

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-11586-RS
ADDRESS: 2005 ELM AVENUE

JUNE 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 by COH
M. TUCKER
DOE PROJECT ENGINEER

DATE

6/26/85

REA11586:REA-510

8507120194 850626
PDR WASTE
WM-54 PDR

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	4
3.4 Radon/Radon Daughter Concentration	5
3.5 Extent of Contamination	5
4.0 RECOMMENDED REMEDIAL ACTION	7
4.1 Decontamination and Restoration	7
4.2 Evaluation of Recommended Remedial Action	7
5.0 REFERENCES	8
6.0 APPENDIX	9

1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-11586-RS, is a single-family residence located at 2005 Elm 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, 31 cu. yd.; interior, 0 cu. yd.

Estimated cost to perform remedial action, including dislocation when applicable, is \$3,602. Remedial action on this property will take approximately 10 days to complete.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 2005 Elm Avenue, Grand Junction, Colorado

Zoning: Residential (RSF-8)

Lot Size: Approximately 7,750 sf (0.2 acre)

Legal Description: Lot 6, Block 2, Arcadia Village Replat, City of Grand Junction, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 2 miles north 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:	Elm Avenue
South:	Alley
East:	Single-family residence
West:	Single-family residence

2.2 Existing Facilities and Structures

Primary Structure:

Type:	Single-story residence with attached garage
Size:	Approximately 1,955 sf including basement
Construction Date:	1951
Construction:	Wood-frame
Foundation:	Concrete wall on spread footing
Footing Depth:	Approximately 80" to bottom of footing from grade
Basement:	Yes- full
Crawl Space:	None
Condition:	Good

Other Structures:

Type:	Shed
Size:	Approximately 63 sf
Construction:	Pre-fabricated metal
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-11586-RS on May 21, 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 under the brick walk, which is east of the primary structure; the driveway, which is north of the primary structure; and the sidewalk south of the primary structure. Also contamination was found in the south yard along the fence line.

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, team leader notes, deconvolution graphs, and Exterior Gamma Scan map are included in the Appendix (Section 6.0).

3.2 Gamma Exposure-Rate Surveys

3.2.1 Exterior Findings

Background Readings: 15 to 17 uR/h
Highest Outside Gamma Reading (HOG): 60 uR/h

Exterior radium-concentration measurements are presented in Appendix Table 3.1. Grid-point survey results are shown in Appendix Figure 3.1.

3.2.2 Interior Findings

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

Interior gamma exposure-rate measurements are summarized in Appendix Table 3.2.

3.3 Boreholes, Soil Samples, and Other Measurements

Areas which displayed elevated gamma levels were further investigated; these areas are shown in Appendix Figure 3.2. Data from these investigations are included in Appendix Table 3.1.

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 3.3 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) A deposit beneath the asphalt driveway northeast of the primary structure is contaminated to a total depth of 6 inches (approximately 49 sf).
- (AREA B) The lawn west of the primary structure is contaminated to a 6-inch depth (approximately 68 sf).
- (AREA C) A portion of the lawn west of the primary structure is contaminated to a depth of 9 inches (approximately 12 sf).
- (AREA D) A brick walk that surrounds the east and south sides of garage is contaminated to a depth of 12 inches (approximately 120 sf).
- (AREA E) Soil on either sides of the brick walk is contaminated to a depth of 12 inches (approximately 113 sf).
- (AREA F) A deposit at the base of the deck stairs, south of the of the primary structure, is contaminated to a 6-inch depth (approximately 16 sf).
- (AREA G) Directly south of the garage there is a deposit which extends to a 6-inch depth (approximately 100 sf).
- (AREA H) A deposit east of the concrete sidewalk, which is south of the primary structure, extends to a depth of 12 inches (approximately 10 sf).
- (AREA I) Two deposits, west of the concrete sidewalk, are contaminated to a depth of 6 inches (approximately 84 sf).
- (AREA J) South of the primary structure, along the east side of the sidewalk, there is a contaminated deposit that extends to a 12-inch depth (approximately 28 sf).
- (AREA K) A deposit in the south yard is contaminated to a 12-inch depth (approximately 40 sf).
- (AREA L) A contaminated deposit in the south yard, southwest of Area K, extends to a depth of 6 inches (approximately 153 sf).

- (AREA M) A deposit on both sides of the south fence is contaminated to a depth of 9 inches (approximately 140 sf).
- (AREA N) A contaminated deposit north of the south fence extends to a depth of 12 inches (approximately 15 sf).
- (AREA O) The uncontaminated 2-inch-thick concrete sidewalk, south of the primary structure, is underlain with contamination to a depth of 10 inches. The total depth of contamination is 12 inches (approximately 130 sf).
- (AREA P) A deposit beneath the asphalt driveway northeast of the primary structure is contaminated to a depth of 6 inches, based on data collected in Area A (approximately 76 sf).

(AREAS REQUIRING FURTHER INVESTIGATION DURING REMEDIAL ACTION)

After sources of radiation have been removed outside the garage, gamma readings should be taken inside this area to confirm the absence of interior contamination.

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-11586-RS, includes removal of all areas identified as containing radioactive material (as discussed in Section 3.5 and shown in Appendix Figure 3.3) 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 \$3,602.

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, 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	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 Sample Locations
Figure 3.3	Estimated Extent of Contamination

Official Survey Report

Exterior Gamma Survey Map

Team Leader Notes

Deconvolution Graphs (Apparent Radium-226 Concentration)

Radium Concentrations at Exterior Locations

DOE ID #GJ-11586-RS

2005 Elm Avenue

Page 1 of 5

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
1	180249	03	TC	3.1		*	Water line
		06	TC	3.3		*	North of the
		09	TC	3.5		*	primary structure
		12	TC	3.5		*	
		15	TC	3.6		*	DC = 0 inches
		18	TC	3.6		*	
		21	TC	3.7		*	
		24	TC	3.7		*	
		27	TC	3.7		*	
		30	TC	3.7		*	
		33	TC	3.7		*	
		36	TC	3.7		*	
		39	TC	3.8		*	
		42	TC	3.7		*	
		45	TC	3.7		*	
		48	TC	3.8		*	
2	180280	00	DS	6.6		*	Asphalt driveway
		03	TC	6.9		*	East of the
		06	TC	5.2		*	primary structure
		09	TC	4.4		*	
		12	TC	4.0		*	DC = 6 inches
		15	TC	3.8		*	Based on the
		18	TC	3.9		*	deconvolution graph
		21	TC	3.9		*	
		24	TC	3.9		*	
		27	TC	4.0		*	
		30	TC	3.9		*	
		33	TC	3.9		*	
3	190230	03	TC	8.4		*	West side of
		06	TC	6.9		*	primary structure
		09	TC	5.2		*	
		12	TC	4.4		*	DC = 9 inches
		15	TC	4.1		*	Based on the
		18	TC	4.0		*	deconvolution graph
		21	TC	3.9		*	
		24	TC	4.0		*	
		27	TC	4.0		*	
		30	TC	4.0		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-11586-RS

2005 Elm Avenue

Page 2 of 5

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot.	Ct Spectr.		
3	190230	36	TC	4.0		*	
		39	TC	3.9		*	
		42	TC	4.0		*	
		45	TC	4.0		*	
		48	TC	4.0		*	
		51	TC	4.0		*	
		54	TC	4.0		*	
		57	TC	4.1		*	
		60	TC	4.1		*	
4	193230	00	DS	2.6		*	West of the
		06	DS	1.5		*	primary structure DC = 6 inches
5	198283	00	DS	1.8		*	Gas line
		16	DS	<1.0		*	
6	205265	00	DS	<1.0		*	South of the primary structure
7	210285	00	DS	20.1		*	On brick west of
		02	DS	37.0		*	garage
		08	DS	2.0		*	
		03	TC	12.5		*	Under brick walk
		06	TC	8.3		*	
		09	TC	6.2		*	DC = 12 inches
		12	TC	4.8		*	Based on all
		15	TC	4.3		*	available data
		18	TC	4.1		*	
		21	TC	3.8		*	
		24	TC	3.8		*	
		27	TC	3.7		*	
8	215245	00	DS	2.3		*	South of the
		06	DS	1.2		*	primary structure DC = 6 inches
9	215270	00	DS	1.8		*	West of garage
		06	DS	1.3		*	
10	219248	03	TC	2.8		*	
		06	TC	3.2		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-11586-RS

