cleanup of uranium mill tailings, allow residual radioactive materials to remain in place when certain conditions are met. The criterion defining when remedial action will not take place (called Supplemental Standards) is as follows:

The estimated cost of remedial action is unreasonably high relative to the long-term benefits, and the residual radioactive materials do not themselves pose a clear present or future hazard to the public.

The gamma survey shows that surficial contamination extends 5 to 10 feet into the grave areas from the access road and that general area radiation levels range from 14 to 72 micro R/hr. If a person spent 8 hours a day, five days a week for 50 weeks in a 72 micro R/hr gamma radiation field, he would receive about 144 millirem of gamma exposure in one year. This is about one-third the amount allowed the general public (10 CFR 20.105). The actual amount of subsurface material, if any, that will remain in place after remedial action is performed on the roadways will be estimated from excavation of sidewalks during remedial action.

MK-FERGUSON COMPANY  
A MEMPHIS-OWNED COMPANY

Mr. Robert F. Ledger  
February 20, 1987  
Page 2

MK-Ferguson believes that the criteria for the application of Supplemental Standards have been met due to the high cost to perform remedial action in the maintained grave areas in regards to the low risk to the public health. That cost, plus the adverse public opinion that could result, versus the very low present and future public risk makes remedial action in the maintained grave areas economically prohibitive.

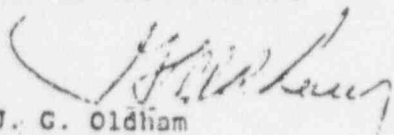
In compliance with the EPA regulations found in the Code of Federal Regulations, 40 CFR 192.21, we solicit your comments concerning this action. Excavation of radioactive materials on your property in other outdoor areas will proceed.

We are attaching a copy of the applicable sections of the Code of Federal Regulations as well as a property sketch for your convenience in responding to this proposed action. To comply with EPA regulations, we must receive a written response with your concurrence. We request this response by March 13, 1987.

If you have any questions concerning this situation, please call Mr. David Charlton of my staff at (505) 766-3040.

Sincerely,

MK-FERGUSON COMPANY


  
J. G. Oldham  
Project Director

JGO/JGP/DAC/sh  
Enclosures

cc: w/ enclosures:

J. Innis

R. Sena

Document Control 





LEONEL B. SILVA  
MAYOR

FRED W. KLATT III  
MAYOR PRO TEM

ROBERT F. LEDGER, JR.  
CITY MANAGER

GREGORY W. BELL

ANN W. BROWN

WILLIAM F. CASEY

CITY COUNCIL MEMBERS

March 3, 1987

Mr. J.G. Oldham  
UMTRA Project Director  
MK-Ferguson Company  
P.O. Box 9136  
Albuquerque, NM 87119

MK-FERGUSON CO.  
ALBUQUERQUE

MAR 06 1987

RECEIVED

RE: USE OF SUPPLEMENTAL STANDARDS,  
GREENMOUNT CEMETERY DU-053

Dear Mr. Oldham:

I am in receipt of and have reviewed your letter of February 20, 1987, regarding the captioned.

Based upon MK-Ferguson's analysis of the site, the City concurs with your recommended course of action, i.e., the application of supplemental standards that permit the radioactive materials to be left in place.

I would request, however, that if possible, we be provided with a somewhat more precise and specific map of the cemetery that locates and details the contaminated material situated at the site. Such a map would prove valuable to the City for a number of reasons:

1. employee safety
2. planning and locating future gravesites
3. planning physical improvements to the cemetery site, i.e. road system, building locations, plantings, etc.

I trust you find the foregoing to be a satisfactory reply to your letter.

Sincerely,

Robert F. Ledger, Jr.  
City Manager

RFL:mw

xc: R. Roskowski, Director of Parks & Recreation  
G. Hoch, City Planner  
Vicinity Properties File

ENGINEERS  
AND  
CONSTRUCTORS



**MK-FERGUSON COMPANY**  
A MORRISON KNUDSEN COMPANY

HEADQUARTERS OFFICE  
ONE ERIEVIEW PLAZA  
CLEVELAND, OHIO U.S.A. 44114  
PHONE (216) 523 5600/TELEX 985542

REPLY TO: MK-FERGUSON COMPANY  
REMEDIAL ACTIONS  
CONTRACTOR UMTRA PROJECT  
P.O. BOX 9136  
ALBUQUERQUE, NEW MEXICO U.S.A. 87119

September 9, 1987

Robert E. Ledger Jr.  
City Manager  
City of Durango  
949 Second Avenue  
Durango, CO 81301

SUBJECT: DU-053S<sup>17</sup> Radiological Data for the Greenmount Cemetery.

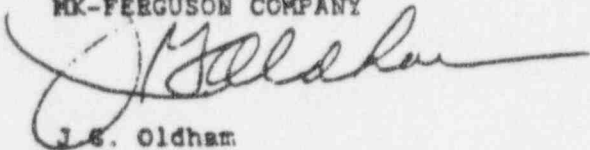
Dear Mr. Ledger:

In response to your request for more specific radiological data for the Greenmount Cemetery in a letter dated March 3, 1987 (attached), the enclosed preliminary drawings are provided for your use. Remedial action on the property is scheduled to begin in the Spring of 1988.

If you have any questions concerning this matter, please call Mr. David Charlton of my staff at 800-443-4379.

Sincerely,

MK-FERGUSON COMPANY



J. S. Oldham  
Project Director

JGO/RAP/DAC/mjs  
Enclosure

cc: w/attachments  
Document Control ←

ENGINEERS  
AND  
CONSTRUCTORS



MK-FERGUSON COMPANY  
A MORRISON KNUDSEN COMPANY

HEADQUARTERS OFFICE  
ONE ERIEVIEW PLAZA  
CLEVELAND, OHIO U.S.A. 44114  
PHONE (216) 523-5600/TELEX 985542

FILE  
DU-053

REPLY TO: MK-FERGUSON COMPANY  
REMEDIAL ACTIONS  
CONTRACTOR-UMTRA PROJECT  
PO BOX 9136  
ALBUQUERQUE, NEW MEXICO U.S.A. 87119

July 11, 1988

Mr. Robert Ledger  
City Manager  
City of Durango  
949 E. 2nd Avenue  
Durango, CO 81301

Reference: DU-053, Greenmount Cemetery

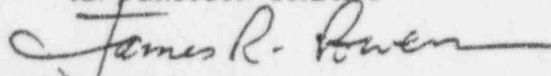
Dear Mr. Ledger,

This letter is to inform you that remedial action for the removal of uranium mill tailings from the Greenmount Cemetery is planned only in the portion of the cemetery that is owned by the City. The Elk's Lodge has requested that the part of the cemetery that they own not be disturbed by remedial action. That request will be honored and supplemental standards will be applied to their portion.

Please acknowledge receipt of this letter by signing in the space provided below and returning a signed copy to me.

