

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-12224-RS
ADDRESS: 1660 ORCHARD AVENUE

AUGUST 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

Michael K. Tucker

M. TUCKER
DOE PROJECT ENGINEER

DATE

August 26, 1985

REA12224:REA-620

8509100244 850827
PDR WASTE
WM-54 PDR

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-12224-RS, is a single-family residence located at 1660 Orchard 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, 19 cu. yd.; interior, 0 cu. yd.

Estimated cost to perform remedial action, including dislocation when applicable, is \$3,732. Remedial action on this property will take approximately 10 days to complete.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 1660 Orchard Avenue, Grand Junction, Colorado

Zoning: Residential (RSF-8)

Lot Size: Approximately 9,000 sf (0.21 acres)

Legal Description: Beginning N. 0°01'E. 30.0 feet and east 245.0 feet from the southwest corner of the E 1/2 SW 1/4 SE 1/4 NW 1/4 Section 12, T1S, R1W, UM; thence N. 0°01'E. 120.0 feet, thence east 75.0 feet, thence south 120.0 feet, thence west 75.0 feet to beginning, City of Grand Junction, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 2 mile(s) 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:	Single-family residence
South:	Orchard Avenue
East:	North 17th Street
West:	Single-family residence

2.2 Existing Facilities and Structures

Primary Structure:

Type:	Single-story residence
Size:	Approximately 1,150 sf
Construction Date:	1898
Construction:	Wood-frame
Foundation:	Concrete stemwall on spread footing
Footing Depth:	Not determined
Basement:	Full
Crawl Space:	None
Condition:	Good

Other Structures:

Type:	Garage
Size:	Approximately 384 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 over 50 years old. Therefore, it does meet the eligibility criteria for consideration of inclusion on the National Register of Historic Places.

Alterations to Structure: None known

Architectural Significance: None known

Historical Significance: None known

3.0 RADIOLOGIC SURVEY

3.1 Introduction

Radiologic data were collected by Bendix at DOE ID No. GJ-12224-RS on July 17, 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 located north of the garage and associated with the city sidewalk on the east property line. ORNL indicated that the concrete used for the city sidewalk is contaminated.

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): 29 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) Surface Material: Concrete
Direction From Primary Structure: East
Total Depth of Contamination: 4 inches
Other (height or thickness): 4-inch-thick concrete
Comments: City sidewalk
Approximate Square Footage: 669
- (Area B) Surface Material: Soil
Direction From Primary Structure: North
Other Directions: North of garage
Total Depth of Contamination: 12 inches
Approximate Square Footage: 136
- (Area C) Surface Material: Soil
Direction From Primary Structure: North
Other Directions: Adjacent to Area B
Total Depth of Contamination: 6 inches
Approximate Square Footage: 40
- (Area D) Surface Material: Soil
Direction From Primary Structure: North
Other Directions: South of garage
Total Depth of Contamination: 9 inches
Approximate Square Footage: 80
- (Area E) Surface Material: Soil
Direction From Primary Structure: North
Other Directions: Adjacent to Area D
Total Depth of Contamination: 6 inches
Approximate Square Footage: 33

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-12224-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 \$3,732.

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-GMD4-84AL28460) 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	Exterior Estimated Extent of Contamination

Official Survey Report

Team Leader Notes

Deconvolution Graphs (Apparent Radium-226 Concentration)

Exterior Gamma Scan Map

Radium Concentrations at Exterior Locations

DOE ID #GJ-12224-RS

1660 Orchard Avenue

Page 1 of 3

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
1	140310	00	DS	1.3		*	On asphalt
2	141271	00	DS	3.5		*	North of garage
		06	DS	3.3		*	
		12	DS	<1.0		*	
3	145255	00	DS	5.8		*	North of garage
		06	DS	1.8		*	
4	145260	03	TC	5.2		*	North of garage DC = 12 inches Based on the deconvolution graph
		06	TC	5.6		*	
		09	TC	5.2		*	
		12	TC	4.6		*	
		15	TC	3.9		*	
		18	TC	3.8		*	
		21	TC	3.7		*	
		24	TC	3.6		*	
		27	TC	3.6		*	
		30	TC	3.6		*	
		33	TC	3.6		*	
		36	TC	3.5		*	
		39	TC	3.5		*	
5	160305	00	DS	7.2		*	On concrete
6	167270	00	DS	2.9		*	South of garage
		06	DS	3.1		*	
		12	DS	1.2		*	
7	170268	03	TC	6.2		*	South of garage DC = 9 inches Based on the deconvolution graph
		06	TC	5.2		*	
		09	TC	4.3		*	
		12	TC	3.8		*	
		15	TC	3.5		*	
		18	TC	3.5		*	
		21	TC	3.5		*	
		24	TC	3.4		*	
		27	TC	3.4		*	
		30	TC	3.5		*	
		33	TC	3.6		*	
		36	TC	3.6		*	
		39	TC	3.7		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-12224-RS

