

**RADIOLOGIC AND ENGINEERING ASSESSMENT**

FOR

DOE ID NO.: GJ-04257-RS  
ADDRESS: 2312 MESA AVENUE

JULY 1985

FOR

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT OFFICE

ALBUQUERQUE OPERATIONS OFFICE

DEPARTMENT OF ENERGY

BY

BENDIX FIELD ENGINEERING CORPORATION  
P.O. Box 1569  
Grand Junction, Colorado 81502

APPROVED BY

*M.K. Tucker* <sup>by</sup> *CDH*  
M. TUCKER  
DOE PROJECT ENGINEER

DATE

7/2/85

REA04257:REA-510

8507220032 850702  
PDR WASTE PDR  
WM-54

## TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 EXECUTIVE SUMMARY . . . . .	1
1.1 Introduction . . . . .	1
1.2 Evaluation and Recommendation . . . . .	1
2.0 PROPERTY DESCRIPTION . . . . .	2
2.1 General Description . . . . .	2
2.2 Existing Facilities and Structures . . . . .	2
3.0 RADIOLOGIC SURVEY . . . . .	4
3.1 Introduction . . . . .	4
3.2 Gamma Exposure-Rate Surveys . . . . .	4
3.2.1 Exterior Findings . . . . .	4
3.2.2 Interior Findings . . . . .	4
3.3 Boreholes, Soil Samples, and Other Measurements . . . . .	5
3.4 Radon/Radon Daughter Concentration . . . . .	5
3.5 Extent of Contamination . . . . .	5
4.0 RECOMMENDED REMEDIAL ACTION . . . . .	6
4.1 Decontamination and Restoration . . . . .	6
4.2 Evaluation of Recommended Remedial Action . . . . .	6
5.0 REFERENCES . . . . .	7
6.0 APPENDIX . . . . .	8

## 1.0 EXECUTIVE SUMMARY

### 1.1 Introduction

The location, DOE ID No. GJ-04257-RS, is a single-family residence located at 2312 Mesa Avenue, Grand Junction, Colorado.

The purpose of this assessment is to evaluate the extent of uranium millsite contamination at this property. This assessment includes recommended remedial action, estimated volume of material to be removed, and estimated cost of the proposed action.

### 1.2 Evaluation and Recommendation

The action recommended is the removal of contaminated material and restoration of the property to its original condition. The identified residual radioactive material found on this property is tailings; the estimated volume is: exterior, 13 cu. yd.; interior, 0 cu. yd.

Estimated cost to perform remedial action, including dislocation when applicable, is \$2,481. Remedial action on this property will take approximately 7 days to complete.

## 2.0 PROPERTY DESCRIPTION

### 2.1 General Description

Address: 2312 Mesa Avenue, Grand Junction, Colorado

Zoning: Residential (RSF-8)

Lot Size: Approximately 6,930 sf (0.2 acre)

Legal Description: Lot 19, Block 2, Regent Subdivision, Section 12, T1S, R1W, Ute Meridian, City of Grand Junction, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 3 miles northeast of the State of Colorado Tailings Repository. Appendix Figure 2.1 shows the property location relative to its surroundings.

Utilities: Utility locations are shown in Appendix Figure 2.2.

Electrical:	Overhead
Gas:	Underground
Telephone:	Overhead
Sewer:	Underground
Water:	Underground
Cable TV:	Overhead

Bordering Properties:

North:	Alley (dirt/gravel)
South:	Mesa Avenue
East:	Single-family residence
West:	Single-family residence

### 2.2 Existing Facilities and Structures

Primary Structure:

Type:	Single-story residence with attached carport
Size:	Approximately 1,941 sf including finished basement
Construction Date:	1956
Construction:	Wood-frame
Foundation:	Concrete wall on spread footing
Footing Depth:	Approximately 72" to bottom of footing from grade
Basement:	Yes - under entire living area
Crawl Space:	None
Condition:	Good

Other Structures:

Type:	Shed
Size:	Approximately 49 sf
Construction:	Wood-frame
Foundation:	Concrete slab-on-grade
Condition:	Good

Type:	Carport/shed
Size:	Approximately 240 sf
Construction:	Wood-frame
Foundation:	Concrete slab-on-grade
Condition:	Good

General Remarks:

Structures, utilities, landscaping, and other special features of this property are included in Appendix Figure 2.2.

Historical Data:

This structure is not over 50 years old. Therefore, it does not meet the eligibility criteria for consideration of inclusion on the National Register of Historic Places.

### **3.0 RADIOLOGIC SURVEY**

#### **3.1 Introduction**

Radiologic data were collected by Bendix at DOE ID No. GJ-04257-RS on May 2, 1985. Data collection methods were performed in accordance with procedures fully described in the Radiologic Support Operations Procedures Manual GJ-07(84) (Bendix Field Engineering Corporation, 1984). These data were evaluated to determine the areal and vertical extent of uranium mill tailings contamination at this property as well as any other contaminated material that may have originated from the millsite.

A review of historical information from the files of the Colorado Department of Health (CDH) and the inclusion data from Oak Ridge National Laboratory (ORNL) was conducted. These records indicate contamination in the north yard along the patio and the sidewalk north and east of the primary structure.

The Bendix radiologic survey was designed to investigate the entire property, with emphasis on previously identified areas of contamination. Conclusions based upon data analyses are discussed in Section 3.5, Extent of Contamination. Photocopies of the Official Survey Report, Memo of Understanding, team leader notes, and deconvolution graphs are included in the Appendix (Section 6.0).

#### **3.2 Gamma Exposure-Rate Surveys**

##### **3.2.1 Exterior Findings**

Background Readings: 13 to 16 uR/h  
Highest Outside Gamma Reading (HOG): 53 uR/h

Exterior radium-concentration measurements are presented in Appendix Table 3.1. Grid-point survey results are shown in Appendix Figure 3.1. Appendix Figure 3.2 presents the ranges of elevated gamma readings and indicates areas of possible contamination.

##### **3.2.2 Interior Findings**

Background Readings: 14 to 17 uR/h  
Highest Inside Gamma Reading (HIG): 17 uR/h

The interior radium-concentration measurement is presented in Appendix Table 3.2. Interior gamma exposure-rate measurements are summarized in Appendix Table 3.3. Appendix Figures 3.3a and 3.3b show interior exposure rates and locations of these measurements.

### 3.3 Boreholes, Soil Samples, and Other Measurements

Areas which displayed elevated gamma levels were further investigated; these areas are shown in Appendix Figures 3.3b and 3.4. Data from these investigations are included in Appendix Tables 3.1 and 3.2.

### 3.4 Radon/Radon Daughter Concentration (RDC)

The working level was not assessed by CDH. No RDC measurements were taken by Bendix.

### 3.5 Extent of Contamination

Appendix Figure 3.5 shows identified areas and estimated depths of contamination on this property, based on assessments of all measurements taken. As noted in this figure, areas recommended for remedial action that contain identified residual radioactive materials are:

- (AREA A) Contamination extends 9 inches under the contaminated 3-inch-thick concrete patio slab. The total depth of contamination is 12 inches (approximately 252 sf).
- (AREA B) The contaminated 4-inch-thick sidewalk, at the north and east sides of the primary structure, is underlain with contaminated soil to a depth of 8 inches. The total depth of contamination is 12 inches (approximately 82 sf).
- (AREA C) Lawn directly north of primary structure is contaminated to a depth of 6 inches (approximately 33 sf).

#### (AREAS REQUIRING FURTHER INVESTIGATION DURING REMEDIAL ACTION)

The triangular shaped flagstone and mortar portion of the patio, directly east of Area A, may have contamination beneath it's east corner. During the excavation of Area B additional investigation may be required to accurately assess this area.



#### 4.0 RECOMMENDED REMEDIAL ACTION

##### 4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-04257-RS, includes removal of all areas identified as containing radioactive material (as discussed in Section 3.5 and shown in Appendix Figure 3.5) and transport of removed material to the disposal site.

After remedial action is completed, the areas involved will be restored to original condition in accordance with the Bendix drawings, Vicinity Properties General Construction Specification (Bendix Field Engineering Corporation, 1984), and Statement of Work for Construction Subcontractor.

Dislocation of the occupants will not be required for this remedial action.

##### 4.2 Evaluation of Recommended Remedial Action

Volume calculations of the areas included for remedial action are presented in Appendix Table 4.1. Cost estimates are presented in Appendix Table 4.2.

Estimated cost of remedial action is \$2,481.

This remedial action will result in removal of the identified residual radioactive materials.

There is no owner preference with respect to remedial action and no legal or other complications are foreseen at this time.



## 5.0 REFERENCES

ARIX, A Professional Corporation, Procedures Manual for the Grand Junction Remedial Action Program, for Colorado Department of Health, Radiation Control Division, and the U.S. Department of Energy, 1983.

Bendix Field Engineering Corporation, Procedures Manual Radiologic Support Operations Grand Junction Vicinity Properties, (GJ-07), for U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico, 1984.

Bendix Field Engineering Corporation, Engineering, Construction, and Land Support Manual Grand Junction Vicinity Properties Project, (GJ-08), for U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico, 1984.

Bendix Field Engineering Corporation, Grand Junction Vicinity Properties Operating Manual, (GJ-16) for U.S. Department of Energy, Nuclear Energy Programs, Division of Remedial Action Projects, UMTRA, 1984.

Bendix Field Engineering Corporation, Vicinity Properties General Construction Specification, for U.S. Department of Energy, Nuclear Energy Programs, Division of Remedial Action Projects, UMTRA, 1984.