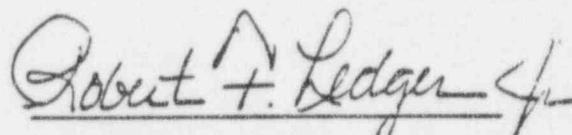
Sincerely,

MK-FERGUSON COMPANY

  
James R. Powers  
Site Manager

JRP/kw

cc: Rob Pommerening  
File

  
Mr. Robert Ledger  
City Manager

ENGINEERS  
AND  
CONSTRUCTORS



**MK-FERGUSON COMPANY**  
A MORRISON KNUDSEN COMPANY

HEADQUARTERS OFFICE  
ONE ERIEVIEW PLAZA  
CLEVELAND OHIO U.S.A. 44114  
PHONE (216) 523 5600/TELEX 985542

REPLY TO MK-FERGUSON COMPANY  
REMEDIAL ACTIONS  
CONTRACTOR UMTRA PROJECT  
P.O. BOX 9136  
ALBUQUERQUE, NEW MEXICO U.S.A. 87119

February 17, 1988

Mr. George Waterman  
Chairman of Trustees  
Elk's Lodge  
901 E. 2nd Avenue  
Durango, CO 81301

SUBJECT: Use of Supplemental Standards - DU 053

Dear Mr. Waterman:

Pursuant to your conversations with Mr. Alan Erickson of my staff concerning the Greenmount Cemetery in Durango, Colorado, the following is presented:

The Radiological and Engineering Assessment (REA) performed on the Greenmount Cemetery in Durango has revealed that minor amounts of radioactive materials were found in maintained grave areas. This conclusion is derived from surface gamma readings taken in that area. Subsurface radiological investigation of the maintained grave areas was not conducted because we did not find it prudent to auger in these areas. Because of the economic impact involved in cleaning up this material, coupled with the very low public health hazard, we are recommending leaving the radioactive materials in place. This action is authorized under Title 40, Code of Federal Regulations, Sections 192.21 and 22. Basically, these sections of the EPA standards, which are established for cleanup of uranium mill tailings, allow residual radioactive materials to remain in place when certain conditions are met. The criterion defining when remedial action will not take place (called Supplemental Standards) is as follows:

The estimated cost of remedial action is unreasonably high relative to the long-term benefits, and the residual radioactive materials do not themselves pose a clear present or future hazard to the public.



Mr. George Waterman

February 17, 1988

Page 2

The gamma survey shows that surficial contamination extends 5 to 10 feet into the grave areas from the access road and that general area radiation levels range from 14 to 72 micro R/hr. If a person spent 8 hours a day, five days a week for 50 weeks in a 72 micro R/hr gamma radiation field, he would receive about 144 millirem of gamma exposure in one year. This is about one-third the amount allowed the general public (10 CFR 20.105). The actual amount of subsurface material, if any, that will remain in place after remedial action is performed on the roadways will be estimated from excavation of sidewalls during remedial action.

MK-Ferguson believes that the criteria for the application of Supplemental Standards have been met due to the high cost to perform remedial action in the maintained grave areas in regards to the low risk to the public health. That cost, plus the adverse public risk makes remedial action in the maintained grave areas economically prohibitive.

In compliance with the EPA regulations found in the Code of Federal Regulations, 40 CFR 192.21, we solicit your comments concerning this action. Excavation of radioactive materials on your property in other outdoor areas will proceed.

We are attaching a copy of the applicable sections of the Code of Federal Regulations as well as a property sketch for your convenience in responding to this proposed action. To comply with EPA regulations, we must receive a written response with your concurrence. We request this response by March 4, 1988.

If you have any questions concerning this situation, please call Mr. David Charlton of my staff at 1-800-443-4379.

Sincerely,

MK-Ferguson Company

*Charles D. McKelvey*

*for* J.G. Oldham  
Project Director

JGO/DAC/ss

Enclosures

cc: w/enclosures:

J. Garcia

J. Powers

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0344F

spection and Enforcement Regional Office listed in Appendix D at least 30 days before the date that respiratory protective equipment is first used under the provisions of this section.

[41 FR 52301, Nov. 29, 1976, as amended at 43 FR 29270, July 7, 1978; 47 FR 16164, Apr. 15, 1982]

#### § 20.104 Exposure of minors.

(a) No licensee shall possess, use, or transfer licensed material in such a manner as to cause any individual within a restricted area who is under 18 years of age, to receive in any period of one calendar quarter from radioactive material and other sources of radiation in the licensee's possession a dose in excess of 10 percent of the limits specified in the table in paragraph (a) of § 20.101.

(b) No licensee shall possess, use or transfer licensed material in such a manner as to cause any individual within a restricted area, who is under 18 years of age to be exposed to airborne radioactive material possessed by the licensee in an average concentration in excess of the limits specified in Appendix B, Table II of this part. For purposes of this paragraph, concentrations may be averaged over periods not greater than a week.

(c) The provisions of §§ 20.103(b)(2) and 20.103(c) shall apply to exposures subject to paragraph (b) of this section except that the references in §§ 20.103(b)(2) and 20.103(c) to Appendix B, Table I, Column 1 shall be deemed to be references to Appendix B, Table II, Column 1.

[25 FR 10914, Nov. 17, 1960, as amended at 41 FR 52302, Nov. 29, 1976]

#### § 20.105 Permissible levels of radiation in unrestricted areas.

(a) There may be included in any application for a license or for amendment of a license proposed limits upon levels of radiation in unrestricted areas resulting from the applicant's possession or use of radioactive material and other sources of radiation. Such applications should include information as to anticipated average radiation levels and anticipated occupancy times for each unrestricted area involved. The Commission will approve

the proposed limits if the applicant demonstrates that the proposed limits are not likely to cause any individual to receive a dose to the whole body in any period of one calendar year in excess of 0.5 rem.

(b) Except as authorized by the Commission pursuant to paragraph (a) of this section, no licensee shall possess, use or transfer licensed material in such a manner as to create in any unrestricted area from radioactive material and other sources of radiation in his possession:

(1) Radiation levels which, if an individual were continuously present in the area, could result in his receiving a dose in excess of two millirems in any one hour, or

(2) Radiation levels which, if an individual were continuously present in the area, could result in his receiving a dose in excess of 100 millirems in any seven consecutive days.

(c) In addition to other requirements of this part, licensees engaged in uranium fuel cycle operations subject to the provisions of 40 CFR Part 190, "Environmental Radiation Protection Standards for Nuclear Power Operations," shall comply with that part.

[25 FR 10914, Nov. 17, 1960, and 46 FR 18526, Mar. 25, 1981]

#### § 20.106 Radionuclides in effluents to unrestricted areas.

(a) A licensee shall not possess, use, or transfer licensed material so as to release to an unrestricted area radioactive material in concentrations which exceed the limits specified in Appendix B, Table II of this part, except as authorized pursuant to § 20.302 or paragraph (b) of this section. For purposes of this section concentrations may be averaged over a period not greater than one year.

(b) An application for a license or amendment may include proposed limits higher than those specified in paragraph (a) of this section. The Commission will approve the proposed limits if the applicant demonstrates:

(1) That the applicant has made a reasonable effort to minimize the radioactivity contained in effluents to unrestricted areas; and

for consideration of the various factors affecting the longevity of control and stabilization methods and their costs. These factors have different levels of predictability and may vary for the different sites.

(2) Protection of water should be considered in the analysis for reasonable assurance of compliance with the provisions of § 192.02. Protection of water should be considered on a case-specific basis, drawing on hydrological and geochemical surveys and all other relevant data. The hydrologic and geologic assessment to be conducted at each site should include a monitoring program sufficient to establish background ground water quality through one or more upgradient wells, and identify the presence and movement of plumes associated with the tailings piles.