2005 Elm Avenue

Page 3 of 5

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
10	219248	09	TC	3.3		*	Southwest of deck
		12	TC	3.5		*	Sewer line
		15	TC	3.5		*	DC = 0 inches
		18	TC	3.5		*	
		21	TC	3.5		*	
		24	TC	3.6		*	
		27	TC	3.6		*	
		30	TC	3.7		*	
		33	TC	3.7		*	
		36	TC	3.7		*	
		39	TC	3.6		*	
11	228283	00	DS	41.8		*	Along brick sidewalk
		03	TC	9.3		*	South of primary
		06	TC	9.3		*	structure
		09	TC	7.2		*	
		12	TC	5.6		*	DC = 12 inches
		15	TC	4.7		*	Based on the
		18	TC	4.2		*	deconvolution graph
		21	TC	3.9		*	
		24	TC	3.9		*	
		27	TC	3.8		*	
		30	TC	3.7		*	
		33	TC	3.9		*	
12	230268	00	DS	4.8		*	Along sidewalk
		06	DS	1.8		*	South yard DC = 6 inches
13	233278	00	DS	4.4		*	South of garage
		06	DS	1.6		*	DC = 6 inches
14	235266	03	TC	4.6		*	Core through the
		06	TC	5.5		*	sidewalk south
		09	TC	5.2		*	of the primary
		12	TC	4.7		*	structure
		15	TC	4.5		*	
		18	TC	4.2		*	DC = 12 inches
		21	TC	4.0		*	Based on the
		24	TC	4.0		*	deconvolution graph
		27	TC	4.1		*	
		30	TC	4.0		*	
		33	TC	4.0		*	
		36	TC	4.0		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-11586-RS

2005 Elm Avenue

Page 4 of 5

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
15	235268	03	TC	18.9		*	Next to sidewalk
		06	TC	16.7		*	
		09	TC	10.3		*	DC = 12 inches
		12	TC	6.6		*	Based on the
		15	TC	5.2		*	deconvolution graph
		18	TC	4.5		*	
		21	TC	4.2		*	
		24	TC	4.2		*	
		27	TC	4.1		*	
		30	TC	4.1		*	
16	248264	00	DS	8.0		*	South yard
		06	DS	2.0		*	West of walk
		12	DS	<1.0		*	DC = 6 inches
17	253257	00	DS	13.7		*	South yard
		06	DS	3.1		*	DC = 12 inches
		12	DS	1.2		*	
18	255268	00	DS	16.4		*	Southeast property
		06	DS	2.6		*	East of concrete
		12	DS	1.2		*	walk
19	260245	00	DS	3.9		*	South property
		06	DS	1.7		*	DC = 6 inches
20	264244	03	TC	12.5		*	South fence
		06	TC	9.6		*	
		09	TC	7.2		*	DC = 12 inches
		12	TC	5.7		*	Based on the
		15	TC	5.1		*	deconvolution graph
		18	TC	4.7		*	
		21	TC	4.4		*	
		24	TC	4.4		*	
		27	TC	4.3		*	
		30	TC	4.3		*	
21	268244	03	TC	12.3		*	Alley south of
		06	TC	13.8		*	primary structure
		09	TC	8.7		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-11586-RS

2005 Elm Avenue

Page 5 of 5

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
21	268244	12	TC	6.2		*	
		15	TC	5.1		*	DC = 9 inches
		18	TC	4.6		*	Based on the
		21	TC	4.3		*	deconvolution graph
		24	TC	4.3		*	
		27	TC	4.1		*	
		30	TC	4.3		*	
22	272267	03	TC	5.4		*	Alley
		06	TC	6.0		*	
		09	TC	5.5		*	DC = 12 inches
		12	TC	5.0		*	Based on the
		15	TC	4.7		*	deconvolution graph
		18	TC	4.3		*	
		21	TC	4.2		*	
		24	TC	4.1		*	
		27	TC	4.1		*	
		30	TC	4.1		*	
		33	TC	4.1		*	
		36	TC	4.1		*	
23	273265	00	DS	5.5		*	South alley
		09	DS	20.0		*	Horizontally under
		12	DS	8.7		*	sidewalk

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 = 05-21-85
Team Leader = CH

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	*	*	*	*	14-17	*
PRIMARY STRUCTURE	*	*	*	*	12-14	*
GARAGE	13	13-25	17	13	15-17	17
SHED	*	*	*	*	13-14	*

=====

* The CDH and ORNL data indicates the absence of interior contamination at this property. This information was investigated by performing walking gamma scans.

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-11586-RS

Page 1 of 2

<u>AREA</u>	<u>CALCULATIONS(ft)</u>	<u>SF</u>	<u>DEPTH(ft)</u>	<u>CF</u>	<u>CUBIC YARDS</u>
EXTERIOR					
Asphalt and Concrete					
A	9 x 8 =	72	x 0.2 =	14	
O	65 x 2 =	130	x 0.2 =	26	
P	19 x 4 =	76	x 0.2 =	15	
Volume of Asphalt and Concrete				55 =	55/27 = 2
Contaminated Fill					
A	7 x 7 =	49	x 0.3 =	15	
B	17 x 4 =	68	x 0.5 =	34	
C	4 x 3 =	12	x 0.8 =	10	
D	24 x 3 =	72			
	16 x 3 =	48			
		120	x 0.8 =	96	
E	3 x 11 =	33			
	5 x 16 =	80			
		113	x 1.0 =	113	
F	4 x 4 =	16	x 0.5 =	8	
G	5 x 20 =	100	x 0.5 =	50	
H	5 x 2 =	10	x 1.0 =	10	
I	8 x 3 =	24			
	20 x 3 =	60			
		84	x 0.5 =	42	
J	14 x 2 =	28	x 1.0 =	28	
K	4 x 10 =	40	x 1.0 =	40	

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-11586-RS

Page 2 of 2

<u>AREA</u>	<u>CALCULATIONS(ft)</u>	<u>SF</u>	<u>DEPTH(ft)</u>	<u>CF</u>	<u>CUBIC YARDS</u>
L	3 x 18 =	54			
	3 x 15 =	15			
	7 x 12 =	84			
		<hr/> 153	x 0.5 =	77	
M	7 x 20 =	140	x 0.8 =	112	
N	3 x 5 =	15	x 1.0 =	15	
O	65 x 2 =	130	x 0.8 =	104	
P	8 x 3 =	24			
	7 x 2 =	14			
	8 x 3 =	24			
	7 x 2 =	14			
		<hr/> 76	x 0.3 =	23	
Volume of Fill				<hr/> 777	= 777/27 = 29
TOTAL VOLUME - EXTERIOR					<hr/> = 31

See Appendix Figure 3.3 For Areas

=====

Table 4.2
Estimated Cost of Decontamination and Restoration
DOE ID No. GJ-11586-RS Page 1 of 1

EXTERIOR

Remove/replace asphalt 148 sf @ \$2.60/sf	\$ 385
Remove/replace concrete 130 sf @ \$3/sf	390
Remove/clean/replace brick walk 83 sf @ \$4/sf	332
Remove identified residual radioactive material 24 cy @ \$14.50 (machine-open)	348
5 cy @ \$44/cy (manual-open)	220
Replace areas with roadbase 10 cy @ \$11.50/cy	115
Replace areas with topsoil 19 cy @ 9.50/cy	181
Replace areas with sod 480 sf @ \$.35/sf	168