Bendix Field Engineering Corporation, Environmental Assessment of Preliminary Cleanup Activities at Offsite Properties Contaminated by Tailings from the Grand Junction Inactive Uranium Millsite, (GJ-04), for U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico, 1983.

U.S. Department of Energy, Programmatic Memorandum of Agreement (DOE No. DE-GM04-84AL28460) between the U.S. Department of Energy, the Advisory Council on Historic Preservation, and the Colorado State Historic Preservation Officer, for UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico, 1984.

U.S. Department of Energy, Vicinity Properties Management and Implementation Manual, for UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico, 1984.

U.S. Environmental Protection Agency, Standards for Remedial Action at Inactive Uranium Processing Sites (40 CFR Part 192), Washington, D.C., 1983.

## 6.0 APPENDIX

This Appendix contains the following:

Appendix Tables:

Table 3.1	Radium Concentrations at Exterior Locations
Table 3.2	Radium Concentrations at Interior Locations
Table 3.3	Summary of Interior Gamma Exposure Rates
Table 4.1	Area and Volume Calculations
Table 4.2	Estimated Cost of Decontamination and Restoration

Appendix Figures:

Figure 2.1	Vicinity Map
Figure 2.2	Site Plan
Figure 3.1	Exterior Grid-Point Exposure Rates
Figure 3.2	Exterior Gamma Scan
Figure 3.3a	Interior Gamma Exposure Rates - Basement
Figure 3.3b	Interior Gamma Exposure Rates and Sample Location
Figure 3.4	Exterior Sample Locations
Figure 3.5	Exterior Estimated Extent of Contamination

Official Survey Report

Memo of Understanding

Team Leader Notes

Deconvolution Graphs (Apparent Radium-226 Concentration)

## Radium Concentrations at Exterior Locations

DOE ID No. GJ-04257-RS

2312 Mesa Avenue

Page 1 of 4

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
2	144264	03	TC	2.6		*	Sewer line
		06	TC	2.9		*	North property
		09	TC	3.1		*	
		12	TC	3.0		*	DC = 0 inches
		15	TC	2.9		*	
		18	TC	2.9		*	
		21	TC	3.0		*	
		24	TC	3.0		*	
		27	TC	3.0		*	
		30	TC	2.9		*	
		33	TC	3.1		*	
		36	TC	3.0		*	
		39	TC	3.1		*	
		42	TC	3.2		*	
		45	TC	3.2		*	
		48	TC	3.2		*	
		51	TC	3.1		*	
		54	TC	3.2		*	
		57	TC	3.3		*	
		60	TC	3.3		*	
		63	TC	3.4		*	
		66	TC	3.4		*	
		69	TC	3.6		*	
3	200253	00	DS	1.6		*	In grass along
		06	DS	1.0		*	sidewalk
4	200255	00-03	SS			5.7	Core
		03-09	SS			160.1	Soil under core
		03	TC	26.4		*	DC = 12 inches
		06	TC	39.9		*	Based on the
		09	TC	29.9		*	deconvolution graph
		12	TC	18.8		*	
		15	TC	12.4		*	
		18	TC	9.1		*	
		21	TC	7.3		*	
		24	TC	6.4		*	
		27	TC	5.6		*	
		30	TC	5.4		*	
		33	TC	5.2		*	
		36	TC	5.0		*	
		39	TC	4.7		*	
		42	TC	4.7		*	
		45	TC	4.5		*	

## Radium Concentrations at Exterior Locations

DOE ID No. GJ-04257-RS

2312 Mesa Avenue

Page 2 of 4

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
4	200255	48	TC	4.4		*	
		51	TC	4.1		*	
		54	TC	4.0		*	
		57	TC	3.8		*	
		60	TC	3.8		*	
		63	TC	3.7		*	
		66	TC	3.7		*	
		69	TC	3.6		*	
5	206290	00	DS	5.5		*	Northeast of the primary structure DC = 6 inches
		06	DS	2.1		*	
		12	DS	1.8		*	
6	210292	00-04	SS			4.9	Core
		04-10	SS			164.6	
		03	TC	45.5		*	Northeast corner of the primary structure DC = 12 inches Based on the deconvolution graph
		06	TC	41.6		*	
		09	TC	25.4		*	
		12	TC	16.8		*	
		15	TC	11.4		*	
		18	TC	8.8		*	
		21	TC	6.7		*	
		24	TC	5.8		*	
		27	TC	5.1		*	
		30	TC	4.3		*	
		33	TC	4.2		*	
		36	TC	4.3		*	
		39	TC	4.2		*	
		42	TC	4.1		*	
		45	TC	4.0		*	
		48	TC	3.9		*	
		51	TC	3.9		*	
		54	TC	4.0		*	
		57	TC	4.0		*	
		60	TC	4.0		*	
		63	TC	4.1		*	
		66	TC	4.1		*	
		69	TC	4.1		*	
		72	TC	4.1		*	
		75	TC	4.1		*	
		78	TC	4.2		*	
		81	TC	4.2		*	

## Radium Concentrations at Exterior Locations

DOE ID No. GJ-04257-RS

2312 Mesa Avenue

Page 3 of 4

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
7	217293	00	DS	2.1		*	East of primary structure
		06	DS	<1.0		*	
8	220249	00	DS	<1.0		*	West foundation
9	223293	00	DS	<1.0		*	Gas line
		16	DS	<1.0		*	
10	238271	00	DS	<1.0		*	Background
		06	DS	<1.0		*	
		00-06	SS			2.1	Next to water line
		03	TC	2.8		*	
		06	TC	3.1		*	DC = 0 inches
		09	TC	3.2		*	
		12	TC	3.4		*	
		15	TC	3.3		*	
		18	TC	3.4		*	
		21	TC	3.4		*	
		24	TC	3.4		*	
		27	TC	3.5		*	
		30	TC	3.5		*	
		33	TC	3.4		*	
		36	TC	3.5		*	
		39	TC	3.5		*	
		42	TC	3.6		*	
		45	TC	3.6		*	
		48	TC	3.6		*	
		51	TC	3.6		*	
		54	TC	3.8		*	
		57	TC	3.7		*	
		60	TC	3.7		*	
		63	TC	3.7		*	
		66	TC	3.8		*	
		69	TC	3.8		*	
		72	TC	3.8		*	
		75	TC	3.8		*	
		78	TC	3.9		*	
		81	TC	4.0		*	
		84	TC	3.9		*	
		87	TC	4.0		*	
		90	TC	4.2		*	
		93	TC	4.1		*	

## Radium Concentrations at Exterior Locations

DOE ID No. GJ-04257-RS

2312 Mesa Avenue

Page 4 of 4

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
10	238271	96	TC	4.1		*	
		99	TC	4.2		*	
		102	TC	4.1		*	
		105	TC	4.2		*	

Measurement GB = GAD-6 Borehole  
Types: GS = GAD-6 Surface  
DS = Delta Scintillometer  
TC = Total Count Borehole  
SS = Soil Sample  
BH = Combined GAD-6 and  
Total Count Borehole

Notes: DC = Depth of Contamination  
\* = No Soil Sample Taken  
[n] - Reading Taken n-Inches  
Above Floor or Ground  
Date of Survey = 05-02-85  
Team Leader = CH

## Radium Concentrations at Interior Locations

DOE ID No. GJ-04257-RS

2312 Mesa Avenue

Page 1 of 1

=====

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
1		00	DS	<1.0		*	Garage

=====

Measurement	GB = GAD-6 Borehole	Notes:	DC = Depth of Contamination
Types:	GS = GAD-6 Surface		* = No Soil Sample Taken
	DS = Delta Scintillometer		[n] = Reading Taken n-Inches
	TC = Total Count Borehole		Above Floor or Ground
	SS = Soil Sample		Date of Survey = 05-02-85
	BH = Combined GAD-6 and		Team Leader = CH
	Total Count Borehole		



Table 3.3  
Summary of Interior Gamma Exposure Rates

DOE ID No. GJ-04257-RS      2312 Mesa Avenue      Page 1 of 1

=====

Location *	Number of Readings Taken at Waist Level	Range at Waist Level (uR/h)	Mean at Waist Level (uR/h)	Number of Readings Taken at Surface	Range at Surface (uR/h)	Mean Surface (uR/h)
BASEMENT	*	*	*	*	16-17	*
GROUND FLOOR	*	*	*	*	14-15	*
SHED	03	15-17	16	03	15-18	16
STORAGE	*	*	*	*	14-14	*

=====

\* The historical data indicates the absence of interior contamination at this property. This information was investigated by performing a walking gamma scan. These areas and the ranges of gamma measurements are shown in Appendix Figures 3.3a and 3.3b. Exposure rates in the shed are shown in Appendix Figure 3.3b.