(3) If contaminants have been released from a tailings pile, an assessment of the location of the contaminants and the rate and direction of movement of contaminated ground water, as well as its relative contamination, should be made. In addition, the assessment should identify the attenuative capacity of the unsaturated and saturated zone to determine the extent of plume movement. Judgments on the possible need for remedial or protective actions for ground-water aquifers should be guided by relevant considerations described in EPA's hazardous waste management system (47 FR 32274, July 26, 1982) and by relevant State and Federal Water Quality Criteria for anticipated or existing uses of water over the term of the stabilization. The decision on whether to institute remedial action, what specific action to take, and to what levels an aquifer should be protected or restored should be made on a case-by-case basis taking into account such factors as technical feasibility of improving the aquifer in its hydrogeologic setting, the cost of applicable restorative or protective programs, the present and future value of the aquifer as a water resource, the availability of alternative water supplies, and the degree to which human exposure is likely to occur.

(b)(1) Compliance with Subpart B, to the extent practical, should be dem-

onstrated through radiation surveys. Such surveys may, if appropriate, be restricted to locations likely to contain residual radioactive materials. These surveys should be designed to provide for compliance averaged over limited areas rather than point-by-point compliance with the standards. In most cases, measurement of gamma radiation exposure rates above and below the land surface can be used to show compliance with § 192.12(a). Protocols for making such measurements should be based on realistic radium distributions near the surface rather than extremes rarely encountered.

(2) In § 192.12(a), "background level" refers to the native radium concentration in soil. Since this may not be determinable in the presence of contamination by residual radioactive materials, a surrogate "background level" may be established by simple direct or indirect (e.g., gamma radiation) measurements performed nearby but outside of the contaminated location.

(3) Compliance with § 192.12(b) may be demonstrated by methods that the Department of Energy has approved for use under Pub. L. 92-314 (10 CFR 712), or by other methods that the implementing agencies determine are adequate. Residual radioactive materials should be removed from buildings exceeding 0.03 WL so that future replacement buildings will not pose a hazard [unless removal is not practical—see § 192.21(c)]. However, sealants, filtration, and ventilation devices may provide reasonable assurance of reductions from 0.03 WL to below 0.02 WL. In unusual cases, indoor radiation may exceed the levels specified in § 192.12(b) due to sources other than residual radioactive materials. Remedial actions are not required in order to comply with the standard when there is reasonable assurance that residual radioactive materials are not the cause of such an excess.

#### § 192.21 Criteria for applying supplemental standards.

The implementing agencies may (and in the case of Subsection (f) shall) apply standards under § 192.22 in lieu of the standards of Subparts A



or B if they determine that any of the following circumstances exists:

(a) Remedial actions required to satisfy Subparts A or B would pose a clear and present risk of injury to workers or to members of the public, notwithstanding reasonable measures to avoid or reduce risk.

(b) Remedial actions to satisfy the cleanup standards for land, § 192.12(a), or the acquisition of minimum materials required for control to satisfy § 192.02(b), would, notwithstanding reasonable measures to limit damage, directly produce environmental harm that is clearly excessive compared to the health benefits to persons living on or near the site, now or in the future. A clear excess of environmental harm is harm that is long-term, manifest, and grossly disproportionate to health benefits that may reasonably be anticipated.

(c) The estimated cost of remedial action to satisfy § 192.12(a) at a "vicinity" site (described under Sec. 101(6)(B) of the Act) is unreasonably high relative to the long-term benefits, and the residual radioactive materials do not pose a clear present or future hazard. The likelihood that buildings will be erected or that people will spend long periods of time at such a vicinity site should be considered in evaluating this hazard. Remedial action will generally not be necessary where residual radioactive materials have been placed semi-permanently in a location where site-specific factors limit their hazard and from which they are costly or difficult to remove, or where only minor quantities of residual radioactive materials are involved. Examples are residual radioactive materials under hard surface public roads and sidewalks, around public sewer lines, or in fence post foundations. Supplemental standards should not be applied at such sites, however, if individuals are likely to be exposed for long periods of time to radiation from such materials at levels above those that would prevail under § 192.12(a).

(d) The cost of a remedial action for cleanup of a building under § 192.12(b) is clearly unreasonably high relative to the benefits. Factors that should be included in this judgment are the anticipated period of occupancy, the incremental radiation level that would

be affected by the remedial action, the residual useful lifetime of the building, the potential for future construction at the site, and the applicability of less costly remedial methods than removal of residual radioactive materials.

(e) There is no known remedial action.

(f) Radionuclides other than radium-226 and its decay products are present in sufficient quantity and concentration to constitute a significant radiation hazard from residual radioactive materials.

#### § 192.22 Supplemental standards.

Federal agencies implementing Subparts A and B may in lieu thereof proceed pursuant to this section with respect to generic or individual situations meeting the eligibility requirements of § 192.21.

(a) When one or more of the criteria of § 192.21(a) through (e) applies, the implementing agencies shall select and perform remedial actions that come as close to meeting the otherwise applicable standard as is reasonable under the circumstances.

(b) When § 192.21(f) applies, remedial actions shall, in addition to satisfying the standards of Subparts A and B, reduce other residual radioactivity to levels that are as low as is reasonably achievable.

(c) The implementing agencies may make general determinations concerning remedial actions under this Section that will apply to all locations with specified characteristics, or they may make a determination for a specific location. When remedial actions are proposed under this Section for a specific location, the Department of Energy shall inform any private owners and occupants of the affected location and solicit their comments. The Department of Energy shall provide any such comments to the other implementing agencies. The Department of Energy shall also periodically inform the Environmental Protection Agency of both general and individual determinations under the provisions of this section.

#### § 192.23 Effective date.

Subparts A, B, and C shall be effective March 7, 1983.



for consideration of the various factors affecting the longevity of control and stabilization methods and their costs. These factors have different levels of predictability and may vary for the different sites.

(2) Protection of water should be considered in the analysis for reasonable assurance of compliance with the provisions of § 192.02. Protection of water should be considered on a case-specific basis, drawing on hydrological and geochemical surveys and all other relevant data. The hydrologic and geologic assessment to be conducted at each site should include a monitoring program sufficient to establish background ground water quality through one or more upgradient wells, and identify the presence and movement of plumes associated with the tailings piles.

(3) If contaminants have been released from a tailings pile, an assessment of the location of the contaminants and the rate and direction of movement of contaminated ground water, as well as its relative contamination, should be made. In addition, the assessment should identify the attenuative capacity of the unsaturated and saturated zone to determine the extent of plume movement. Judgments on the possible need for remedial or protective actions for ground-water aquifers should be guided by relevant considerations described in EPA's hazardous waste management system (47 FR 32274, July 26, 1982) and by relevant State and Federal Water Quality Criteria for anticipated or existing uses of water over the term of the stabilization. The decision on whether to institute remedial action, what specific action to take, and to what levels an aquifer should be protected or restored should be made on a case-by-case basis taking into account such factors as technical feasibility of improving the aquifer in its hydrogeologic setting, the cost of applicable restorative or protective programs, the present and future value of the aquifer as a water resource, the availability of alternative water supplies, and the degree to which human exposure is likely to occur.