TOTAL EXTERIOR \$ 2,139

TOTAL INTERIOR 0

ACCESS CONTROL 200

SUBTOTAL \$ 2,339

CONTINGENCY @ 10% 234

SUBTOTAL \$ 2,573

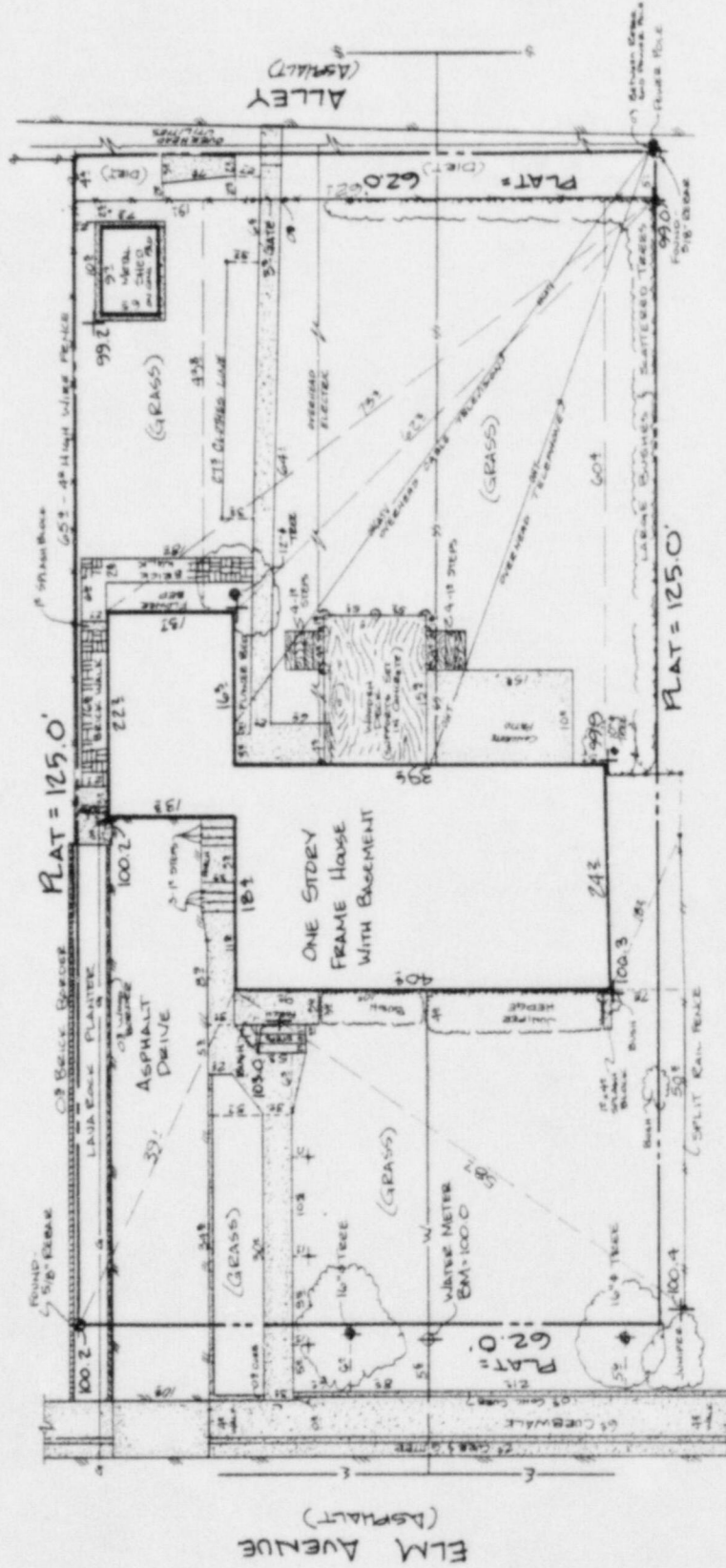
CONTRACTOR OVERHEAD & PROFIT @ 40% 1,029

GRAND TOTAL \$ 3,602

=====

FV062485
REAL1586/REA-510/LAJ

LOT 6 BLOCK 2 ARCADIA VILLAGE REPLAT,
CITY OF GRAND JUNCTION, COLORADO.

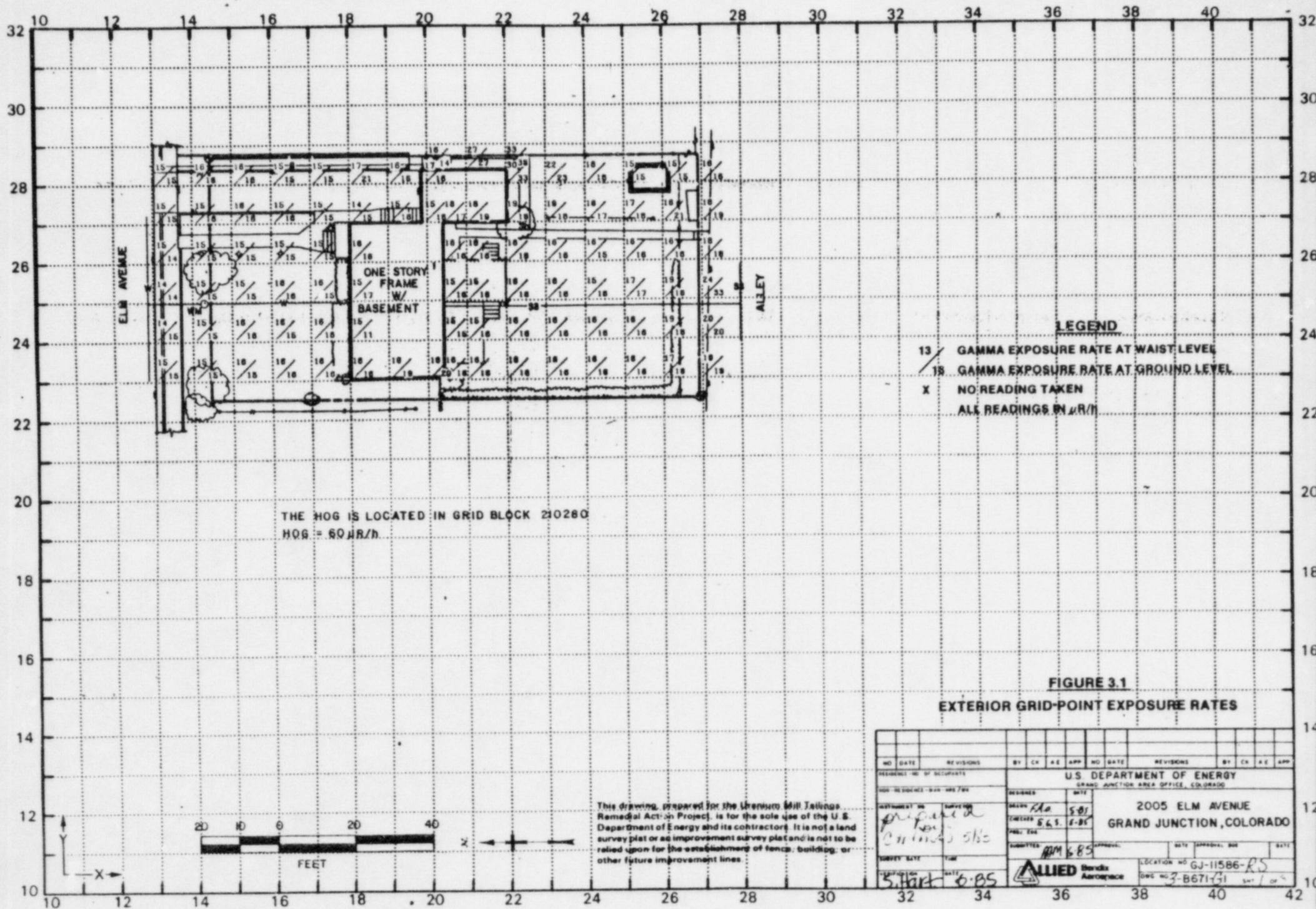


10 5 0 10 20
SCALE IN FEET

FIGURE 2.2 SITE PLAN

This drawing, prepared for the Union Mill Tailings Remedial Action Project, is the property of the U.S. Department of Energy. It is not to be used for any other purpose without the written consent of the U.S. Department of Energy. It is not to be used for any other purpose without the written consent of the U.S. Department of Energy. It is not to be used for any other purpose without the written consent of the U.S. Department of Energy.