Table 4.1  
Area and Volume Calculations  
DOE ID No. GJ-04257-RS

Page 1 of 1

<u>AREA</u>	<u>CALCULATIONS(ft)</u>	<u>SF</u>	<u>DEPTH(ft)</u>	<u>CF</u>	<u>CUBIC YARDS</u>
EXTERIOR					
Concrete					
A	25 x 6 =	150			
	9 x 11 =	99			
	(15 x 7)/2 =	53			
		<u>302</u>	x 0.3 =	91	
B	2 x 24 =	48			
	7 x 4 =	28			
	3 x 2 =	6			
		<u>82</u>	x 0.3 =	25	
Volume of Concrete				= <u>116</u>	= 116/27 = 4
Contaminated Fill					
A	25 x 4 =	100			
	9 x 11 =	99			
	(15 x 7)/2 =	53			
		<u>252</u>	x 0.7 =	176	
B	2 x 24 =	48			
	7 x 4 =	28			
	3 x 2 =	6			
		<u>82</u>	x 0.7 =	57	
C	3 x 11 =	33	x 0.5 =	17	
Volume of Fill				= <u>250</u>	= 250/27 = 9
TOTAL VOLUME - EXTERIOR					= <u>13</u>

See Appendix Figure 3.5 For Areas

Table 4.2  
Estimated Cost of Decontamination and Restoration  
DOE ID No. GJ-04257-RS

Page 1 of 1

---

Remove identified residual radioactive material		
7 cy @ \$14.50/cy (machine-open)	\$	102
2 cy @ \$44/cy (manual-open)		88
Remove/replace concrete		
384 sf @ \$3/sf		1,152
Replace areas with compacted roadbase		
8 cy @ \$11.50/cy		92
Replace areas with topsoil		
1 cy @ \$9.50/cy		10
Replace areas with sod		
33 sf @ \$.50/sf		17
		<hr/>
TOTAL EXTERIOR	\$	1,461
TOTAL INTERIOR		0
ACCESS CONTROL		150
		<hr/>
SUBTOTAL	\$	1,611
CONTINGENCY @ 10%		161
		<hr/>
SUBTOTAL	\$	1,772
CONTRACTOR OVERHEAD & PROFIT @ 40%		709
		<hr/>
GRAND TOTAL	\$	2,481

=====

LR062485  
REA04257/REA-510/LAJ

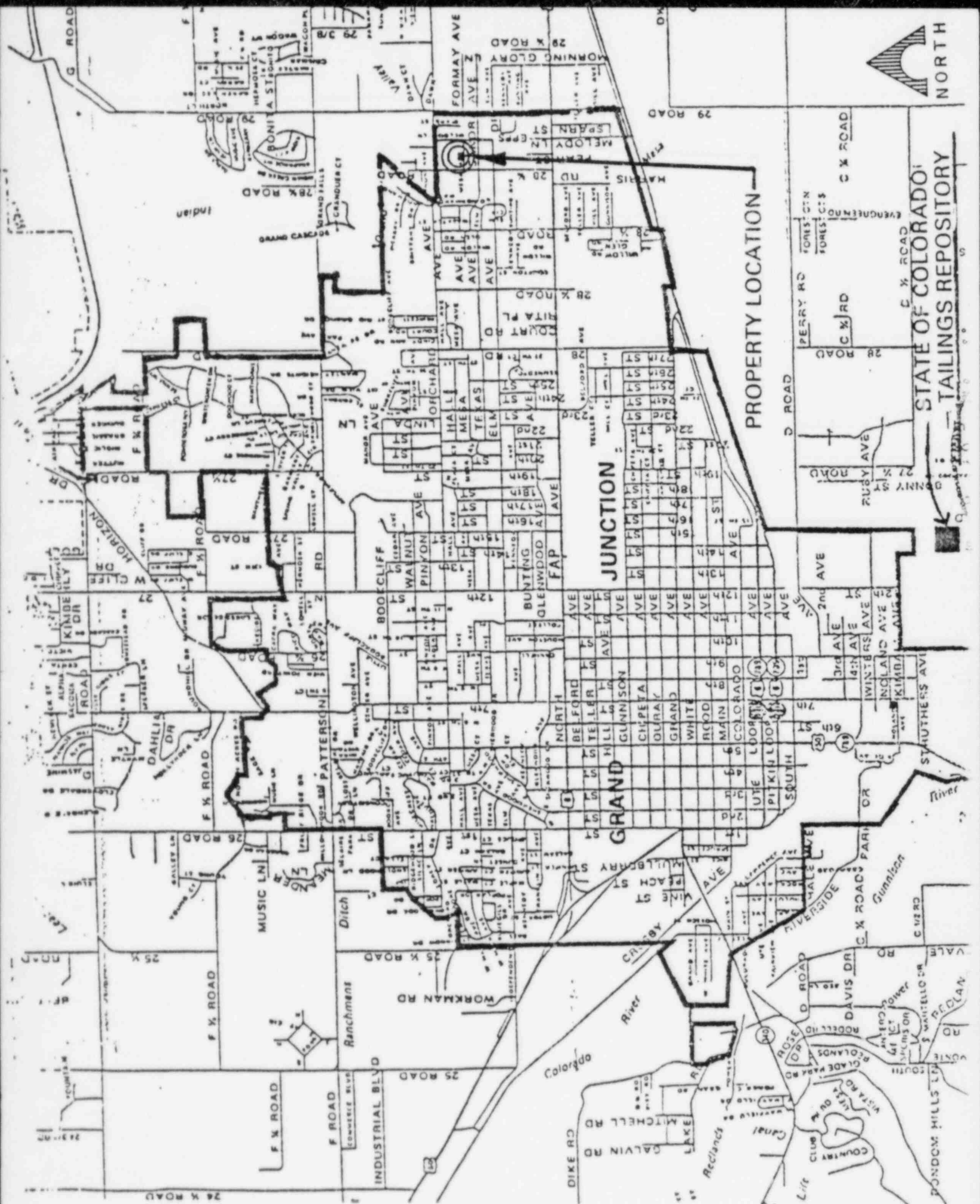


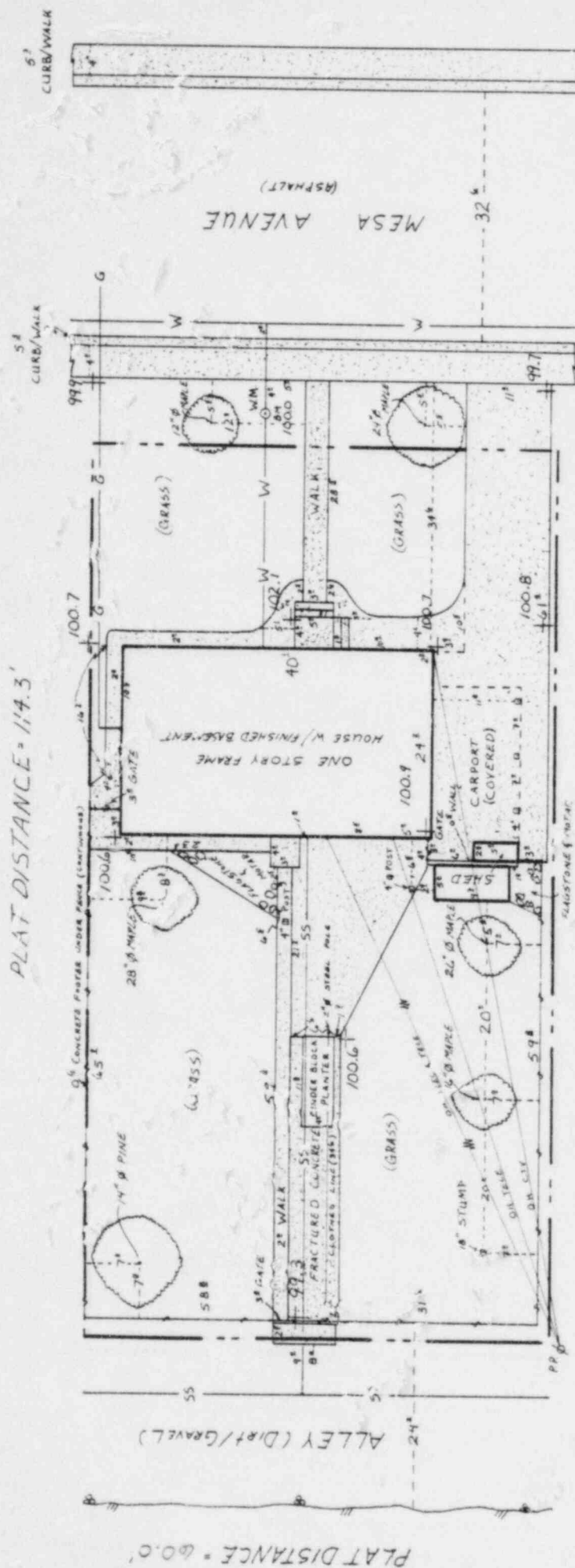
FIGURE 2.1  
VICINITY MAP

PROPERTY DESCRIPTION

LOT 19, BLOCK 2,  
REGENT SUBDIVISION,  
SEC. 12, T. 15, R. 1W, 4TH MERIDIAN  
WITHIN CITY LIMITS OF GRAND JUNCTION,  
MESA COUNTY, COLORADO

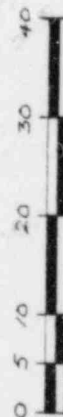
NOTE: PROPERTY LINE FALLS 28.1  
NORTH OF REAR FENCE AND  
OUTSIDE EAST AND WEST  
FENCES ACCORDING TO OWNER

PLAT DISTANCE = 114.3'



GAS BY P.S. CO.  
WATER & SEWER BY L.S.S.D.