1660 Orchard Avenue

Page 2 of 3

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
8	174266	00	DS	3.6		*	South of garage
		06	DS	1.4		*	
9	192265	00	DS	2.1		*	Electric line
		06	DS	2.1		*	Exposed
10	193260	06	TC	3.5		*	North side of primary structure DC = 0 inches No reading taken at 3-inch-level
		09	TC	3.5		*	
		12	TC	3.3		*	
		15	TC	3.2		*	
		18	TC	3.3		*	
		21	TC	3.2		*	
		24	TC	3.2		*	
		27	TC	3.2		*	
		30	TC	3.2		*	
		33	TC	3.1		*	
		36	TC	3.1		*	
		39	TC	3.2		*	
		42	TC	3.1		*	
		45	TC	3.2		*	
		48	TC	3.4		*	
		51	TC	3.4		*	
		54	TC	3.4		*	
		57	TC	3.5		*	
		60	TC	3.5		*	
11	200302	00	DS	2.1		*	Next to sidewalk
		06	DS	4.0		*	Horizontal
		10	DS	2.8		*	Horizontal
		10	DS	<1.0		*	Vertical
		12	DS	1.7		*	Horizontal
12	200310	00	DS	1.0		*	On asphalt
13	210253	03	TC	2.8		*	West side of primary structure DC = 0 inches
		06	TC	2.9		*	
		09	TC	3.0		*	
		12	TC	3.1		*	
		15	TC	3.1		*	
		18	TC	3.1		*	
		21	TC	3.2		*	
		24	TC	3.2		*	
		27	TC	3.3		*	
		30	TC	3.3		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-12224-RS

1660 Orchard Avenue

Page 3 of 3

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
13	210253	33	TC	3.3		*	
		36	TC	3.3		*	
14	220308	00	DS	6.9		*	On concrete gutter
15	222283	00	DS	1.0		*	Background
		03	TC	3.0		*	Sewer line
		06	TC	3.2		*	DC = 0 inches
		09	TC	3.2		*	
		12	TC	3.3		*	
		15	TC	3.2		*	
		18	TC	3.3		*	
		21	TC	3.2		*	
		24	TC	3.2		*	
		27	TC	3.1		*	
		30	TC	3.2		*	
		33	TC	3.3		*	
		36	TC	3.4		*	
		39	TC	3.4		*	
		42	TC	3.5		*	
		45	TC	3.4		*	
		48	TC	3.6		*	
		51	TC	3.7		*	
		54	TC	3.7		*	
		57	TC	3.7		*	
		60	TC	3.8		*	
		63	TC	3.9		*	
		66	TC	3.8		*	
16	223251	00	DS	1.1		*	Gas line
		18	DS	<1.0		*	Exposed gas line
17	240305	00	DS	5.1		*	City sidewalk
18	240310	00	DS	1.3		*	On asphalt

Measurement Types:

GB = GAD-6 Borehole

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 = 07-17-85

Team Leader = DM

Table 3.2

Summary of Interior Gamma Exposure Rates

DOE ID No. GJ-12224-RS

1660 Orchard 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	*
Crawl space	*	*	*	*	14-17	*
Garage	*	*	*	*	16-16	*

* Gamma scans were performed to confirm the absence of interior contamination.

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-12224-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	5.5 x 127 =	699	x 0.3 =	210	
				210	
Volume of Concrete				=	210 / 27 = 8
Contaminated Fill					
*A	5.5 x 127 =	699	x 0.1 =	70	
B	8 x 17 =	136	x 1.0 =	136	
C	5 x 8 =	40	x 0.5 =	20	
D	8 x 10 =	80	x 0.8 =	64	
E	3 x 11 =	33	x 0.5 =	17	
				307	
Volume of Fill				=	307 / 27 = 11
TOTAL VOLUME - EXTERIOR					= 19

*Note: In order to completely remove the contaminated concrete, 1" to 2" of clean fill must also be removed.

See Appendix Figure 3.3 For Areas

=====

Table 4.2
Estimated Cost of Decontamination and Restoration
DOE ID No. GJ-12224-RS Page 1 of 1

EXTERIOR

Remove/replace concrete sidewalk 635 sf @ \$3.25/sf	\$ 2,064
--	----------

Remove identified residual radioactive material 11 cy @ \$14.50/cy (machine-open)	160
--	-----

Replace topsoil 6 cy @ \$9.50/cy	57
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Replace roadbase 5 cy @ \$11.50/cy	58
---------------------------------------	----