U.S. DEPARTMENT OF ENERGY	DOE ID NO.	GJ11586 ES
GRAND JUNCTION PROJECT OFFICE, COLORADO	ADDRESS	2005 ELM AVENUE
	GRAND JUNCTION, COLORADO	
SUB: ELB 5.13.05	DATE: 5.14.05	WCF/5.14.05
DRAWING NO. 3-6671-F1		SHEET 1 OF 1



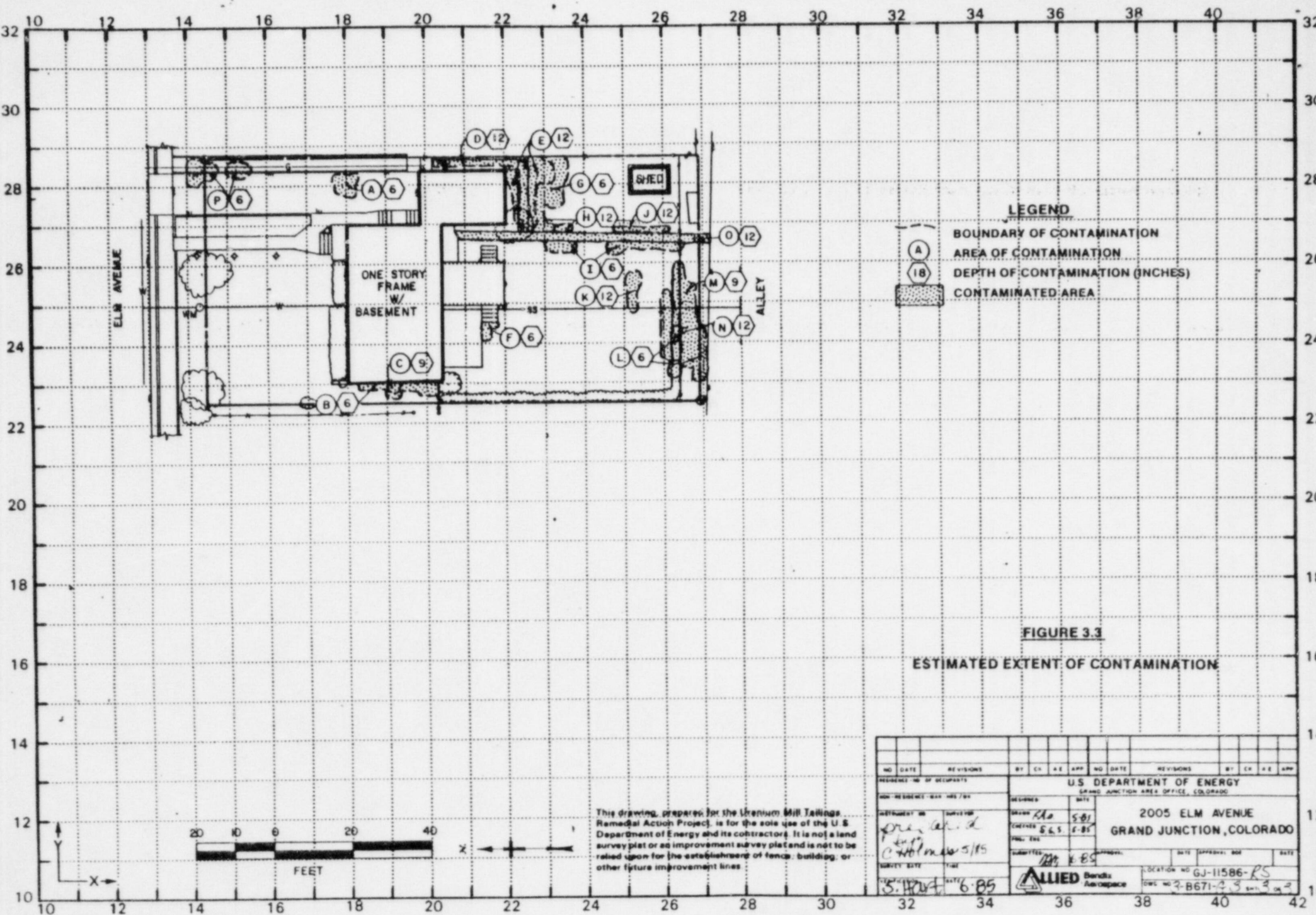


FIGURE 3.3

ESTIMATED EXTENT OF CONTAMINATION

NO. DATE REVISIONS BY CH. A.E. APP. NO. DATE REVISIONS BY CH. A.E. APP.		U.S. DEPARTMENT OF ENERGY GRAND JUNCTION AREA OFFICE, COLORADO	
RESIDENTIAL NO. OF OCCUPANTS		2005 ELM AVENUE GRAND JUNCTION, COLORADO	
ADJ. RESIDENTIAL MAX. HRS. / WK.		DESIGNED BY: <i>R.A.</i> DATE: <i>5-81</i>	LOCATION NO. <i>GJ-11586-RS</i>
DETACHMENT NO. <i>pre-14-1</i> SURVEY NO. <i>5/15</i>		ENGINEER: <i>S.G.S.</i> DATE: <i>5-81</i>	
SURVEY DATE: <i>5-81</i> DATE: <i>6-85</i>		CLIENT: <i>ALLIED</i> PROJECT: <i>6-85</i>	DATE: <i>6-85</i>
DRAWN BY: <i>ALLIED</i>		DATE: <i>6-85</i>	DATE: <i>6-85</i>

3/85

DOE ID NO. GJ-11586-RS

Date May 30, 1985

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

Official Survey Report

Property Address 2005 Elm Avenue

Property Owner William Schmidt

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.

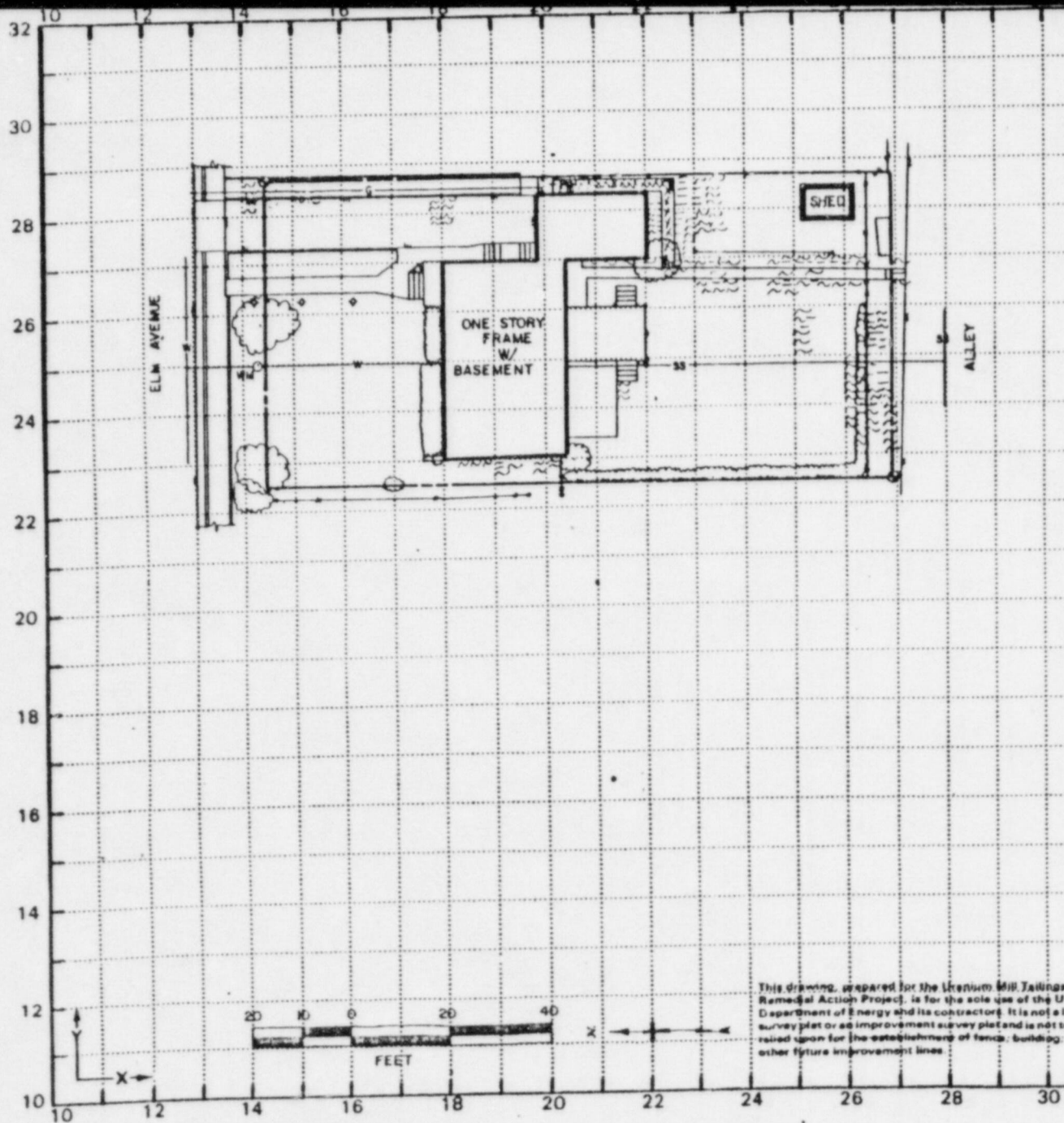
II. RESULTS OF RADIOLOGIC ASSESSMENT

☐ 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



Exterior Gamma Survey map

Legend

- ~ gamma readings of 150 - 199 cps
- gamma readings of 200 - 500 cps
- X gamma readings of >500 cps

This drawing, prepared for the Uranium 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.