PLAT DISTANCE = 115.5'



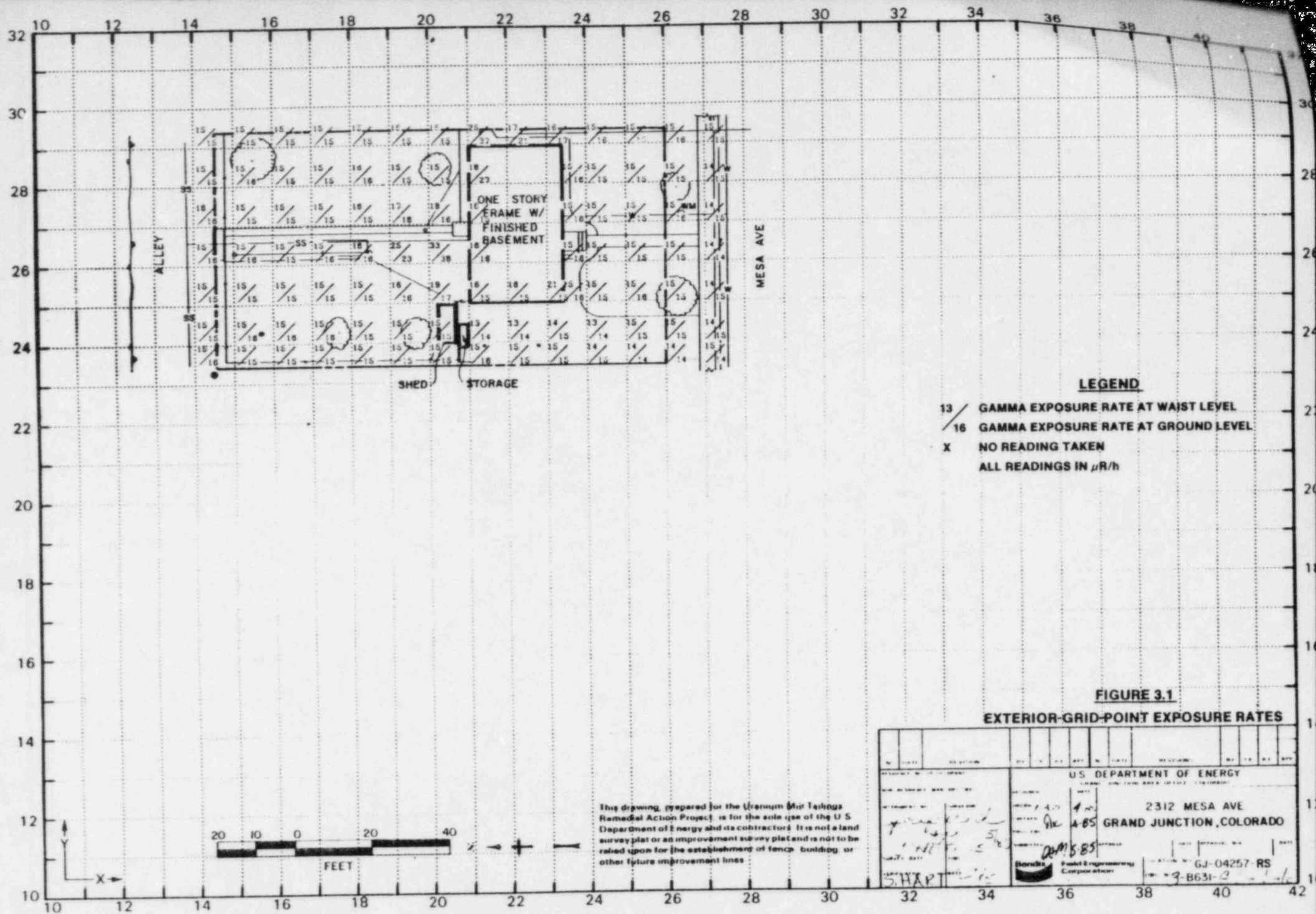
FEET

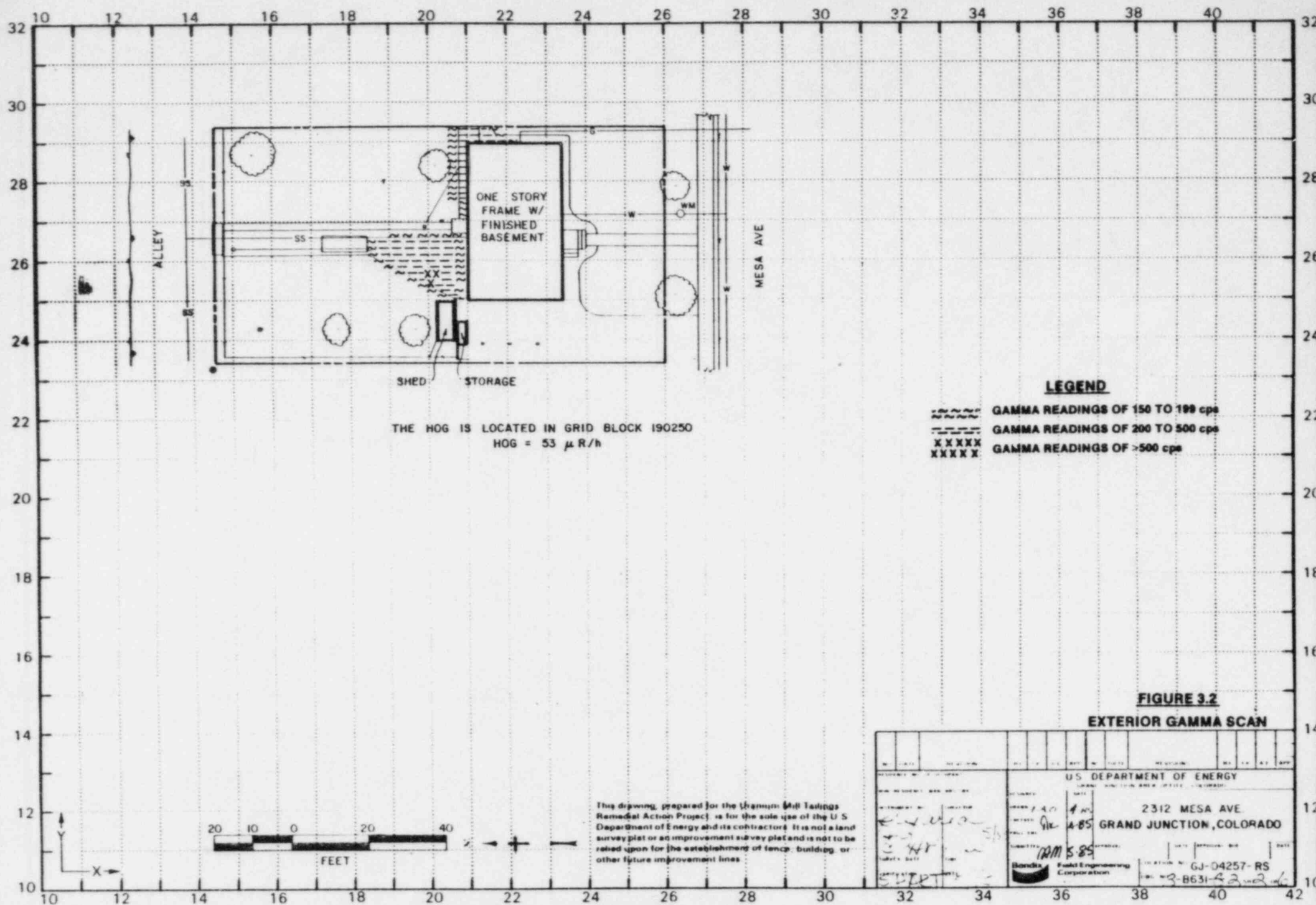
FIGURE 2.2 SITE PLAN

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION PROJECT OFFICE, COLORADO	DOE ID NO. GJO4257RS
ADDRESS 2312 MESA AVE. GRAND JUNCTION, CO	ALLIED Grand Junction Engineering Corporation Grand Junction, Colorado
SURV. P.S. & L.S.S.D. DRAFT 4-24-85	DATE 7-25-85
DRAWING NO. 3C-631-F1	SHEET 1 OF 2