	<hr style="width: 100%;"/> TOTAL EXTERIOR \$ 2,339
--	--

	TOTAL INTERIOR 0
--	------------------

	ACCESS CONTROL 200
--	--------------------

	<hr style="width: 100%;"/> SUBTOTAL \$ 2,539
--	--

	CONTINGENCY @ 5% 127
--	----------------------

	<hr style="width: 100%;"/> SUBTOTAL \$ 2,666
--	--

	CONTRACTOR OVERHEAD & PROFIT @ 40% 1,066
--	--

	<hr style="width: 100%;"/> GRAND TOTAL \$ 3,732
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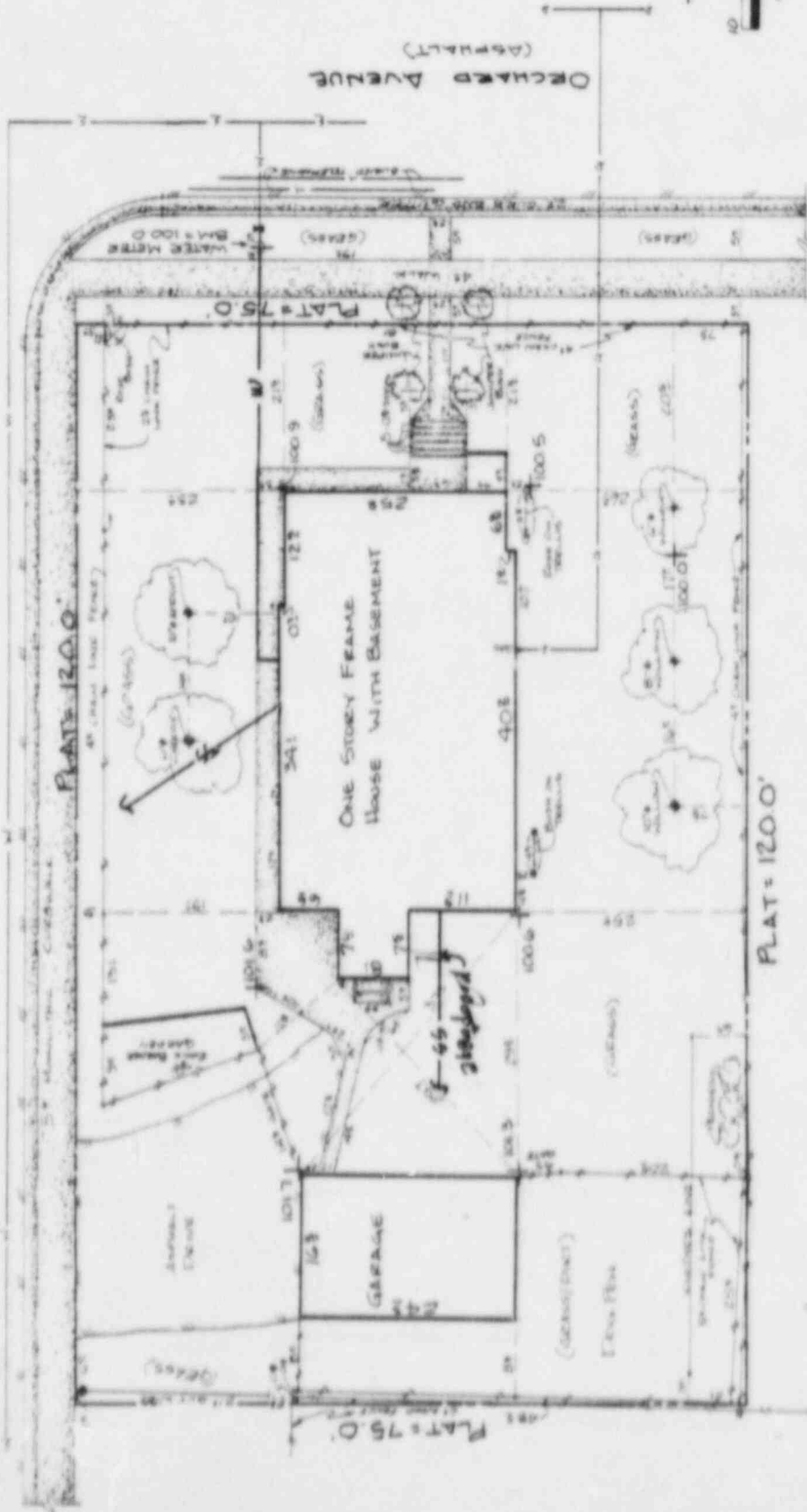
JF082385
REAL2224/REA-620/LMR



FIGURE 2.1
VICINITY MAP
GRAND JUNCTION, COLORADO

STATE OF COLORADO
TAILINGS REPOSITORY

North 17th Street
(Asphalt)



BEGINNING N. 0° 01' E. 300 FEET AND EAST 245.0 FEET
FROM THE SOUTHWEST CORNER OF THE E 1/2 S 1/4 5E 1/4 NW 1/4
SECTION 12, T. 15, R. 1 W., U. M., CITY OF GRAND JUNCTION,
MESA COUNTY, COLORADO; THENCE N. 0° 1' E. 120.0 FEET,
THENCE EAST 75.0 FEET, THENCE SOUTH 120.0 FEET, THENCE
WEST 75.0 FEET TO BEGINNING.

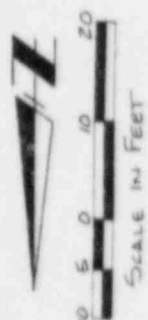
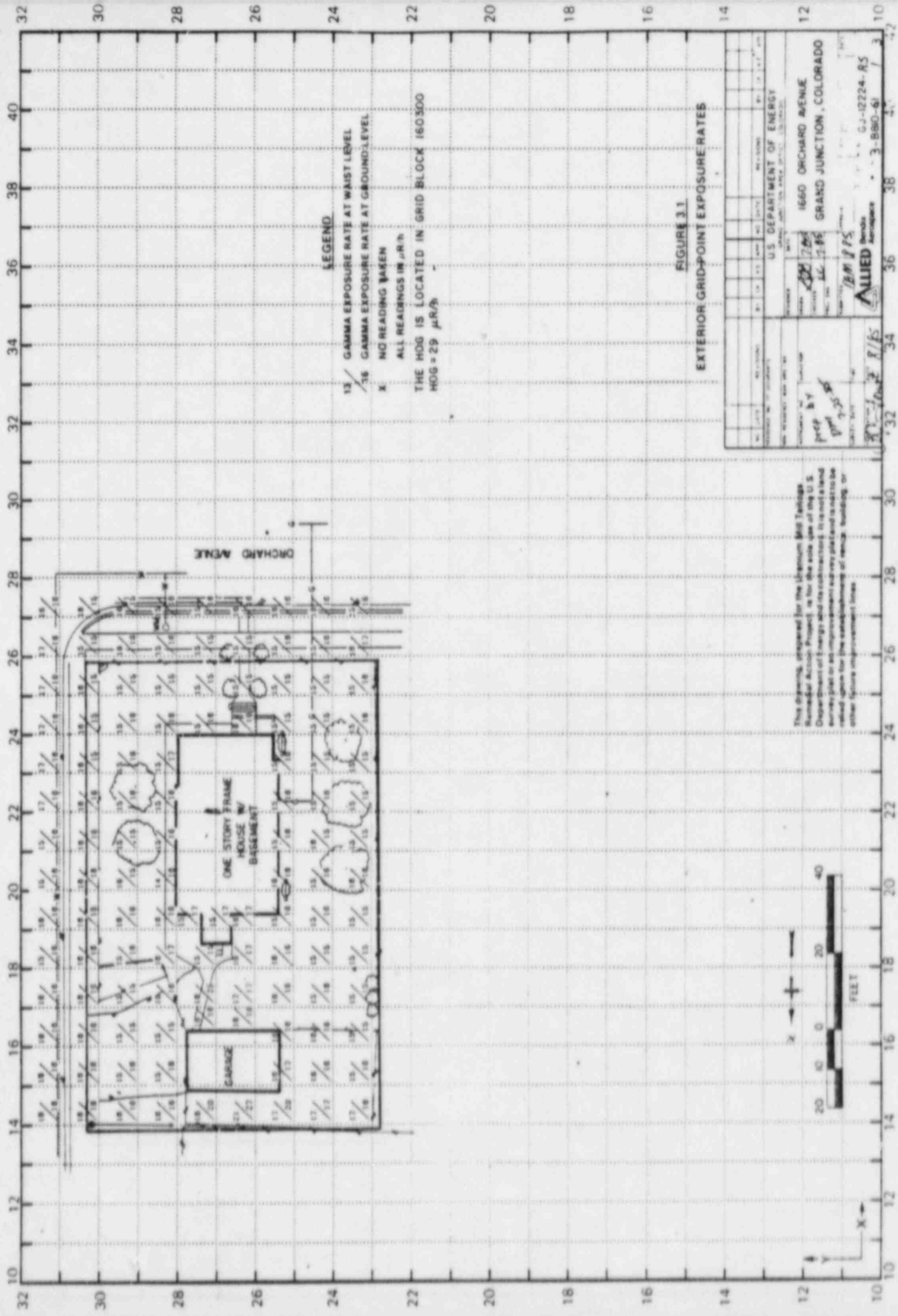