NO. DATE		REVISIONS		BY	CH	APPROV	NO. DATE	REVISIONS		BY	CH	APPROV
RESIDENT NO. OF OCCUPANTS												
MAX. RESIDENTS - RES. AND 700												
APPROVED BY		DESIGNED BY		DATE		DRAWN BY		DATE		CHECKED BY		
prepared by		J. A. S. S. S.		5-81		E. L. S. E. S.		5-81		DATE		
SURVEY DATE		DATE		DATE		DATE		DATE		DATE		
LOCATION		DATE		DATE		DATE		DATE		DATE		
<div style="display: flex; justify-content: space-between;"> <div> <p>U.S. DEPARTMENT OF ENERGY</p> <p>GRAND JUNCTION AREA OFFICE, COLORADO</p> <p>2005 ELM AVENUE</p> <p>GRAND JUNCTION, COLORADO</p> </div> <div> <p>LOCATION NO. GJ-11586-4r</p> <p>DATE NO. 1-8671-F1</p> </div> </div>												

ALLIED Bendix
Aerospace

Bendix Field Engineering Corporation
Grand Junction Operations
Grand Junction, Colorado

Date: May 21, 1985
To: Files
From: Carol Holmes
Subject: Team Leader Notes - GJ-11586-RS

Address: 2005 Elm Avenue

Owner: William R. Schmidt

Team Members

C. Holmes (Team Leader)	N. Wallace
L. Kula	D. Dow
R. Schouten	S. Larsen

Instruments

Crutch Scintillometer - C-1036, C-1185, C-3502
Total Count - C-3573, C-4006
Delta Scintillometer - C-3940, C-3937

The house is presently being rented by the owner's daughter. She was present during the walking scan.

Visual mill tailings were discovered beneath the brick walk, which surrounds the garage. This explains the slight elevation of readings in the garage.

Contamination was also discovered along side of the sidewalk, as well as beneath it. The sidewalk lies south of the primary structure.

Also, there were a few areas in the backyard, south of the primary structure, along the fence line, and an area along the west side of the house where contamination was discovered.

Team Leader Notes
Carol Holmes
GJ-11586-RS
May 21, 1985
Page 2

No problems were encountered.

All team members were frisked before leaving the property.

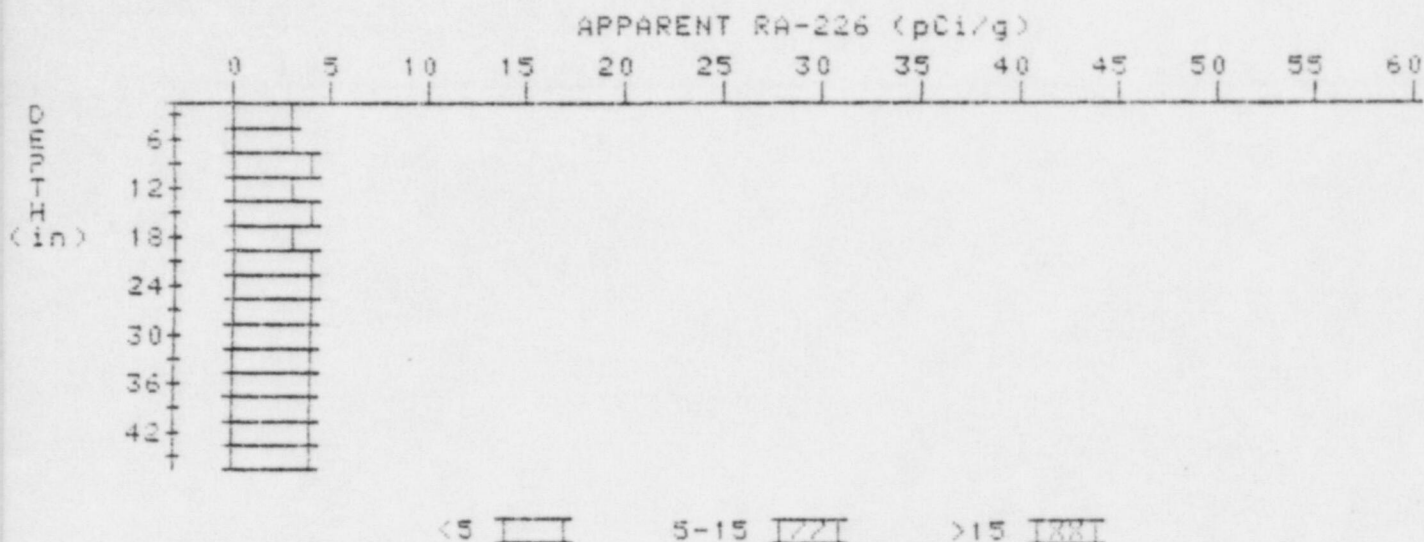
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

1

PROPERTY NUMBER: GJ-11586-RS

HOLE NUMBER: 1

LOCATION: 180249

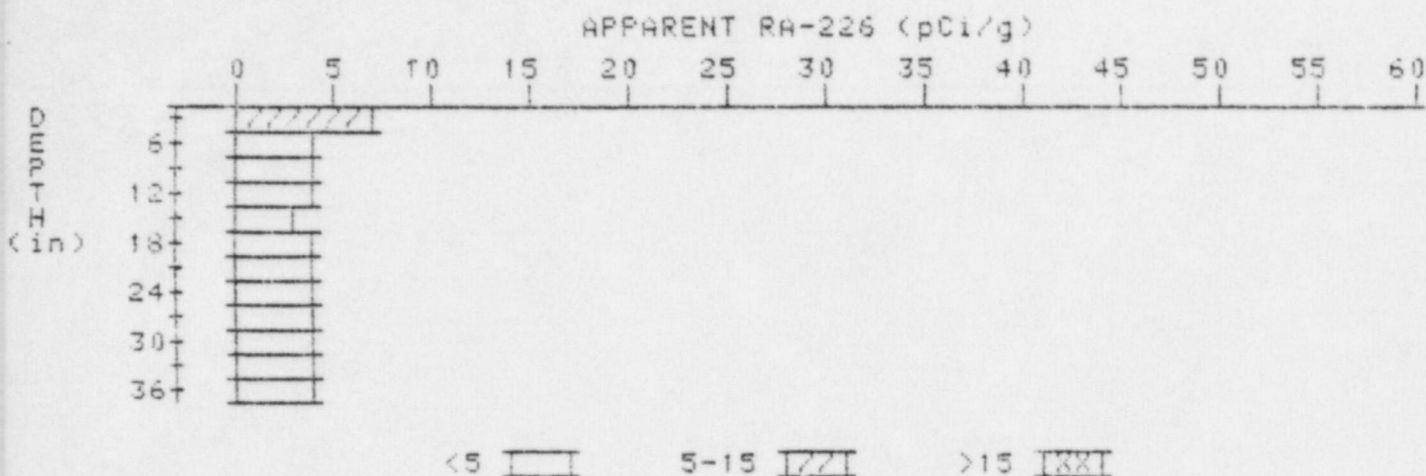


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.1	3.1
6	3.3	3.3
9	3.5	3.9
12	3.5	3.3
15	3.6	3.8
18	3.6	3.4
21	3.7	3.9
24	3.7	3.7
27	3.7	3.7
30	3.7	3.7
33	3.7	3.7
36	3.7	3.5
39	3.8	4.2
42	3.7	3.5
45	3.7	3.7