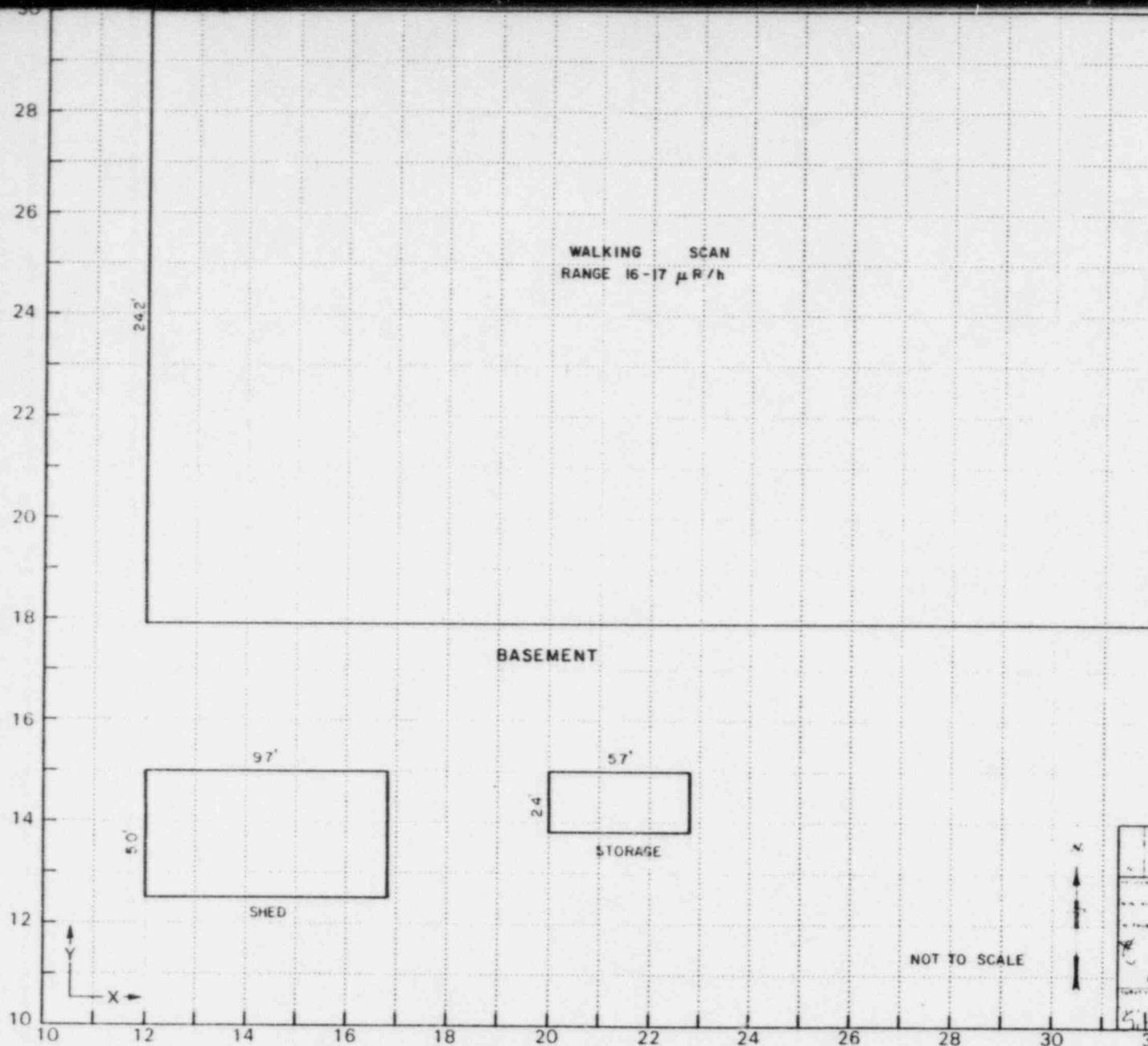
This drawing, prepared for the Uranium Mill Tailings  
Remedial Action Project, is for the sole use of the U.S.  
Department of Energy. It is not to be used for any  
survey plan or an improvement survey plan and is not to be  
relied upon for the establishment of fence, building, or  
other future improvement lines.











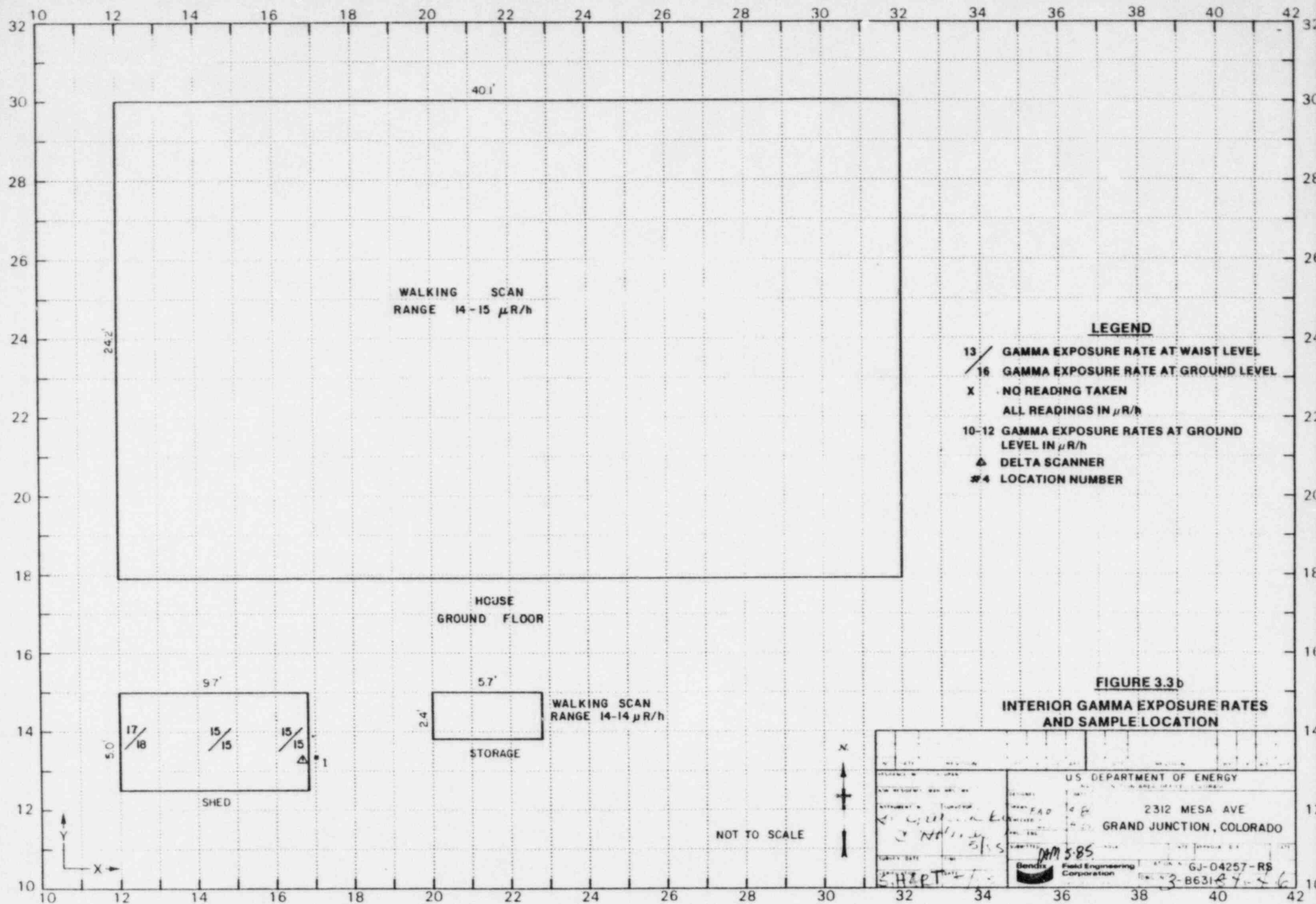
# LEGEND

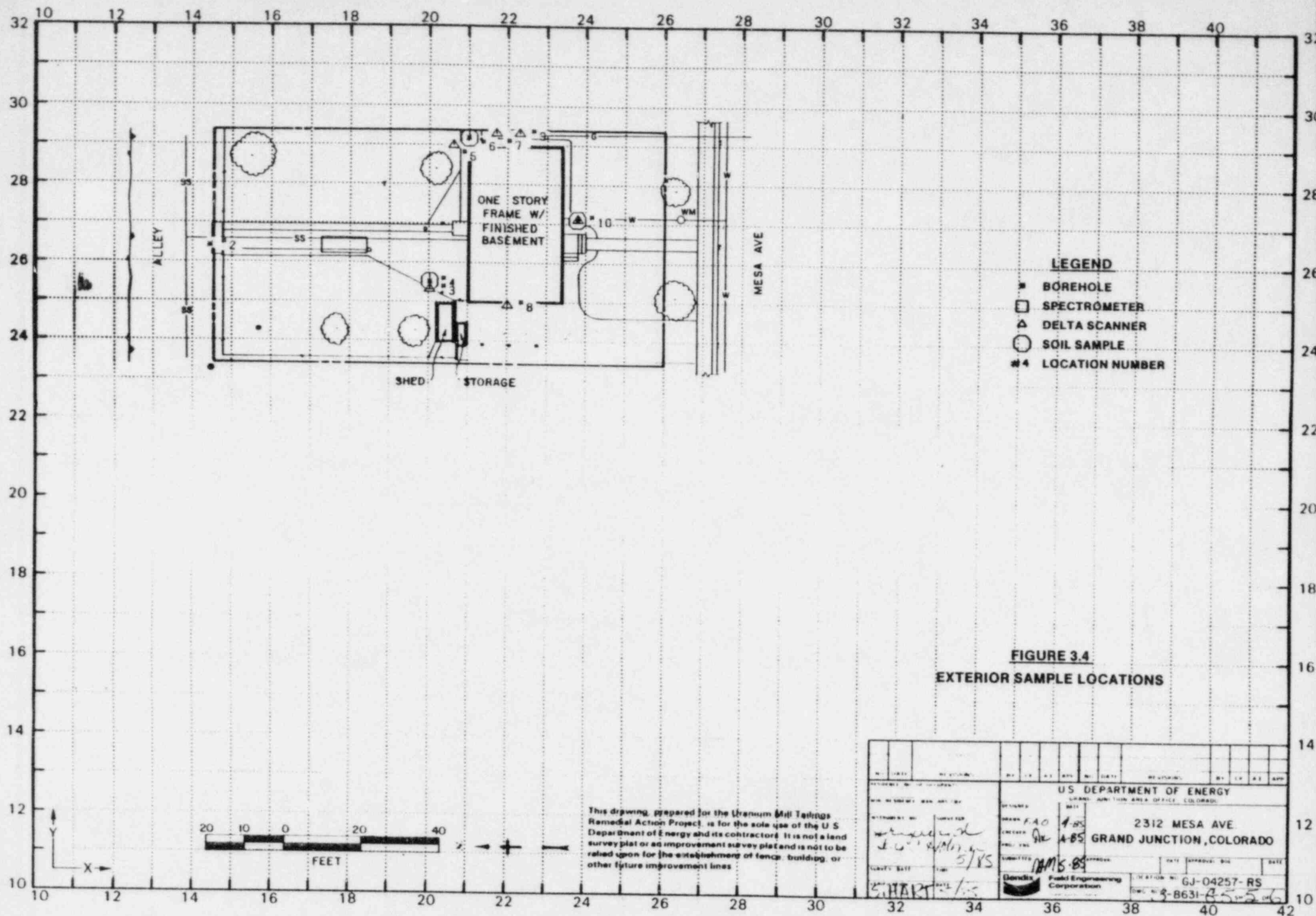
10-12 GAMMA EXPOSURE RATES AT GROUND LEVEL IN  $\mu$ R/h