(b)(1) Compliance with Subpart B, to the extent practical, should be dem-

onstrated through radiation surveys. Such surveys may, if appropriate, be restricted to locations likely to contain residual radioactive materials. These surveys should be designed to provide for compliance averaged over limited areas rather than point-by-point compliance with the standards. In most cases, measurement of gamma radiation exposure rates above and below the land surface can be used to show compliance with § 192.12(a). Protocols for making such measurements should be based on realistic radium distributions near the surface rather than extremes rarely encountered.

(2) In § 192.12(a), "background level" refers to the native radium concentration in soil. Since this may not be determinable in the presence of contamination by residual radioactive materials, a surrogate "background level" may be established by simple direct or indirect (e.g., gamma radiation) measurements performed nearby but outside of the contaminated location.

(3) Compliance with § 192.12(b) may be demonstrated by methods that the Department of Energy has approved for use under Pub. L. 92-314 (10 CFR 712), or by other methods that the implementing agencies determine are adequate. Residual radioactive materials should be removed from buildings exceeding 0.03 WL so that future replacement buildings will not pose a hazard (unless removal is not practical—see § 192.21(c)). However, sealants, filtration, and ventilation devices may provide reasonable assurance of reductions from 0.03 WL to below 0.02 WL. In unusual cases, indoor radiation may exceed the levels specified in § 192.12(b) due to sources other than residual radioactive materials. Remedial actions are not required in order to comply with the standard when there is reasonable assurance that residual radioactive materials are not the cause of such an excess.

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The implementing agencies may (and in the case of Subsection (f) shall) apply standards under § 192.22 in lieu of the standards of Subparts A

or B if they determine that any of the following circumstances exists:

(a) Remedial actions required to satisfy Subparts A or B would pose a clear and present risk of injury to workers or to members of the public, notwithstanding reasonable measures to avoid or reduce risk.

(b) Remedial actions to satisfy the cleanup standards for land, § 192.12(a), or the acquisition of minimum materials required for control to satisfy § 192.02(b), would, notwithstanding reasonable measures to limit damage, directly produce environmental harm that is clearly excessive compared to the health benefits to persons living on or near the site, now or in the future. A clear excess of environmental harm is harm that is long-term, manifest, and grossly disproportionate to health benefits that may reasonably be anticipated.

(c) The estimated cost of remedial action to satisfy § 192.12(a) at a "vicinity" site (described under Sec. 101(6)(B) of the Act) is unreasonably high relative to the long-term benefits, and the residual radioactive materials do not pose a clear present or future hazard. The likelihood that buildings will be erected or that people will spend long periods of time at such a vicinity site should be considered in evaluating this hazard. Remedial action will generally not be necessary where residual radioactive materials have been placed semi-permanently in a location where site-specific factors limit their hazard and from which they are costly or difficult to remove, or where only minor quantities of residual radioactive materials are involved. Examples are residual radioactive materials under hard surface public roads and sidewalks, around public sewer lines, or in fence post foundations. Supplemental standards should not be applied at such sites, however, if individuals are likely to be exposed for long periods of time to radiation from such materials at levels above those that would prevail under § 192.12(a).

(d) The cost of a remedial action for cleanup of a building under § 192.12(b) is clearly unreasonably high relative to the benefits. Factors that should be included in this judgment are the anticipated period of occupancy, the incremental radiation level that would

be affected by the remedial action, the residual useful lifetime of the building, the potential for future construction at the site, and the applicability of less costly remedial methods than removal of residual radioactive materials.

(e) There is no known remedial action.

(f) Radionuclides other than radium-226 and its decay products are present in sufficient quantity and concentration to constitute a significant radiation hazard from residual radioactive materials.

#### § 192.22 Supplemental standards.

Federal agencies implementing Subparts A and B may in lieu thereof proceed pursuant to this section with respect to generic or individual situations meeting the eligibility requirements of § 192.21.

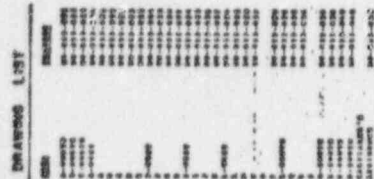
(a) When one or more of the criteria of § 192.21(a) through (e) applies, the implementing agencies shall select and perform remedial actions that come as close to meeting the otherwise applicable standard as is reasonable under the circumstances.

(b) When § 192.21(f) applies, remedial actions shall, in addition to satisfying the standards of Subparts A and B, reduce other residual radioactivity to levels that are as low as is reasonably achievable.

(c) The implementing agencies may make general determinations concerning remedial actions under this Section that will apply to all locations with specified characteristics, or they may make a determination for a specific location. When remedial actions are proposed under this Section for a specific location, the Department of Energy shall inform any private owners and occupants of the affected location and solicit their comments. The Department of Energy shall provide any such comments to the other implementing agencies. The Department of Energy shall also periodically inform the Environmental Protection Agency of both general and individual determinations under the provisions of this section.

#### § 192.23 Effective date.

Subparts A, B, and C shall be effective March 7, 1983.

[illegible]



FILE  
DU-053



OFFICE OF SECRETARY

MK-FERGUSON CO.  
ALBUQUERQUE

MAR 2 1988

*Durango Lodge No. 507*

RECEIVED

DURANGO, COLORADO

March 18, 1988

Mr. J. G. Oldham  
MK-Ferguson Company  
Remedial Actions  
P. O. Box 936  
Albuquerque, NM 87119

Dear Mr. Oldham:

Re: your letter dated February 17, 1988, Subject: Use of Environmental Standards-DU-053.

After conversations with your representatives in Durango, Colo concerning the possible removal of some radio-active materials from the Elks portion of the Greenmount Cemetery, the following was accomplished by the Trustees of Durango Lodge 597.

1. Your letter was read to the lodge members in attendance and a vote was taken as to whether or not we would want any removal of the material. The vote was unanimous against the removal of any material in or abutting to the Elks portion of the cemetery.

2. Reason for this decision was based on the following:

a. The factors you outlined in your letter which indicate that the danger of contamination to any individual is extremely unlikely and minimal.

b. The possibility of disturbing or actually ruining occupied graves.

c. The possibility if digging into old unmarked graves put there before the present facility was managed at today's standard.

d. The definite possibility of public outcry should some occupied graves be disturbed or opened.

3. For the above cited reasons the opinion of the Durango Elks Lodge members is that no attempt be made to remove any radio active material from the Greenmount Cemetery.