FIGURE 2.2 SITE PLAN

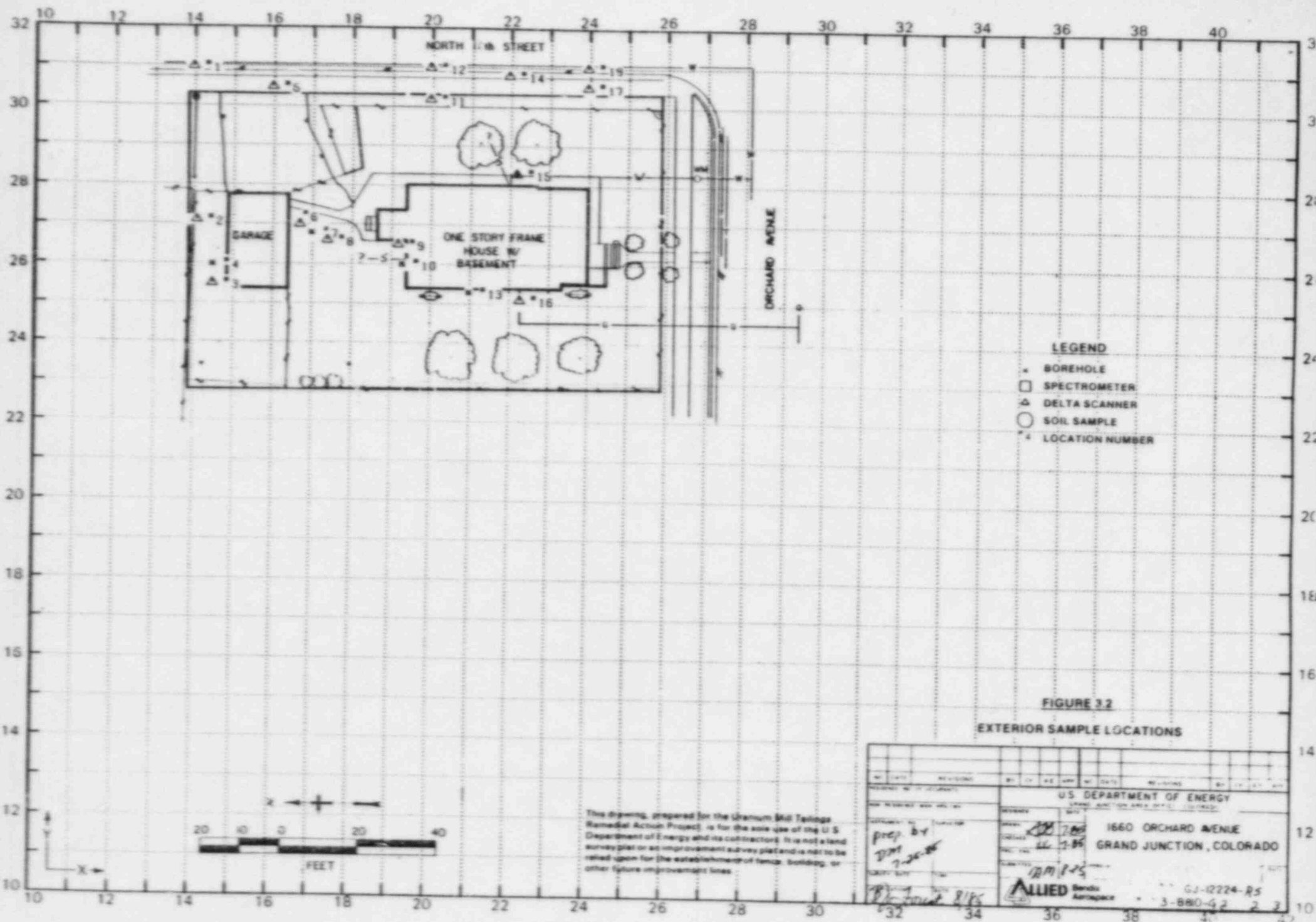
U.S. DEPARTMENT OF ENERGY	DOE NO.	GJ1222485
GRAND JUNCTION PROJECT OFFICE, COLORADO	ADDRESS	1600 ORCHARD AVENUE
		GRAND JUNCTION, COLORADO
DATE: WML 1985	REVISION: RSK 1-10-85	
DRAWING NO. 3, C.B.10 F)		