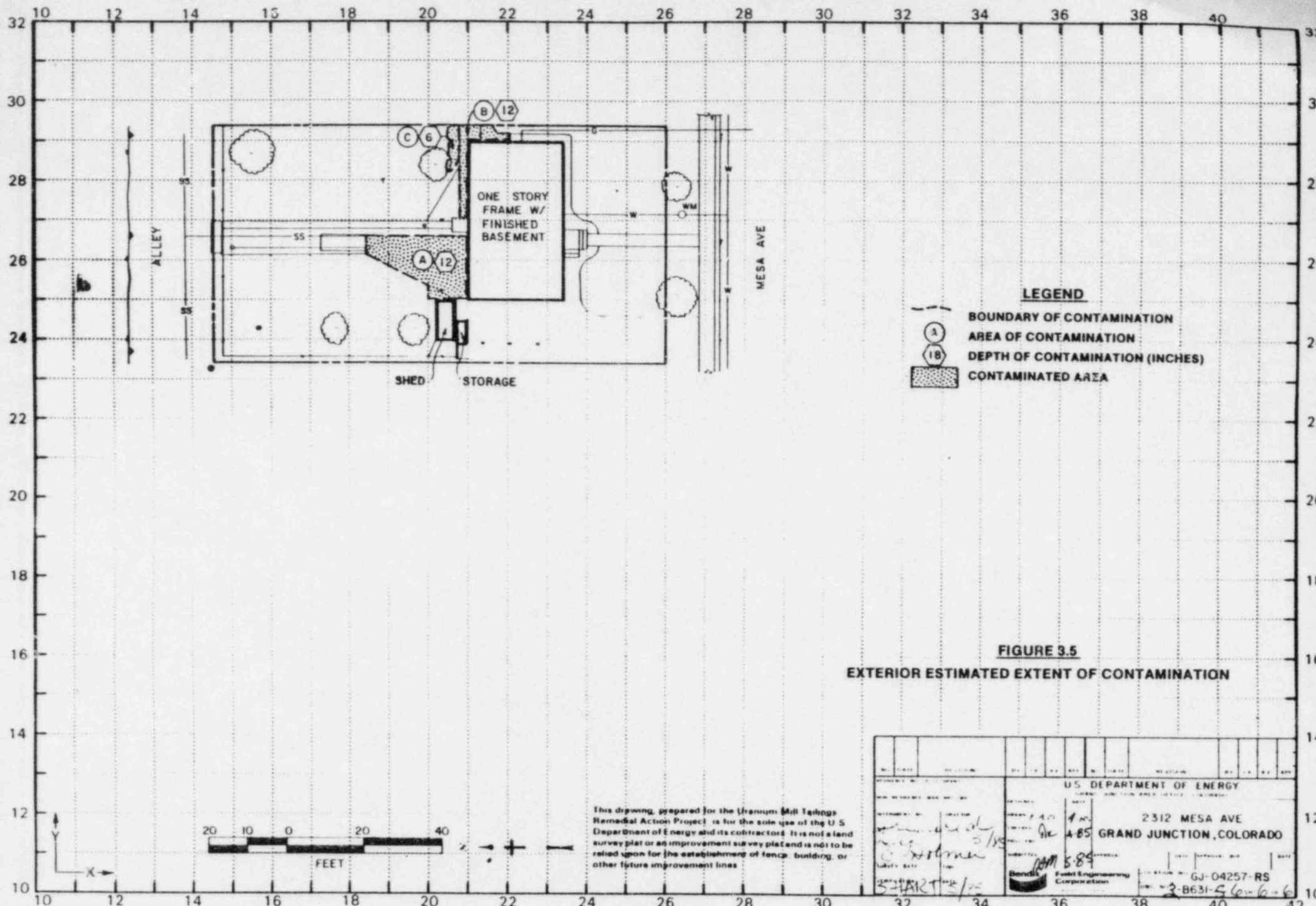
FIGURE 3.3a - BASEMENT

## INTERIOR GAMMA EXPOSURE RATES

U.S. DEPARTMENT OF ENERGY	
2312 MESA AVE GRAND JUNCTION, COLORADO	
DATE: 5/85	PROJECT: 5.85
BY: [Signature]	FOR: [Signature]
REVISION: 1	REVISION: 2
REVISION: 3	REVISION: 4
REVISION: 5	REVISION: 6
REVISION: 7	REVISION: 8
REVISION: 9	REVISION: 10
REVISION: 11	REVISION: 12
REVISION: 13	REVISION: 14
REVISION: 15	REVISION: 16
REVISION: 17	REVISION: 18
REVISION: 19	REVISION: 20
REVISION: 21	REVISION: 22
REVISION: 23	REVISION: 24
REVISION: 25	REVISION: 26
REVISION: 27	REVISION: 28
REVISION: 29	REVISION: 30
REVISION: 31	REVISION: 32
REVISION: 33	REVISION: 34
REVISION: 35	REVISION: 36
REVISION: 37	REVISION: 38
REVISION: 39	REVISION: 40
REVISION: 41	REVISION: 42
REVISION: 43	REVISION: 44
REVISION: 45	REVISION: 46
REVISION: 47	REVISION: 48
REVISION: 49	REVISION: 50
REVISION: 51	REVISION: 52
REVISION: 53	REVISION: 54
REVISION: 55	REVISION: 56
REVISION: 57	REVISION: 58
REVISION: 59	REVISION: 60
REVISION: 61	REVISION: 62
REVISION: 63	REVISION: 64
REVISION: 65	REVISION: 66
REVISION: 67	REVISION: 68
REVISION: 69	REVISION: 70
REVISION: 71	REVISION: 72
REVISION: 73	REVISION: 74
REVISION: 75	REVISION: 76
REVISION: 77	REVISION: 78
REVISION: 79	REVISION: 80
REVISION: 81	REVISION: 82
REVISION: 83	REVISION: 84
REVISION: 85	REVISION: 86
REVISION: 87	REVISION: 88
REVISION: 89	REVISION: 90
REVISION: 91	REVISION: 92
REVISION: 93	REVISION: 94
REVISION: 95	REVISION: 96
REVISION: 97	REVISION: 98
REVISION: 99	REVISION: 100







**LEGEND**

--- BOUNDARY OF CONTAMINATION

○ A AREA OF CONTAMINATION

○ 12 DEPTH OF CONTAMINATION (INCHES)

■ CONTAMINATED AREA

**FIGURE 3.5**  
**EXTERIOR ESTIMATED EXTENT OF CONTAMINATION**

This drawing, prepared for the (Trinam) Mill Tailings Remedial Action Project, is for the sole use of the U.S. Department of Energy and its contractors. It is not a land survey plat or an improvement survey plat and is not to be relied upon for the establishment of fence, building, or other future improvement lines.

U.S. DEPARTMENT OF ENERGY	
2312 MESA AVE	
485 GRAND JUNCTION, COLORADO	
PROJECT NO. 5-1471	DATE 1/75
BY: [Signature]	CHECKED: [Signature]
APP'D: [Signature]	DATE 1/75
Bentley Field Engineering Corporation	
GJ-04257-RS	
3-B631-56-6-6	

3/85

DOE ID NO. GJ-04257-RS Date 5-17-85

U.S. DEPARTMENT OF ENERGY  
URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT  
GRAND JUNCTION VICINITY PROPERTIES

Official Survey Report

Property Address 2312 Mesa Avenue  
Property Owner Velma Sanders  
Address of Owner (if different from above) \_\_\_\_\_  
Report Prepared By Carol Holmes

I. PRESENCE/ABSENCE OF RESIDUAL RADIOACTIVE MATERIALS

☐ No evidence of residual radioactive material on surveyed property.

☒ Residual radioactive materials found at the following locations:

☐ In open areas.

☒ Under or around exterior improvements.

☐ Under or around a typically nonoccupied structure.

☐ Under or around a typically occupied structure.

II. RESULTS OF RADIOLOGIC ASSESSMENT

☐ Levels of radiation from residual radioactive materials, if any, do not exceed EPA Standards and no action is required under the Uranium Mill Tailings Remedial Action Project.

☒ Levels of radiation from residual radioactive materials exceed EPA Standards such that Remedial Action is recommended and will be accomplished, with your consent, as soon as budget and schedule permit.

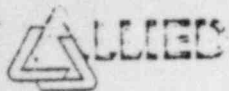
cc:

G. A. Franz, III, GJ/CDH

J. Themelis, Mgr. UMTRA Proj. Off.

HIG = 17 uR/h  
HOG = 53 uR/h





Bendix  
Aerospace

Bendix Field Engineering Corporation  
P. O. Box 1569  
Grand Junction, CO 81502-1569  
Telephone (303) 242-8621  
Telex: 454-338

May 16, 1985

Colorado Department of Health  
222 South 6th Street  
Grand Junction, Colorado 81501

ATTN: Jon Luellen

Dear Jon:

The following is in response to your questions and comments during the Technical Review concerning Department of Energy (DOE) Identification (ID) number GJ-04257-RS, sent on 14 May 1985.