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

2

PROPERTY NUMBER: GJ-11586-RS
HOLE NUMBER: 2
LOCATION: 180280



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	6.9	6.9
6	5.2	3.6
9	4.4	3.7
12	4.0	3.6
15	3.8	3.3
18	3.9	4.1
21	3.9	3.9
24	3.9	3.7
27	4.0	4.4
30	3.9	3.7
33	3.9	3.7
36	4.0	4.0

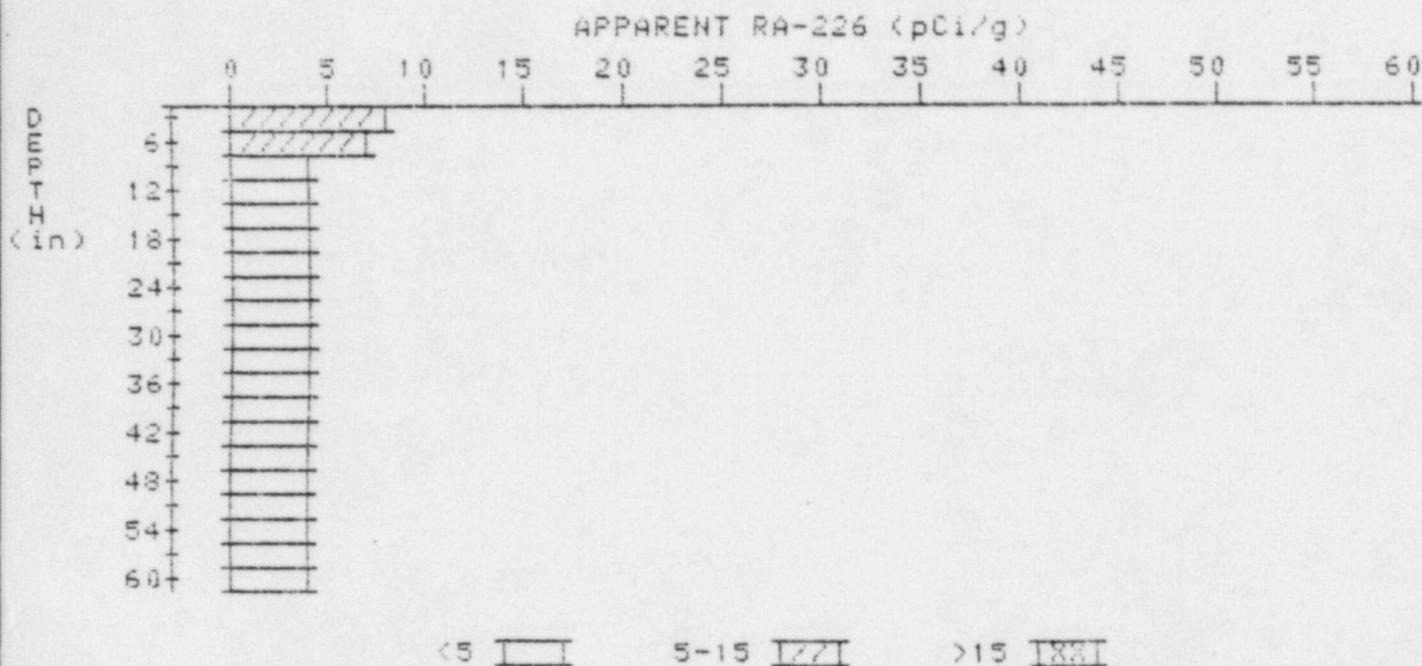
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

3

PROPERTY NUMBER: GJ-11586-RS

HOLE NUMBER: 3.

LOCATION: 190230



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	8.4	8.4
6	6.9	7.3
9	5.2	3.6
12	4.4	3.5
15	4.1	3.7
18	4.0	4.0
21	3.9	3.5
24	4.0	4.2
27	4.0	4.0
30	4.0	4.0
33	4.0	4.0
36	4.0	4.2
39	3.9	3.5
42	4.0	4.2
45	4.0	4.0
48	4.0	4.0
51	4.0	4.0
54	4.0	3.8

57
60

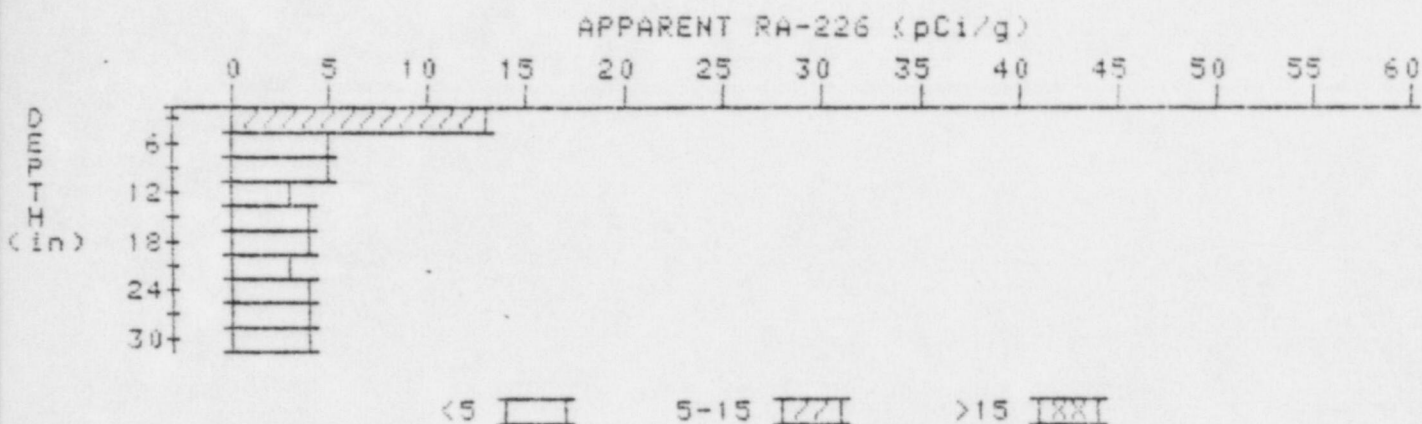
4.1
4.1

4.3
4.1

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

7

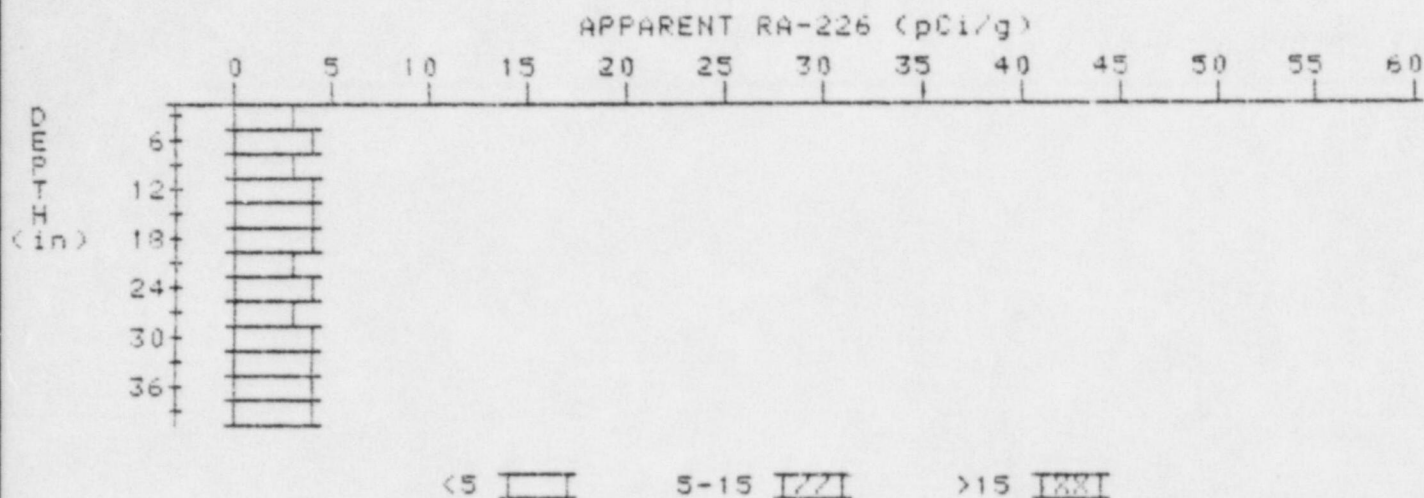
PROPERTY NUMBER: GJ-11586-RS
HOLE NUMBER: 7
LOCATION: 210285



Depth (in)	Apparent Radium-226 (pCi/g)	Apparent Radium-226 (pCi/g)
	Undeconvolved	Deconvolved
3	12.5	12.5
6	8.3	4.6
9	6.2	5.0
12	4.8	3.2
15	4.3	3.8
18	4.1	4.3
21	3.8	3.3
24	3.8	4.0
27	3.7	3.5
30	3.7	3.7