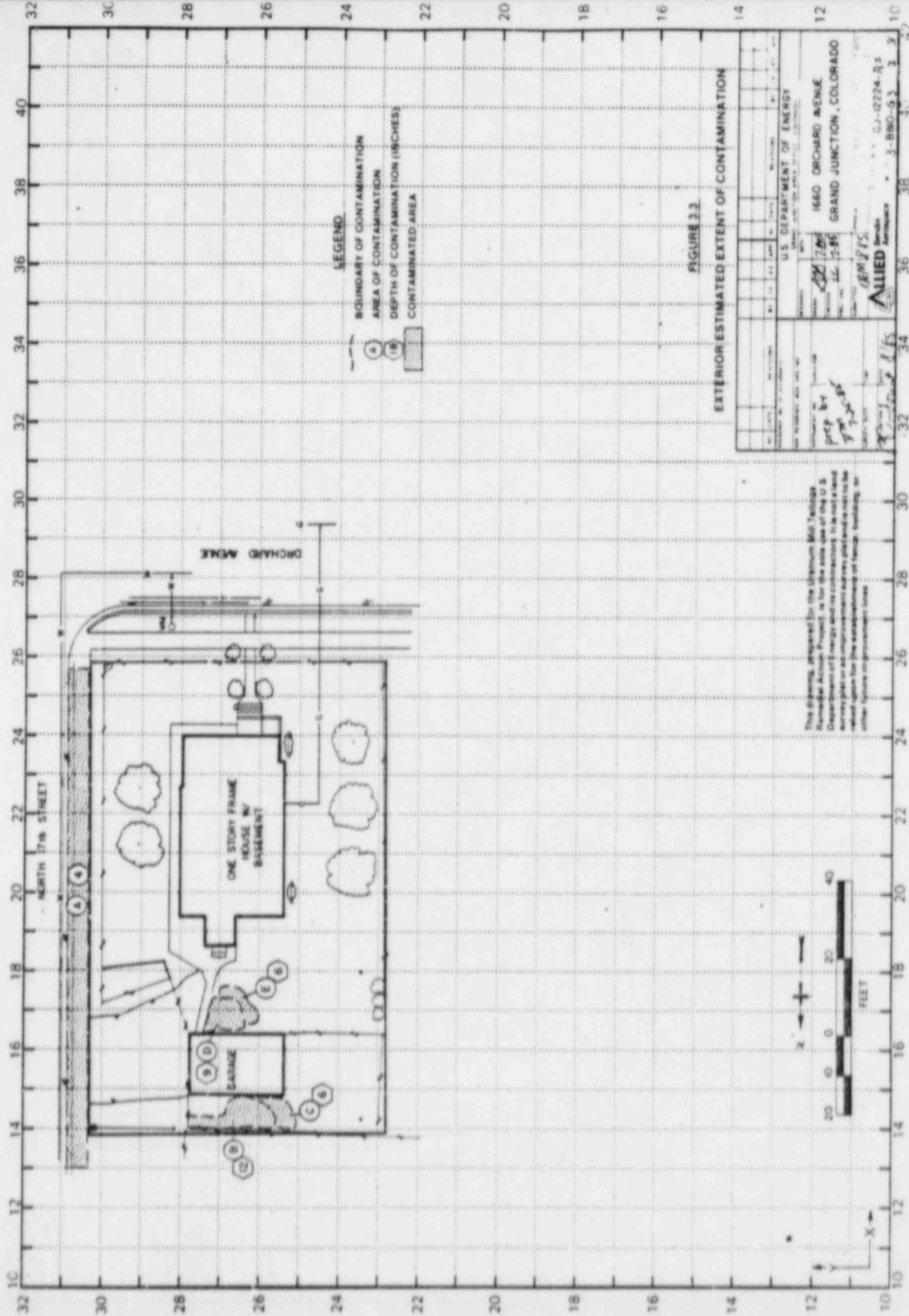
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U.S. DEPARTMENT OF ENERGY	
PROJECT: 1660 ORCHARD AVENUE	DATE: 11/1/85
LOCATION: GRAND JUNCTION, COLORADO	BY: J. J. JONES
SCALE: 1" = 40'	NO. OF SHEETS: 1
APPROVED: J. J. JONES	
ALLIED	
GJ-12224-R5	
3-B80-61	





3/85

DOE ID NO. GJ-12224-RS

Date 7-23-85

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

Official Survey Report

Property Address 1660 Orchard Avenue.

Property Owner F. Marx Jr.

Address of Owner (if different from above) Same

Report Prepared By Dave Martz

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 = 29 uR/h

ALLIED Bendix
Aerospace

Bendix Field Engineering Corporation
Grand Junction Operations
Grand Junction, Colorado

Date: July 17, 1985
To: Files
From: Dave Martz
Subject: Team Leader Notes - GJ-12224-RS

Address: 1660 Orchard Avenue

Owner: F. Marx, Jr.