*Dennis Gible*  
DENNIS GIBBLE:

Secretary

James Powers  
Box 1510  
Durango, Co 81301

Sincerely,

Board of Trustees:

George E. Waterman *George E. Waterman*

Fred DiFerdinando *Fred DiFerdinando*

Robert Sherman

William Fitch *William Fitch*



ENGINEERS  
AND  
CONSTRUCTORS



**MK-FERGUSON COMPANY**  
A MORRISON KNUDSEN COMPANY

HEADQUARTERS OFFICE  
ONE ERIEVIEW PLAZA  
CLEVELAND OHIO U.S.A. 44114  
PHONE (216) 523 5600/TELEX 985542

FIVE  
DU-053

REPLY TO MK-FERGUSON COMPANY  
REMEDIAL ACTIONS  
CONTRACTOR UMTRA PROJECT  
P.O. BOX 9136  
ALBUQUERQUE NEW MEXICO U.S.A. 87119

July 11, 1988

Mr. George Waterman  
Chairman of Trustees  
Durango Elk's Lodge No. 507  
901 E. 2nd Avenue  
Durango, CO 80301

Reference: DU-053, Greenmount Cemetery

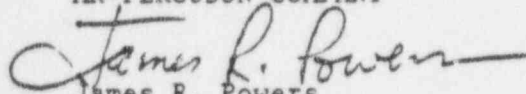
Dear Mr. Waterman,

Per your request, remedial action for the removal of uranium mill tailings from the portion of Greenmount Cemetery that is owned by the Elk's Lodge will not be performed. However, removal of the tailings from the City owned portion will be accomplished.

Please acknowledge receipt of this letter by signing in the space provided below and returning a signed copy to me.

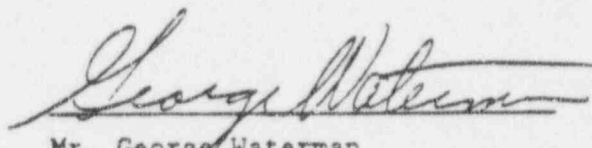
Sincerely,

MK-FERGUSON COMPANY

  
James R. Powers  
Site Manager

JRP/kw

cc: Rob Pommerening  
File

  
Mr. George Waterman  
Chairman of Trustees

ENGINEERS  
AND  
CONSTRUCTORS



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REPLY TO MK FERGUSON COMPANY  
REMEDIAL ACTIONS  
CONTRACTOR UMTRA PROJECT  
PO BOX 9136  
ALBUQUERQUE NEW MEXICO U.S.A. 87119

February 17, 1988

Mr. Harold Young  
Hood Mortuary  
1261 E. 3rd Avenue  
Durango, CO 81301

SUBJECT: Use of Supplemental Standards - DU-053

Dear Mr. Young:

Pursuant to your conversations with Mr. Alan Erickson of my staff concerning the Greenmount Cemetery in Durango, Colorado, the following is presented:

The Radiological and Engineering Assessment (REA) performed on the Greenmount Cemetery in Durango has revealed that minor amounts of radioactive materials were found in maintained grave areas. This conclusion is derived from surface gamma readings taken in that area. Subsurface radiological investigation of the maintained grave areas was not conducted because we did not find it prudent to auger in these areas. Because of the economic impact involved in cleaning up this material, coupled with the very low public health hazard, we are recommending leaving the radioactive materials in place. This action is authorized under Title 40, Code of Federal Regulations, Sections 192.21 and 22. Basically, these sections of the EPA standards, which are established for cleanup of uranium mill tailings, allow residual radioactive materials to remain in place when certain conditions are met. The criterion defining when remedial action will not take place (called Supplemental Standards) is as follows:

The estimated cost of remedial action is unreasonably high relative to the long-term benefits, and the residual radioactive materials do not themselves pose a clear present or future hazard to the public.

Mr. Harold Young  
February 17, 1988  
Page 2

The gamma survey shows that surficial contamination extends 5 to 10 feet into the grave areas from the access road and that general area radiation levels range from 14 to 72 micro R/hr. If a person spent 8 hours a day, five days a week for 50 weeks in a 72 micro R/hr gamma radiation field, he would receive about 144 millirem of gamma exposure in one year. This is about one-third the amount allowed the general public (10 CFR 20.105). The actual amount of subsurface material, if any, that will remain in place after remedial action is performed on the roadways will be estimated from excavation of sidewalls during remedial action.

MK-Ferguson believes that the criteria for the application of Supplemental Standards have been met due to the high cost to perform remedial action in the maintained grave areas in regards to the low risk to the public health. That cost, plus the adverse public risk makes remedial action in the maintained grave areas economically prohibitive.

In compliance with the EPA regulations found in the Code of Federal Regulations, 40 CFR 192.21, we solicit your comments concerning this action. Excavation of radioactive materials on your property in other outdoor areas will proceed.

We are attaching a copy of the applicable sections of the Code of Federal Regulations as well as a property sketch for your convenience in responding to this proposed action. To comply with EPA regulations, we must receive a written response with your concurrence. We request this response by March 4, 1988.

If you have any questions concerning this situation, please call Mr. David Charlton of my staff at 1-800-443-4379.

Sincerely,

MK-Ferguson Company

*John D. Oldham*

J.G. Oldham  
Project Director

JGO/DAC/ss

Enclosures

cc: w/enclosures:

J. Garcia

J. Powers

Document Control

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spection and Enforcement Regional Office listed in Appendix D at least 30 days before the date that respiratory protective equipment is first used under the provisions of this section.

[41 FR 52301, Nov. 29, 1976, as amended at 43 FR 29270, July 7, 1978; 47 FR 16164, Apr. 15, 1982]

#### § 20.104 Exposure of minors.

(a) No licensee shall possess, use, or transfer licensed material in such a manner as to cause any individual within a restricted area who is under 18 years of age, to receive in any period of one calendar quarter from radioactive material and other sources of radiation in the licensee's possession a dose in excess of 10 percent of the limits specified in the table in paragraph (a) of § 20.101.

(b) No licensee shall possess, use or transfer licensed material in such a manner as to cause any individual within a restricted area, who is under 18 years of age to be exposed to airborne radioactive material possessed by the licensee in an average concentration in excess of the limits specified in Appendix B, Table II of this part. For purposes of this paragraph, concentrations may be averaged over periods not greater than a week.

(c) The provisions of §§ 20.103(b)(2) and 20.103(c) shall apply to exposures subject to paragraph (b) of this section except that the references in §§ 20.103(b)(2) and 20.103(c) to Appendix B, Table I, Column 1 shall be deemed to be references to Appendix B, Table II, Column 1.

[25 FR 10914, Nov. 17, 1960, as amended at 41 FR 52302, Nov. 29, 1976]

#### § 20.105 Permissible levels of radiation in unrestricted areas.

(a) There may be included in any application for a license or for amendment of a license proposed limits upon levels of radiation in unrestricted areas resulting from the applicant's possession or use of radioactive material and other sources of radiation. Such applications should include information as to anticipated average radiation levels and anticipated occupancy times for each unrestricted area involved. The Commission will approve

the proposed limits if the applicant demonstrates that the proposed limits are not likely to cause any individual to receive a dose to the whole body in any period of one calendar year in excess of 0.5 rem.

(b) Except as authorized by the Commission pursuant to paragraph (a) of this section, no licensee shall possess, use or transfer licensed material in such a manner as to create in any unrestricted area from radioactive material and other sources of radiation in his possession:

(1) Radiation levels which, if an individual were continuously present in the area, could result in his receiving a dose in excess of two millirems in any one hour, or

(2) Radiation levels which, if an individual were continuously present in the area, could result in his receiving a dose in excess of 100 millirems in any seven consecutive days.

(c) In addition to other requirements of this part, licensees engaged in uranium fuel cycle operations subject to the provisions of 40 CFR Part 190, "Environmental Radiation Protection Standards for Nuclear Power Operations," shall comply with that part.