1. The data collected for Location 3 is correct in the radium table, however, the same delta values for Location 4 is an error. A delta reading was not taken at Location 4.
2. The triangular shaped area of flagstone directly east of the patio and north of the house has a minor reading in one corner, I believe this is due to shine. However, I will mention in the Radiologic and Engineering Assessment (REA) for this area to be checked while remedial action is in process.
3. The reading in the shed of 17 to 18 uR/h is from the east side of the shed and is approximately 10 feet from the high outside gamma (HOG). This is another area of shine, determined by the delta reading.
4. Yes, the water meter was checked with a scintillometer and the reading was 160 cps.

Thank you for your time and cooperation. If you should have additional questions or comments you may contact me at 242-8621, extension 433.

Yours truly,

*Carol Holmes*

Carol Holmes  
RSD Survey Team Leader

CH:pr

CDH.LETTER:04257.HOLMES

ALLIED Bendix  
Aerospace

Bendix Field Engineering Corporation  
Grand Junction Operations  
Grand Junction, Colorado 81501

DATE: May 2, 1985

TO: Files

FROM: Carol Holmes

SUBJECT: Team Leader Notes - GJ-04257-RS

Address: 2312 Mesa Avenue

Owner: Mrs. Velma Sanders

Weather: Dry and warm.

Team Members

C. Holmes (Team Leader)  
R. Schouten  
A. Quintana

P. Hardy  
M. Duran  
C. Adams

Instruments

See Equipment Summary sheet.

Velma Sanders, the owner of the property, was present during the survey. She was cooperative and helpful.

Scanners located the contamination in the backyard, north of the house and the sidewalk that runs along the east and north side of the house.

Mrs. Sanders stated the sidewalk and patio had been poured approximately 18 years ago. Also, Mrs. Sanders said there was no leach field.

The house is 29 years old, so the sidewalk was an addition.

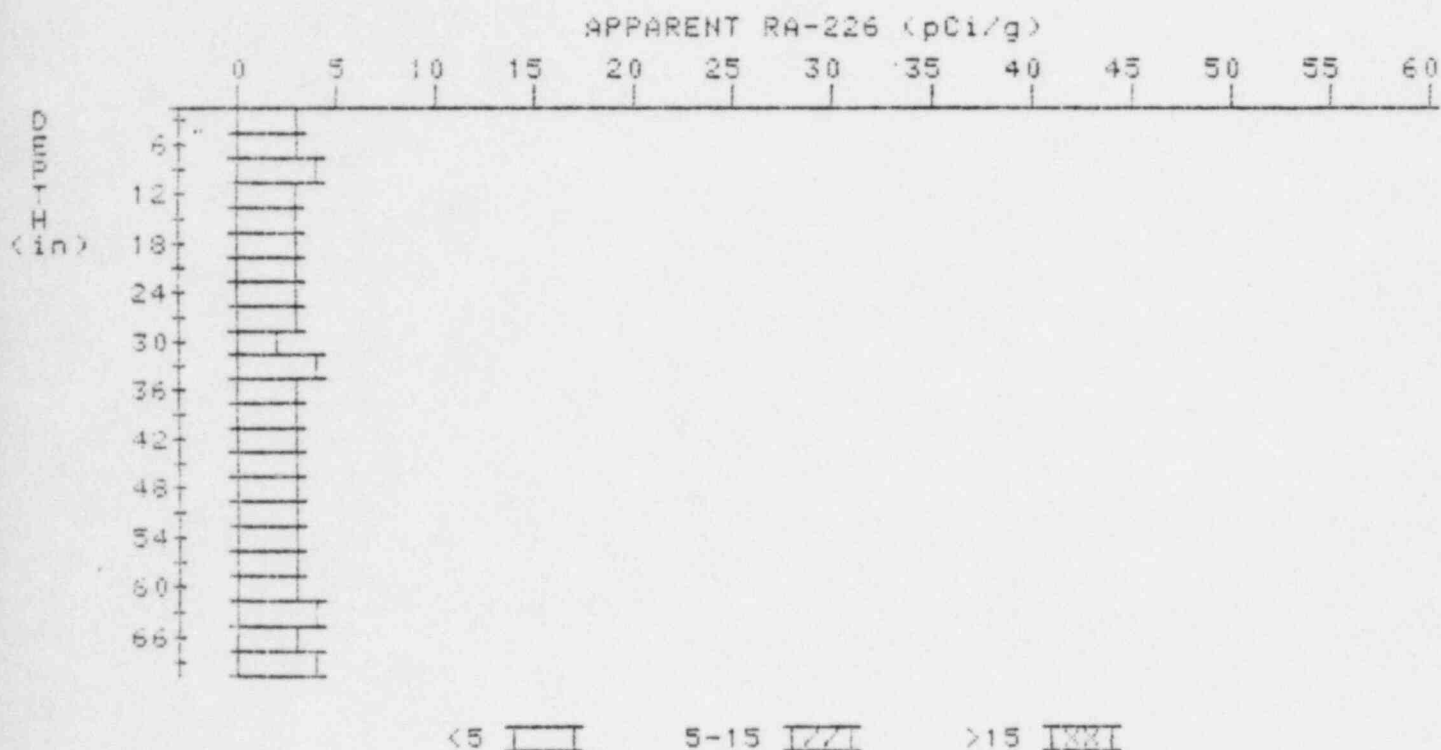
No other complications were encountered.



# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

2

PROPERTY NUMBER: GJ-04257-R3  
HOLE NUMBER: 2  
LOCATION: 144264'



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.6	2.6
6	2.9	3.1
9	3.1	3.6
12	3.0	3.0
15	2.9	2.7
18	2.9	2.7
21	3.0	3.2
24	3.0	3.0
27	3.0	3.2
30	2.9	2.4
33	3.1	3.6
36	3.0	2.6
39	3.1	3.1
42	3.2	3.4
45	3.2	3.2

48  
51  
54  
57  
60  
63  
66  
69

3.2  
3.1  
3.2  
3.3  
3.3  
3.4  
3.4  
3.6

3.4  
3.7  
3.6  
3.5  
3.1  
3.6  
3.0  
3.6

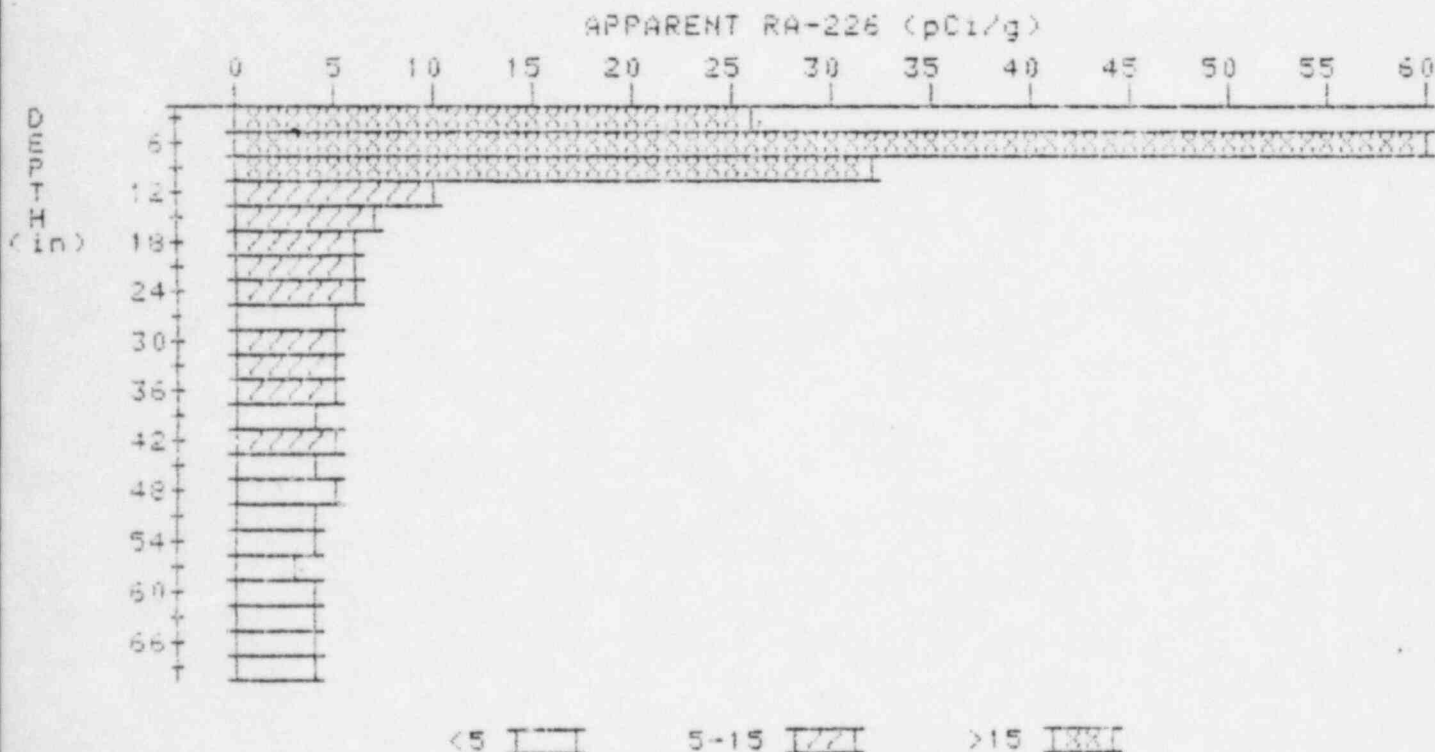
# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