Weather: Cloudy with rain

Team Members

D. Martz (Team Leader)	N. Wallace
R. Herman	M. Duran
M. Dexter	D. Bell
L. Kula	

Instruments

See Operational Check sheet

A review of Colorado Department of Health (CDH) and Oak Ridge National Laboratory (ORNL) data indicates contamination located north of the garage and the city sidewalk on the east property line. ORNL data also indicated the concrete used for the city sidewalk is contaminated. CDH data indicates the garage area has been cleaned up prior to remodeling of the garage in 1973.

The gas, water, and sewer lines were investigated with boreholes and deltas.

Team Leader Notes
Dave Martz
GJ-12224-RS
July 17, 1985
Page 2

An abandoned sewer line exiting the primary structure on the north was checked with a borehole at Grid Location 193260. The active sewer line exits on the east side of the primary structure, close to where the water lines comes in.

The contaminated city sidewalk continues onto the property to the north. Spillover data was not generated because the spillover is just the sidewalk.

All personnel were scanned and found free of contamination.

Revisit

Date: August 5, 1985

I returned to collect several delta readings on the city sidewalks, east of the property. All available data indicates that the concrete is contaminated.

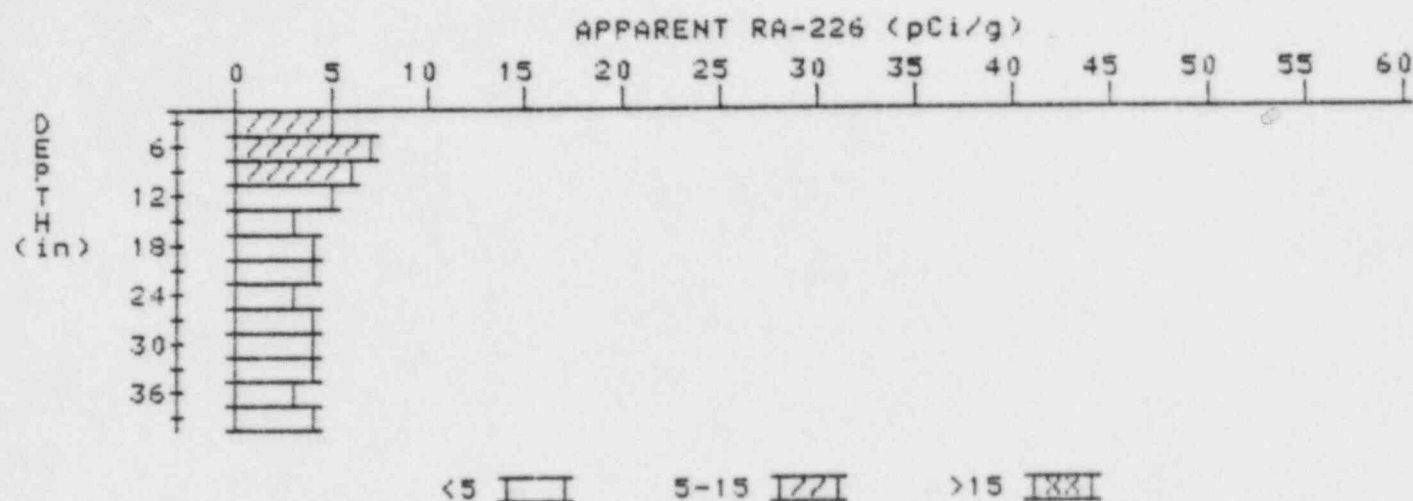
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

4

PROPERTY NUMBER: GJ-12224-RS

HOLE NUMBER: 4

LOCATION: 145260



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
=====	=====	=====
3	5.2	5.2
6	5.6	7.0
9	5.2	5.6
12	4.6	4.8
15	3.9	2.8
18	3.8	3.8
21	3.7	3.7
24	3.6	3.4
27	3.6	3.6
30	3.6	3.6
33	3.6	3.8
36	3.5	3.3
39	3.5	3.8

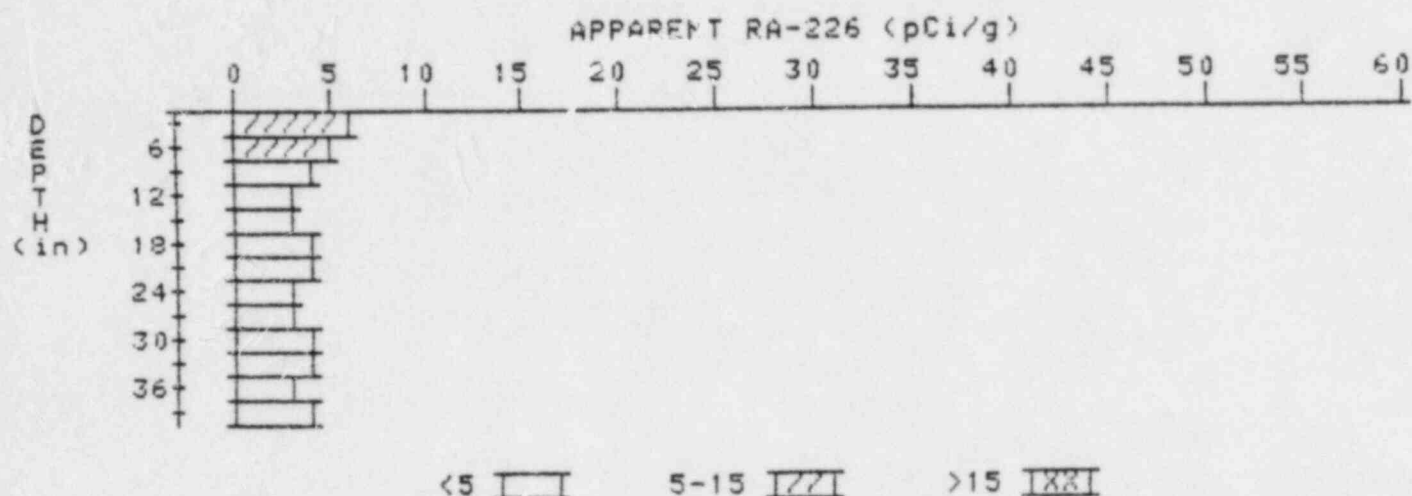
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