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH 10

PROPERTY NUMBER: GJ-11586-RS
HOLE NUMBER: 10
LOCATION: 219248

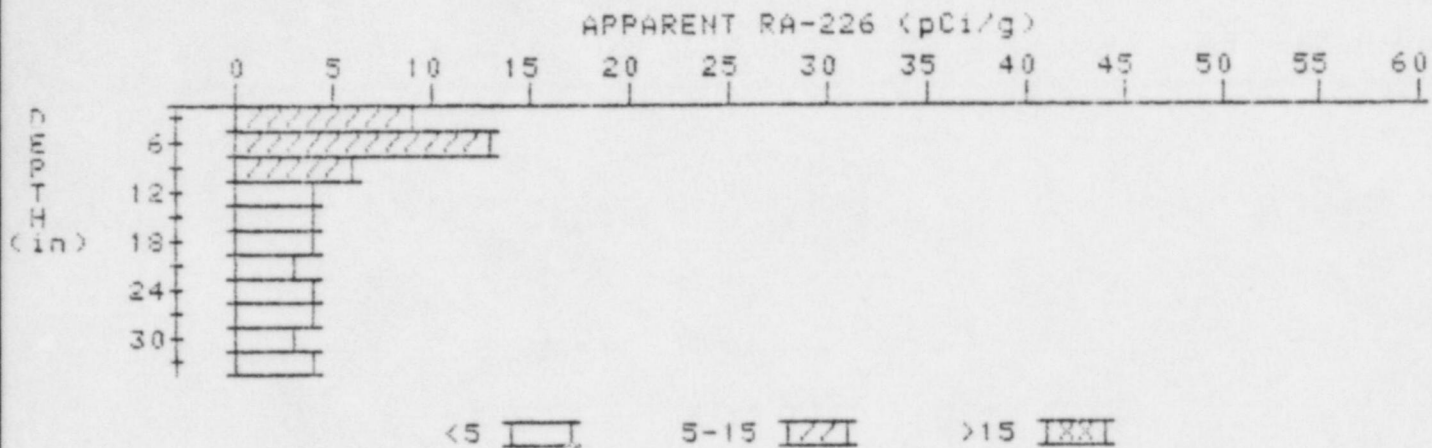


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.8	2.8
6	3.2	3.7
9	3.3	3.1
12	3.5	3.9
15	3.5	3.5
18	3.5	3.5
21	3.5	3.3
24	3.6	3.8
27	3.6	3.4
30	3.7	3.5
33	3.7	3.7
36	3.7	3.9
39	3.6	3.6

APPARENT RADIUM-226 CONCENTRATION 11

DECONVOLUTION GRAPH

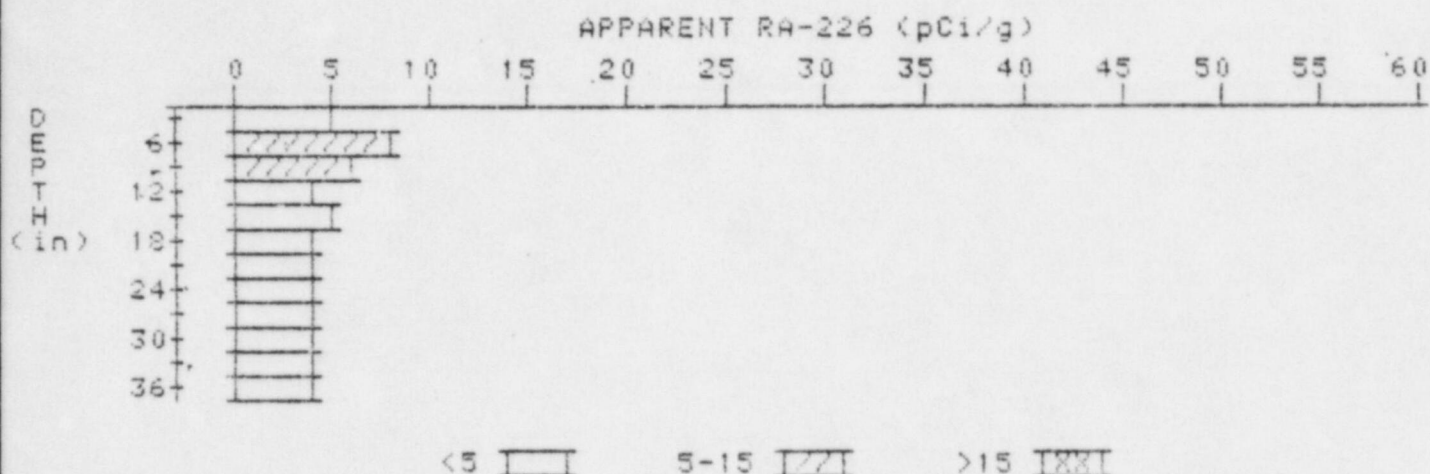
PROPERTY NUMBER: GJ-11586-RS
HOLE NUMBER: 11
LOCATION: 228283



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	9.3	9.3
6	9.3	13.0
9	7.2	6.3
12	5.6	4.4
15	4.7	4.0
18	4.2	3.8
21	3.9	3.4
24	3.9	4.1
27	3.8	3.8
30	3.7	3.2
33	3.9	3.9

APPARENT RADIUM-226 CONCENTRATION 14 DECONVOLUTION GRAPH

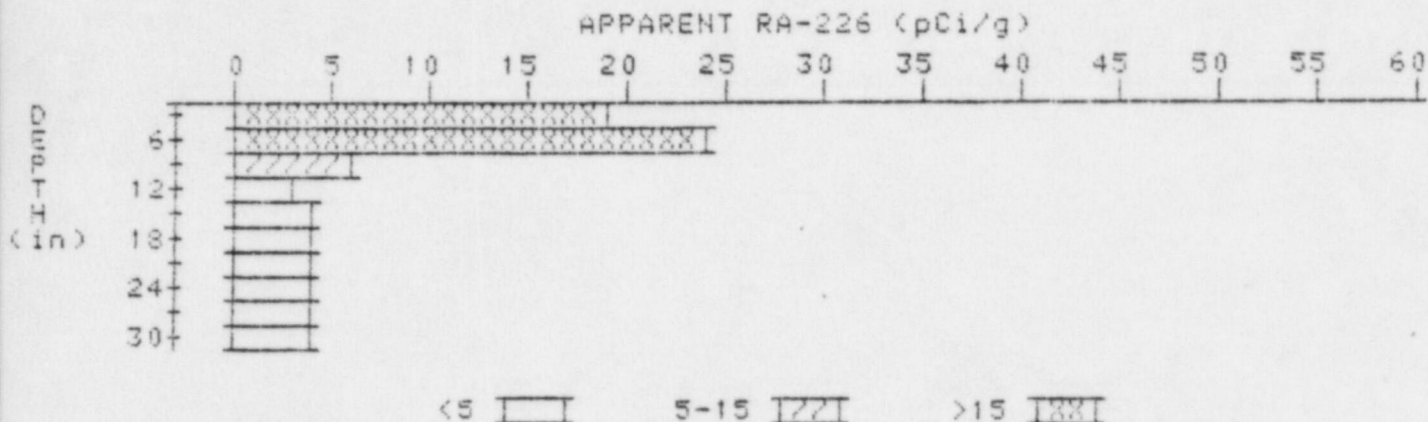
PROPERTY NUMBER: GJ-11586-RS
HOLE NUMBER: 14
LOCATION: 235266



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.6	4.6
6	5.5	7.6
9	5.2	5.6
12	4.7	4.2
15	4.5	4.7
18	4.2	4.0
21	4.0	3.6
24	4.0	3.8
27	4.1	4.5
30	4.0	3.8
33	4.0	4.0
36	4.0	4.0