4

PROPERTY NUMBER: GJ-04257-R8

HOLE NUMBER: 4

LOCATION: 200255



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	26.4	26.4
6	39.9	31.7
9	29.9	31.9
12	13.8	10.4
15	12.4	6.9
18	9.1	6.4
21	7.3	5.7
24	6.4	6.2
27	5.6	4.8
30	5.4	5.4
33	5.2	5.2
36	5.0	5.2
39	4.7	4.2
42	4.7	5.1
45	4.5	4.3

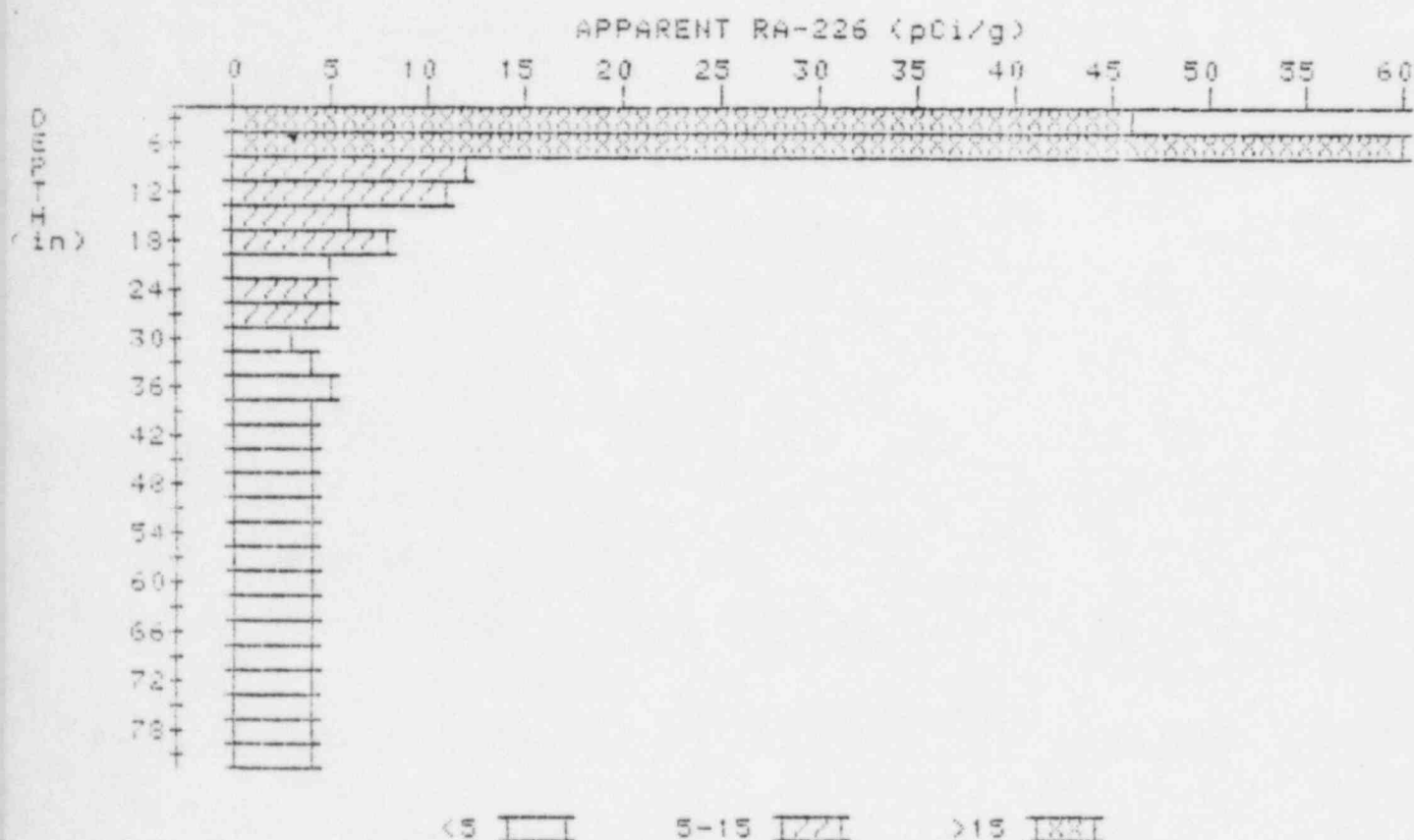
48  
51  
54  
57  
60  
63  
66  
69

4.4  
4.1  
4.0  
3.8  
3.8  
3.7  
3.7  
3.6

4.8  
3.7  
4.2  
3.4  
4.0  
3.5  
3.9  
3.6

# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH 6

PROPERTY NUMBER: GJ-04257-RS  
HOLE NUMBER: 6  
LOCATION: 210292



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	45.5	45.5
6	41.6	63.5
9	25.4	11.9
12	16.8	11.1
15	11.4	6.4
18	8.8	7.9
21	6.7	4.6
24	5.3	5.4
27	5.1	5.3
30	4.3	3.1
33	4.2	3.8
36	4.3	4.7

39  
42  
45  
48  
51  
54  
57  
60  
63  
66  
69  
72  
75  
78  
81

4.2  
4.1  
4.0  
3.9  
3.9  
4.0  
4.0  
4.0  
4.1  
4.1  
4.1  
4.1  
4.1  
4.2  
4.2

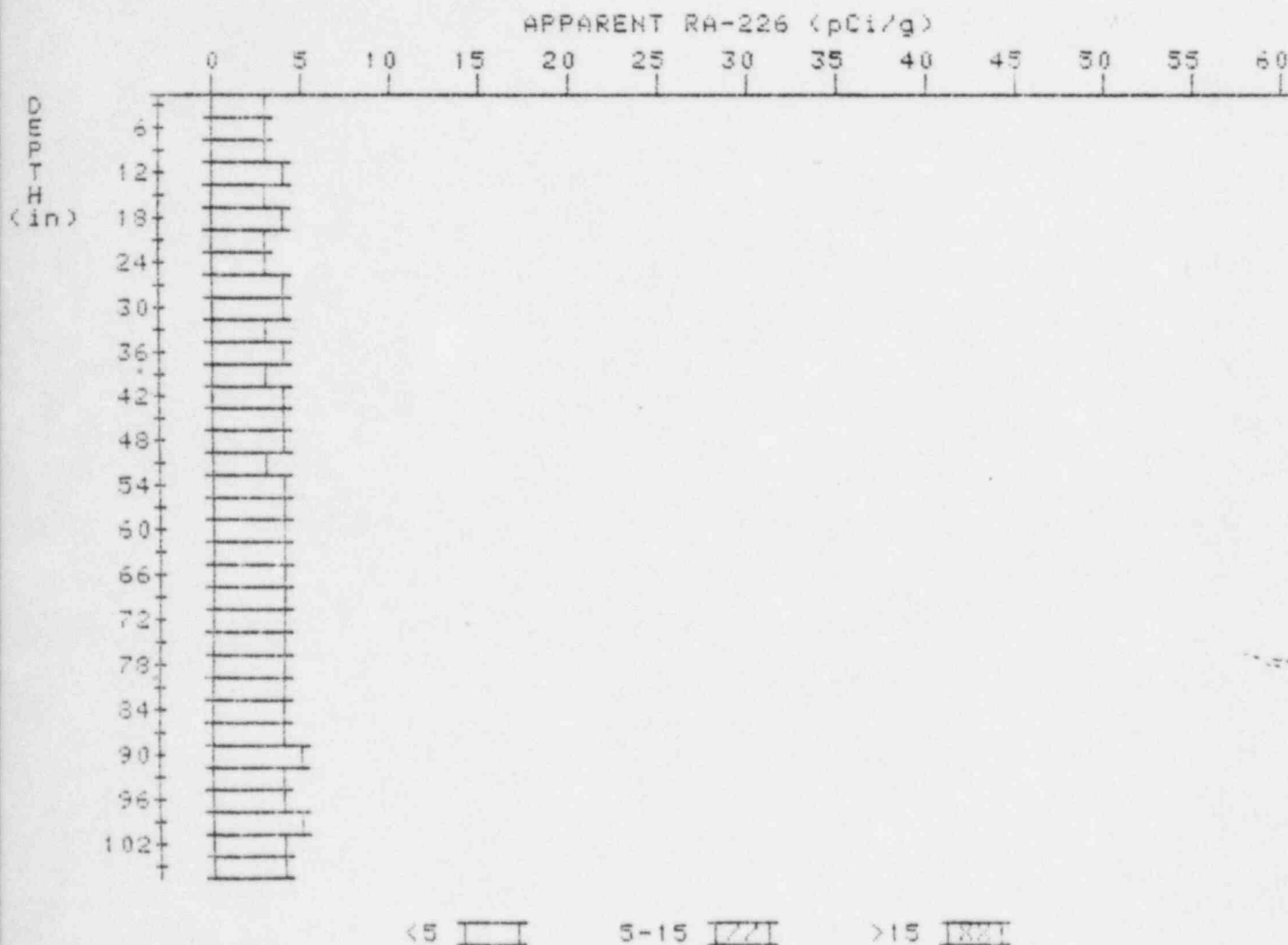
4.2  
4.1  
4.0  
3.7  
3.7  
4.2  
4.0  
3.8  
4.3  
4.1  
4.1  
4.1  
3.9  
4.4  
4.2

# APPARENT RADIUM-226 CONCENTRATION 10 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-04257-RS

HOLE NUMBER: 10

LOCATION: 238271



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.8	2.8
6	3.1	3.5
9	3.2	3.0
12	3.4	3.9
15	3.3	2.9
18	3.4	3.6