7

PROPERTY NUMBER: GJ-12224-RS

HOLE NUMBER: 7

LOCATION: 170268



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	6.2	6.2
6	5.2	5.0
9	4.3	3.6
12	3.8	3.4
15	3.5	3.0
18	3.5	3.5
21	3.5	3.7
24	3.4	3.2
27	3.4	3.2
30	3.5	3.5
33	3.6	3.8
36	3.6	3.4
39	3.7	3.7

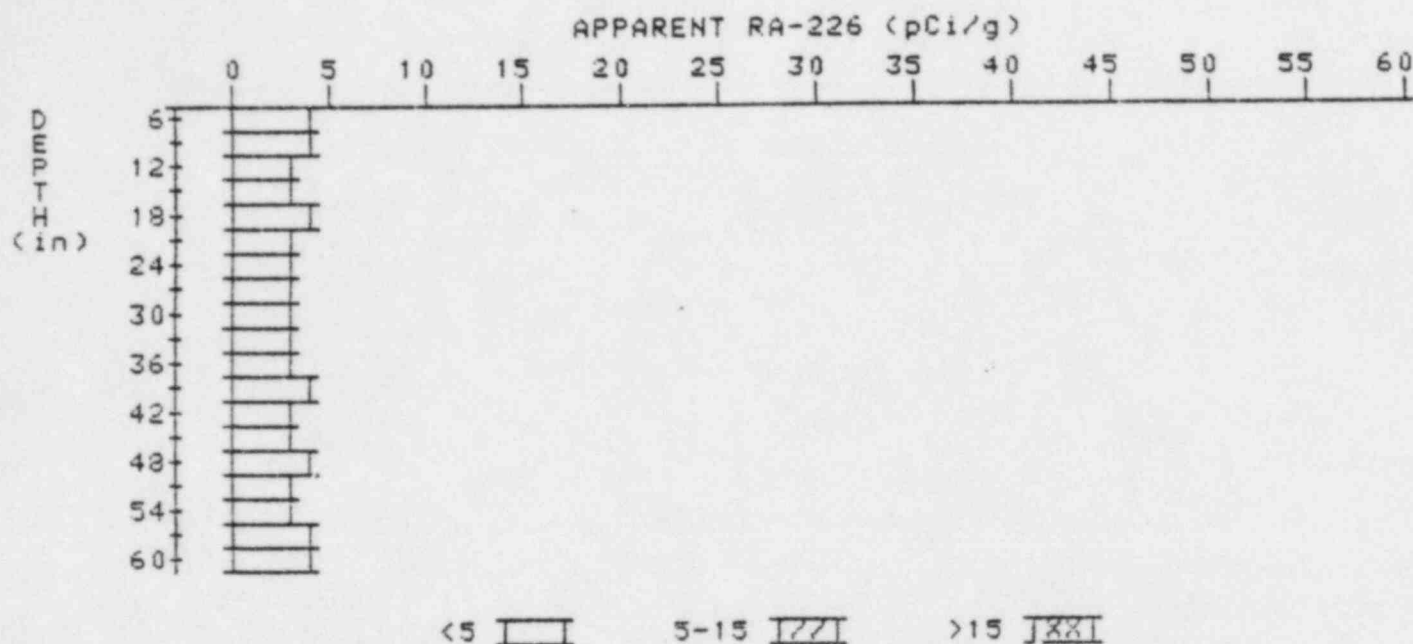
APPARENT RADIUM-226 CONCENTRATION 10

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-12224-RS

HOLE NUMBER: 10

LOCATION: 193260



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
6	3.5	3.5
9	3.5	3.9
12	3.3	3.1
15	3.2	2.8
18	3.3	3.7
21	3.2	3.0
24	3.2	3.2
27	3.2	3.2
30	3.2	3.4
33	3.1	2.9
36	3.1	2.9
39	3.2	3.6
42	3.1	2.7
45	3.2	3.0
48	3.4	3.8
51	3.4	3.4
54	3.4	3.2
57	3.5	3.7

60

3.5

3.5

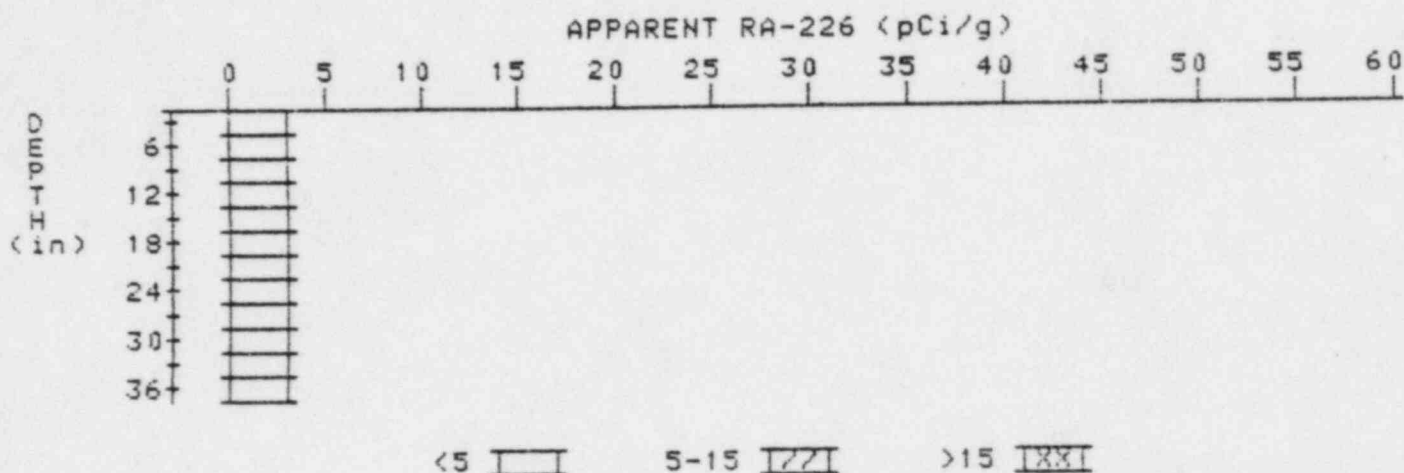
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