[25 FR 10914, Nov. 17, 1960, and 46 FR 18526, Mar. 25, 1981]

#### § 20.106 Radioactivity in effluents to unrestricted areas.

(a) A licensee shall not possess, use, or transfer licensed material so as to release to an unrestricted area radioactive material in concentrations which exceed the limits specified in Appendix B, Table II of this part, except as authorized pursuant to § 20.302 or paragraph (b) of this section. For purposes of this section concentrations may be averaged over a period not greater than one year.

(b) An application for a license or amendment may include proposed limits higher than those specified in paragraph (a) of this section. The Commission will approve the proposed limits if the applicant demonstrates:

(1) That the applicant has made a reasonable effort to minimize the radioactivity contained in effluents to unrestricted areas; and



for consideration of the various factors affecting the longevity of control and stabilization methods and their costs. These factors have different levels of predictability and may vary for the different sites.

(2) Protection of water should be considered in the analysis for reasonable assurance of compliance with the provisions of § 192.02. Protection of water should be considered on a case-specific basis, drawing on hydrological and geochemical surveys and all other relevant data. The hydrologic and geologic assessment to be conducted at each site should include a monitoring program sufficient to establish background ground water quality through one or more upgradient wells, and identify the presence and movement of plumes associated with the tailings piles.

(3) If contaminants have been released from a tailings pile, an assessment of the location of the contaminants and the rate and direction of movement of contaminated ground water, as well as its relative contamination, should be made. In addition, the assessment should identify the attenuative capacity of the unsaturated and saturated zone to determine the extent of plume movement. Judgments on the possible need for remedial or protective actions for ground-water aquifers should be guided by relevant considerations described in EPA's hazardous waste management system (47 FR 32274, July 26, 1982) and by relevant State and Federal Water Quality Criteria for anticipated or existing uses of water over the term of the stabilization. The decision on whether to institute remedial action, what specific action to take, and to what levels an aquifer should be protected or restored should be made on a case-by-case basis taking into account such factors as technical feasibility of improving the aquifer in its hydrogeologic setting, the cost of applicable restorative or protective programs, the present and future value of the aquifer as a water resource, the availability of alternative water supplies, and the degree to which human exposure is likely to occur.

(b)(1) Compliance with Subpart B, to the extent practical, should be dem-

onstrated through radiation surveys. Such surveys may, if appropriate, be restricted to locations likely to contain residual radioactive materials. These surveys should be designed to provide for compliance averaged over limited areas rather than point-by-point compliance with the standards. In most cases, measurement of gamma radiation exposure rates above and below the land surface can be used to show compliance with § 192.12(a). Protocols for making such measurements should be based on realistic radium distributions near the surface rather than extremes rarely encountered.

(2) In § 192.12(a), "background level" refers to the native radium concentration in soil. Since this may not be determinable in the presence of contamination by residual radioactive materials, a surrogate "background level" may be established by simple direct or indirect (e.g., gamma radiation) measurements performed nearby but outside of the contaminated location.

(3) Compliance with § 192.12(b) may be demonstrated by methods that the Department of Energy has approved for use under Pub. L. 92-314 (10 CFR 712), or by other methods that the implementing agencies determine are adequate. Residual radioactive materials should be removed from buildings exceeding 0.03 WL so that future replacement buildings will not pose a hazard (unless removal is not practical—see § 192.21(c)). However, sealants, filtration, and ventilation devices may provide reasonable assurance of reductions from 0.03 WL to below 0.02 WL. In unusual cases, indoor radiation may exceed the levels specified in § 192.12(b) due to sources other than residual radioactive materials. Remedial actions are not required in order to comply with the standard when there is reasonable assurance that residual radioactive materials are not the cause of such an excess.

§ 192.21 Criteria for applying supplemental standards.

The implementing agencies may (and in the case of Subsection (f) shall) apply standards under § 192.22 in lieu of the standards of Subparts A

or B if they determine that any of the following circumstances exists:

(a) Remedial actions required to satisfy Subparts A or B would pose a clear and present risk of injury to workers or to members of the public, notwithstanding reasonable measures to avoid or reduce risk.

(b) Remedial actions to satisfy the cleanup standards for land, § 192.12(a), or the acquisition of minimum materials required for control to satisfy § 192.02(b), would, notwithstanding reasonable measures to limit damage, directly produce environmental harm that is clearly excessive compared to the health benefits to persons living on or near the site, now or in the future. A clear excess of environmental harm is harm that is long-term, manifest, and grossly disproportionate to health benefits that may reasonably be anticipated.

(c) The estimated cost of remedial action to satisfy § 192.12(a) at a "vicinity" site (described under Sec. 101(6)(B) of the Act) is unreasonably high relative to the long-term benefits, and the residual radioactive materials do not pose a clear present or future hazard. The likelihood that buildings will be erected or that people will spend long periods of time at such a vicinity site should be considered in evaluating this hazard. Remedial action will generally not be necessary where residual radioactive materials have been placed semi-permanently in a location where site-specific factors limit their hazard and from which they are costly or difficult to remove, or where only minor quantities of residual radioactive materials are involved. Examples are residual radioactive materials under hard surface public roads and sidewalks, around public sewer lines, or in fence post foundations. Supplemental standards should not be applied at such sites, however, if individuals are likely to be exposed for long periods of time to radiation from such materials at levels above those that would prevail under § 192.12(a).

(d) The cost of a remedial action for cleanup of a building under § 192.12(b) is clearly unreasonably high relative to the benefits. Factors that should be included in this judgment are the anticipated period of occupancy, the incremental radiation level that would

be affected by the remedial action, the residual useful lifetime of the building, the potential for future construction at the site, and the applicability of less costly remedial methods than removal of residual radioactive materials.

(e) There is no known remedial action.

(f) Radionuclides other than radium-226 and its decay products are present in sufficient quantity and concentration to constitute a significant radiation hazard from residual radioactive materials.

#### § 192.22 Supplemental standards.

Federal agencies implementing Subparts A and B may in lieu thereof proceed pursuant to this section with respect to generic or individual situations meeting the eligibility requirements of § 192.21.