APPARENT RADIUM-226 CONCENTRATION 15 DECONVOLUTION GRAPH

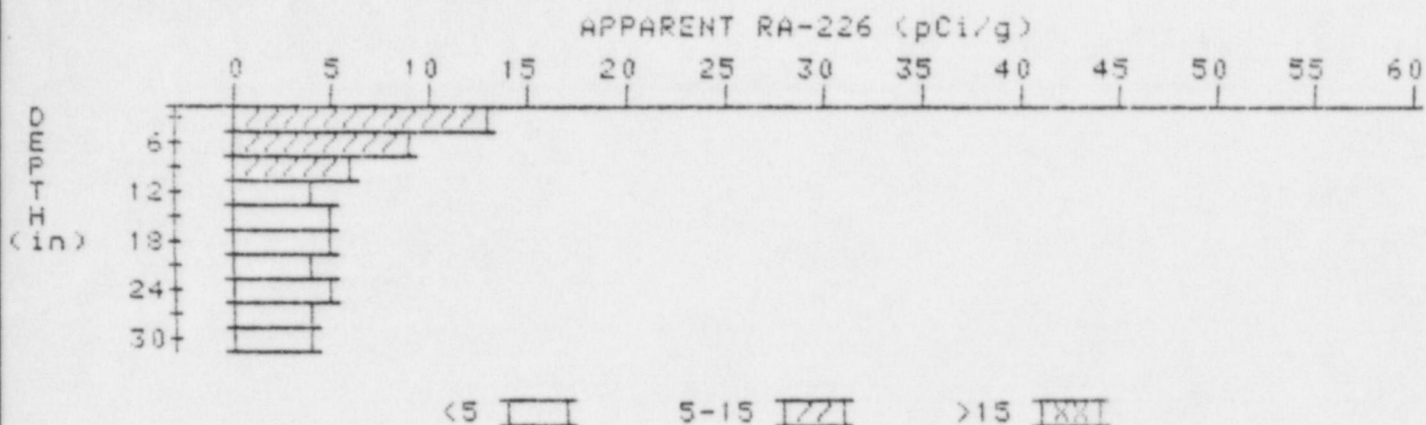
PROPERTY NUMBER: GJ-11586-RS
HOLE NUMBER: 15
LOCATION: 235268



Depth (in)	Apparent Radium-226 (pCi/g)	Apparent Radium-226 (pCi/g)
	Undeconvolved	Deconvolved
3	18.9	18.9
6	16.7	24.2
9	10.3	5.5
12	6.6	2.5
15	5.2	4.0
18	4.5	3.8
21	4.2	3.7
24	4.2	4.4
27	4.1	3.9
30	4.1	4.1

APPARENT RADIUM-226 CONCENTRATION 20 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-11586-RS
HOLE NUMBER: 20
LOCATION: 264244

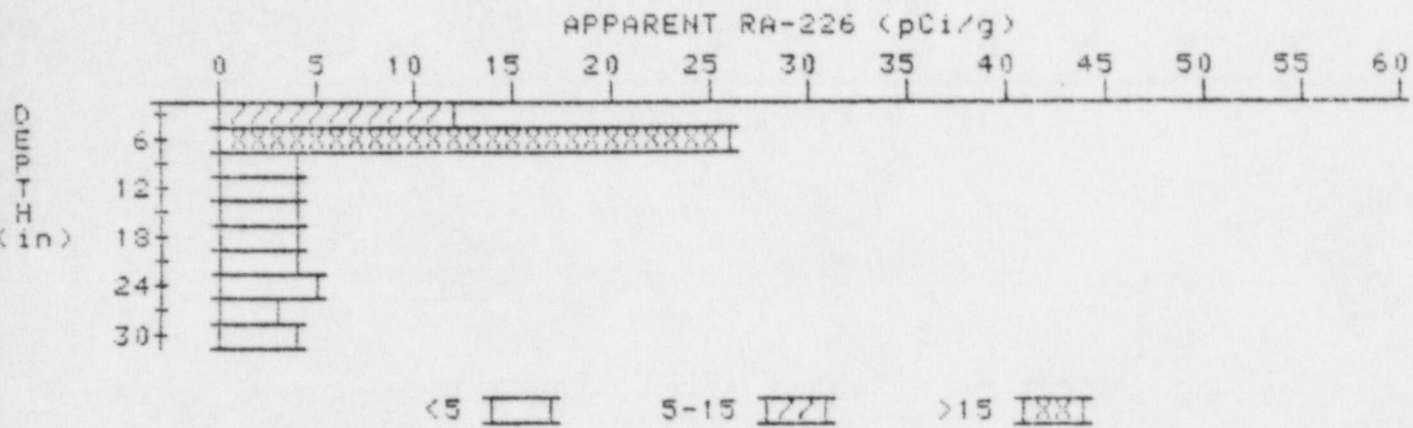


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	12.5	12.5
6	9.6	8.7
9	7.2	5.6
12	5.7	4.1
15	5.1	4.7
18	4.7	4.5
21	4.4	3.9
24	4.4	4.6
27	4.3	4.1
30	4.3	4.3

APPARENT RADIUM-226 CONCENTRATION 21

DECONVOLUTION GRAPH

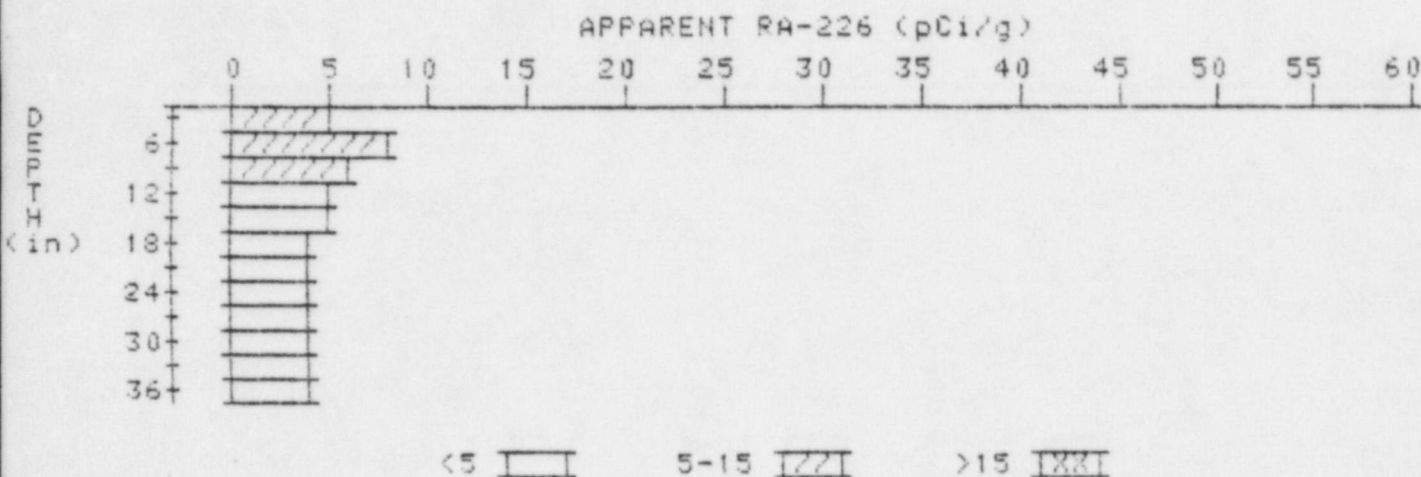
PROPERTY NUMBER: GJ-11586-RS
HOLE NUMBER: 21
LOCATION: 268244



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	12.3	12.3
6	13.8	25.5
9	8.7	4.1
12	6.2	3.7
15	5.1	4.0
18	4.6	4.2
21	4.3	3.8
24	4.3	4.7
27	4.1	3.4
30	4.3	4.3

APPARENT RADIUM-226 CONCENTRATION 22 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-11536-RS
HOLE NUMBER: 22
LOCATION: 272267



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.4	5.4
6	6.0	6.0
9	5.5	5.5
12	5.0	4.6
15	4.7	4.9
18	4.3	3.8
21	4.2	4.2
24	4.1	3.9
27	4.1	4.1
30	4.1	4.1
33	4.1	4.1
36	4.1	4.1