13

PROPERTY NUMBER: GJ-12224-RS

HOLE NUMBER: 13

LOCATION: 210253

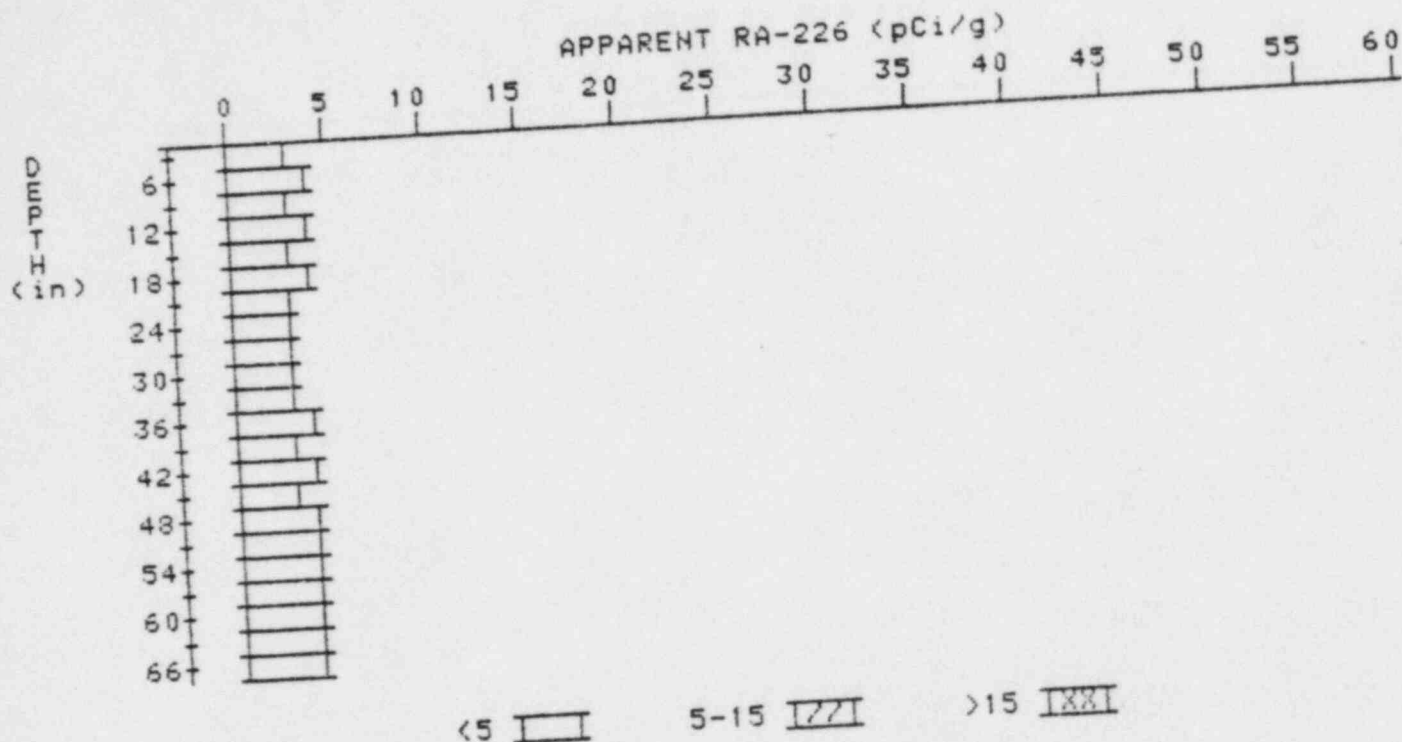


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.8	2.8
6	2.9	2.9
9	3.0	3.0
12	3.1	3.3
15	3.1	3.1
18	3.1	2.9
21	3.2	3.4
24	3.2	3.0
27	3.3	3.5
30	3.3	3.3
33	3.3	3.3
36	3.3	3.3

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

15

PROPERTY NUMBER: GJ-12224-RS
HOLE NUMBER: 15
LOCATION: 222293



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.0	3.0
6	3.2	3.6
9	3.2	3.0
12	3.3	3.7
15	3.2	2.8
18	3.3	3.7
21	3.2	3.0
24	3.2	3.4
27	3.1	2.7
30	3.2	3.2
33	3.3	3.3
36	3.4	3.6
39	3.4	3.2
42	3.5	3.9
45	3.4	2.9
48	3.6	3.8

51
54
57
60
63
66

3.7
3.7
3.7
3.8
3.9
3.8

3.9
3.7
3.5
3.8
4.3
3.8