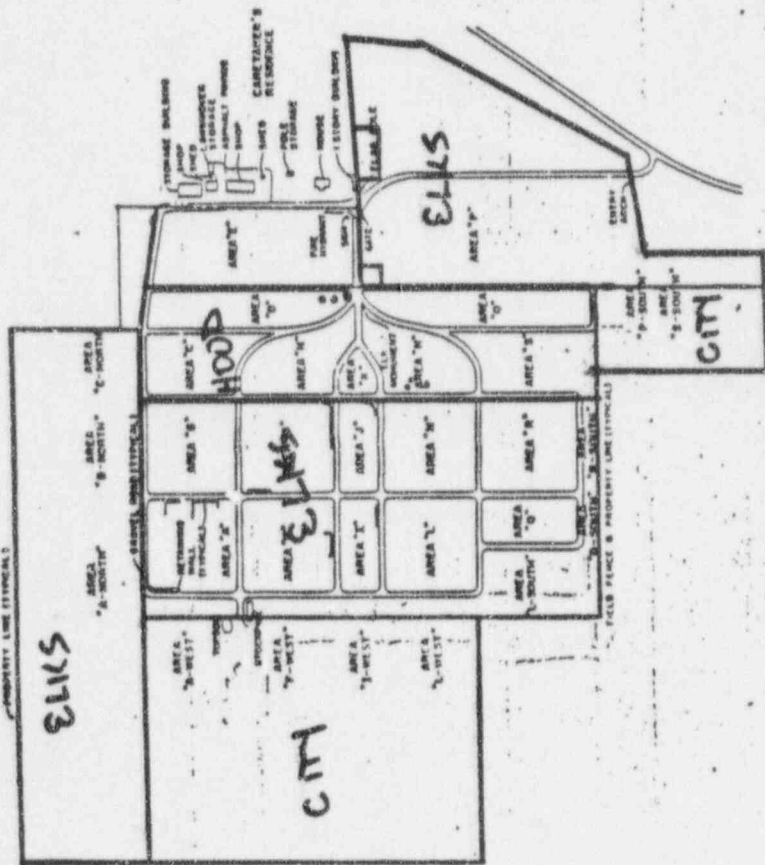
(a) When one or more of the criteria of § 192.21(a) through (e) applies, the implementing agencies shall select and perform remedial actions that come as close to meeting the otherwise applicable standard as is reasonable under the circumstances.

(b) When § 192.21(f) applies, remedial actions shall, in addition to satisfying the standards of Subparts A and B, reduce other residual radioactivity to levels that are as low as is reasonably achievable.

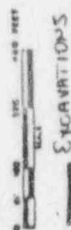
(c) The implementing agencies may make general determinations concerning remedial actions under this Section that will apply to all locations with specified characteristics, or they may make a determination for a specific location. When remedial actions are proposed under this Section for a specific location, the Department of Energy shall inform any private owners and occupants of the affected location and solicit their comments. The Department of Energy shall provide any such comments to the other implementing agencies. The Department of Energy shall also periodically inform the Environmental Protection Agency of both general and individual determinations under the provisions of this section.

#### § 192.23 Effective date.

Subparts A, B, and C shall be effective March 7, 1983.

[illegible]

ADJACENT PROPERTY 531-0348

[illegible]

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Vicinity Property No. DU-053

APPENDIX C  
LEGAL DESCRIPTION



LEGAL DESCRIPTION

The property which is the subject of this Remedial Action Agreement, the address of which is Greenmount Cemetery, Durango, Colorado, is more particularly described in the La Plata County Recorder's Office, as follows:

TRACT 1

A tract of land lying and being in the E1/2NE1/4 of Section 30, Township 35 North, Range 9 West, N.M.P.M., La Plata County, Colorado, and being more particularly described as follows, to-wit: BEGINNING at the Northeast corner of said tract, whence the Northeast corner of said Section 30, Township 35 North, Range 9 West, N.M.P.M., bears North 30° 31' East, 720.28 feet; thence running from said point of beginning South 4° 22' West, 202.95 feet; thence running South 27° 33' West, 657.85 feet; thence running South 80° 25' West, 209.88 feet; thence running South 0° 02' West, 454.88 feet; thence running the Southeast corner of the N1/2W1/4SE1/4NE1/4 of said Section 30; thence running along the East boundary line of the said N1/2W1/4SE1/4NE1/4 of Section 30, North 0° 48' West, 662.01 feet; thence running North 0° 53' West, 321.46 feet to the South boundary line of the present Elks Tract; thence running along said South boundary line of the present Elks Tract, North 88° 55' East, 226.11 feet, to the Southeast corner of the present Elks Tract; thence running along the East boundary line of the present Elks Tract North 0° 51' West, 354.90 feet, to the Northeast corner of the present Elks Tract; thence running North 87° 06' East, 387.66 feet, to the Northeast corner of this tract, the point of beginning, containing 7.596 acres, more or less. LESS AND EXCEPT tract described in Warranty Deed from Durango Elks, Inc., a Colorado corporation, to La Plata Electric Association, Inc., a Colorado corporation, recorded June 21, 1982 as Reception No. 470993, said tract being more particularly described as follows, to-wit: A tract of land lying and being in the NE1/4NE1/4 of Section 30, Township 35 North, Range 9 West, N.M.P.M., La Plata County, Colorado, and being more particularly described as follows, to-wit: BEGINNING at the Northeast corner of said Section 30, thence South 30° 31' West, 720.28 feet to a point; thence South 87° 06' West, 189.94 feet to the true point of beginning; thence from said true point of beginning South 02° 54' East, 124.97 feet; thence South 87° 06' West, 202.28 feet; thence North 0° 51' West, 125.05 feet; thence North 87° 06' East, 197.81 feet to the true point of beginning. TOGETHER WITH a non-exclusive access easement, 24 feet in width, as shown on plat of Westside Substation by Goff Engineering and dated April 8, 1982.

TRACT 2

A tract of land lying and being in the NE1/4NE1/4 of Section 30, Township 35 North, Range 9 West, N.M.P.M., La Plata County, Colorado, and being more particularly described as follows, to-wit: BEGINNING at the Northwest corner of said tract, said Northwest corner being a point of the East boundary line of the W1/4NE1/4NE1/4 of Section 30, Township 35 North, Range 9 West, N.M.P.M., and also being a point on the East boundary line of the original Hood Cemetery Tract, whence the Northeast corner of said Section 30, Township 35 North, Range 9 West, N.M.P.M., bears North 56° 41' 20" East, 1172.62 feet; thence running from said point of beginning: Along said East boundary line of the original Hood Cemetery Tract South 1° 00' East, 355.37 feet; thence running North 88° 55' East, 226.11 feet; thence running North 0° 51' West, 354.90 feet; thence running South 89° 02' West, 227.09 feet, to the Northwest corner the point of beginning, containing 1.847 acres, more or less. LESS AND EXCEPT tract described in Deed from Durango Elks, Inc., a Colorado corporation, to the City of Durango, a Municipal corporation, recorded August 31, 1972 as Reception No. 372715, said tract being more particularly described as follows, to-wit: A tract of land lying and being in the NE1/4NE1/4 of Section 30, Township 35 North, Range 9 West, N.M.P.M., more particularly described as follows, to-wit: BEGINNING at a point on the East boundary line of the NE1/4NE1/4 of said Section 30 which point is also on the East boundary line of the original Hood Cemetery Tract whence the Northeast corner of said Section 30 bears North 56° 41' 20" East, 1172.62 feet; thence North 89° 02' East, 95.00 feet; thence South 0° 51' East, 90.00 feet; thence South 88° 55' West, 94.78 feet, more or less, to a point on the East boundary line of the original Hood Cemetery Tract; thence North 1° 00' West along the East boundary line of said Hood Cemetery Tract 90.20 feet, more or less, to the point of beginning, containing 0.20 acres, more or less.

TRACT 3

A tract of land in the S1/2SE1/4 of Section 19, Township 35 North, Range 9 West, N.M.P.M., and being more particularly described as follows, to-wit: BEGINNING at a point on the South boundary line of said Section 19, and from which point the South 1/4 corner of Section 19, Township 35 North, Range 9 West, N.M.P.M. (being the original stone corner, in place and properly marked) bears North 89° 49' 30" West, a distance of 413.87 feet; thence running from said point of beginning: South 89° 49' 30" East along the South boundary line of the said Section 19 a distance of 1004.33 feet; thence running North 0° 32' West, a distance of 300.00 feet; thence running North 89° 49' 30" West, a distance of 1004.33 feet; thence running South 0° 32' East a distance of 300.00 feet, more or less, to the point of beginning. ALSO the South 300.00 feet of the SE1/4SW1/4, Section 19, Township 35 North, Range 9 West, N.M.P.M., and all that part of the SW1/4SE1/4 of Section 19, described as follows, to-wit:

BEGINNING at the Southwest corner of the said SW1/4SE1/4 of Section 19, Township 35 North, Range 9 West, N.M.P.M., thence running from said point of beginning North along the West boundary line of the said SW1/4SE1/4 of Section 19, a distance of 300.00 feet; thence running East a distance of 411.1 feet; thence running South 0° 32' East, a distance of 300.00 feet, more or less, to the point on the South boundary line of the said SW1/4SE1/4; thence running North 89° 49' 30" West, along the said South boundary line of the SW1/4SE1/4 a distance of 413.87 feet, more or less, to the point of beginning, containing 17.85 acres, more or less.

TRACT 4

The E1/2NW1/4NE1/4 of Section 30, Township 35 North, Range 9 West, N.M.P.M., La Plata County, Colorado.

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Owner: CITY OF DURANGO, a municipal corporation

Instrument Vesting Title: Deed recorded as Book 105 at Page 30.

The W1/2NW1/4NE1/4 of Section 30, Township 35 North, Range 9 West, N.M.P.M., La Plata County, Colorado. LESS AND EXCEPT the following described three tracts:

1. Tract described in Deed from the City of Durango to Wood, Morgan and Burnett Construction Company recorded October 20, 1931 as Book 207 at Page 548 (copy attached hereto).
2. Tract described in Deed from the City of Durango to Burnett Construction Company recorded March 31, 1953 as Book 318 at Page 423 (copy attached hereto).
3. Tract described in Deed from the City of Durango to Burnett Construction Company recorded May 13, 1959 as Book 406 at Page 188 (copy attached hereto).

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Owner: CITY OF DURANGO, a municipal corporation

Instrument Vesting Title: Warranty Deed recorded as Book 404 at Page 494.

BEGINNING at the Northwest corner of the NW1/4SE1/4NE1/4 of Section 30, Township 35 North, Range 9 West, N.M.P.M., and running thence East 330 feet; thence South 462 feet; thence West 330 feet; thence North 462 feet to the point of beginning, containing 3.5 acres, more or less.

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Owner: CITY OF DURANGO, a municipal corporation

Instrument Vesting Title: Warranty Deed recorded as Book 171 at Page 358.



A part of the SE1/4SE1/4 of Section 19, Township 35 North, Range 9 West, N.M.P.M., La Plata County, Colorado, described as follows: BEGINNING at the common corner of Sections 19, 20, 29 and 30 in said Township 35 North, Range 9 West; thence North along the East line of Section 19, 86 feet; thence North 73° 30' West, 525 feet; thence South 235 feet to the South line of said Section 19; thence East along the said South line of said Section 19, 503 feet to the place of beginning, containing 1.85 acres, more or less.

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Owner: CITY OF DURANGO, a municipal corporation  
Instrument Vesting Title: Deed recorded August 31, 1972 as Reception No. 372715.

A tract of land lying and being in the NE1/4NE1/4 of Section 30, Township 35 North, Range 9 West, N.M.P.M., more particularly described as follows, to-wit: BEGINNING at a point on the East boundary line of the NE1/4NE1/4 of said Section 30 which point is also on the East boundary line of the original Hood Cemetery Tract whence the Northeast corner of said Section 30 bears North 56° 41' 20" East, 1172.62 feet; thence North 89° 02' East, 95.00 feet; thence South 0° 51' East, 90.00 feet; thence South 88° 55' West, 94.78 feet, more or less, to a point on the East boundary line of the original Hood Cemetery Tract; thence North 1° 00' West, along the East boundary line of said Hood Cemetery Tract 90.20 feet, more or less, to the point of beginning, containing 0.20 acres, more or less.

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Owner: CITY OF DURANGO, a municipal corporation  
Instrument Vesting Title: Deed recorded as Book 265 at Page 377.

The E3/4NE1/4NE1/4 and the North 462 feet of the E3/4NE1/4NE1/4 of Section 30, Township 35 North, Range 9 West, N.M.P.M., La Plata County, Colorado. LESS AND EXCEPT all that portion lying East of the West bank of the Animas River. ALSO LESS AND EXCEPT all of the Westside Substation according to the plat thereof filed for record June 4, 1982 as Reception No. 470028. ALSO LESS AND EXCEPT a tract of land lying and being in the NE1/4NE1/4 of Section 30, Township 35 North, Range 9 West, N.M.P.M., La Plata County, Colorado, and being more particularly described as follows, to-wit: BEGINNING at the Northwest corner of said tract, said Northwest corner being a point of the East boundary line of the W1/4NE1/4NE1/4 of Section 30, Township 35 North, Range 9 West, N.M.P.M., and also being a point on the East boundary line of the original Hood Cemetery Tract, whence the Northeast corner of said Section 30, Township 35 North, Range 9 West, N.M.P.M., bears North 56° 41' 20" East, 1172.62 feet; thence running from said point of beginning: Along said East boundary line of the original Hood Cemetery Tract South 1° 00' East, 355.37 feet; thence running North 88° 55' East, 226.11 feet; thence running North 0° 51' West, 354.90 feet; thence running South 89° 02' West, 227.09 feet, to the Northwest corner, the point of beginning, containing 1.847 acres, more or less. LESS from the above described 1.847 acre tract, a tract described in Deed from Durango Elks, Inc., a Colorado corporation, to the City of



Durango, a Municipal corporation, recorded August 31, 1972 as Reception No. 372715, said tract being more particularly described as follows, to-wit: A tract of land lying and being in the NE1/4NE1/4 of Section 30, Township 35 North, Range 9 West, N.M.P.M., more particularly described as follows, to-wit: BEGINNING at a point on the East boundary line of the NE1/4NE1/4 of said Section 30 which point is also on the East boundary line of the original Hood Cemetery Tract whence the Northeast corner of said Section 30 bears North 56° 41' 20" East, 1172.62 feet; thence North 89° 02' East, 95.00 feet; thence South 0° 51' East, 90.00 feet; thence South 88° 55' West, 94.78 feet, more or less, to a point on the East boundary line of the original Hood Cemetery Tract; thence North 1° 00' West along the East boundary line of said Hood Cemetery Tract 90.20 feet, more or less, to the point of beginning, containing 0.20 acres, more or less.

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Owner: HOOD MORTUARY, a Colorado corporation

Instrument Vesting Title: Warranty Deed recorded as Book 222 at Page 123.

The W1/2W1/2NE1/4NE1/4 of Section 30, Township 35 North, Range 9 West, N.M.P.M., La Plata County, Colorado.



**MK-FERGUSON COMPANY**

A MORRISON KNUDSEN COMPANY

UMTRA PROJECT OFFICE

P.O. BOX 9136

ALBUQUERQUE, NEW MEXICO 87119