

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-12297-RS
ADDRESS: 2871 ORCHARD AVENUE

JULY 1985

FOR

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT OFFICE

ALBUQUERQUE OPERATIONS OFFICE

DEPARTMENT OF ENERGY

BY

BENDIX FIELD ENGINEERING CORPORATION
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APPROVED BY

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DATE

July 29, 1985

REAL2297:REA-612

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PDR WASTE PDR
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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-12297-RS, is a single-family residence located at 2871 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 found within the legal property boundaries 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, 47 cu. yd.; interior, 0 cu. yd.

Area A is not included in this remedial action, as discussed in Section 4.0 of this REA.

Estimated cost to perform remedial action, including dislocation when applicable, is \$2,082. Remedial action on this property will take approximately 6 days to complete.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 2871 Orchard Avenue, Grand Junction, Colorado

Zoning: Residential (RSF-8)

Lot Size: Approximately 12,375 sf (0.28 acres)

Legal Description: Beginning 396 Feet East of the Northwest Corner of the NE 1/4 NW 1/4 SE 1/4 Section 7, T1S R1E, UM, Thence East 75 feet, Thence South 165 feet, Thence West 75 feet, Thence North to Beginning, City of Grand Junction, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 5 mile(s) 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:	Orchard Avenue
South:	Single-family residence
East:	Single-family residence
West:	Church

2.2 Existing Facilities and Structures

Primary Structure:

Type:	Single-story residence
Size:	Approximately 840 sf
Construction Date:	1955
Construction:	Wood-frame
Foundation:	Concrete wall on spread footing
Footing Depth:	Not determined
Basement:	None
Crawl Space:	Yes - under entire living area
Condition:	Good

Other Structures:

Type:	Garage
Size:	Approximately 544 sf
Construction:	Wood-frame
Foundation:	Monolithic concrete slab-on-grade
Condition:	Good

Type:	Shed
Size:	Approximately 72 sf
Construction:	Wood-frame
Foundation:	None (mudsill)
Condition:	Poor

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-12297-RS on June 12, 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 east and south of the primary structure and south of the garage.

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): 59 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: 13 to 16 uR/h
Highest Inside Gamma Reading (HIG): 16 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)

Determined by CDH: 0.004 gross working level (WL). No additional 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 that contain identified residual radioactive materials are:

- (Area A) Surface Material: roadbase
Direction From Primary Structure: north
Other Directions: south of Orchard Avenue
Total Depth of Contamination: 66 inches
Comments: A utility line is buried in contaminated material. This area is not included for remedial action.
Approximate Square Footage: 648
- (Area B) Surface Material: lawn
Direction From Primary Structure: north
Other Directions: south of Orchard Avenue
Total Depth of Contamination: 6 inches
Approximate Square Footage: 30
- (Area C) Surface Material: lawn
Direction From Primary Structure: north
Other Directions: around the water meter
Total Depth of Contamination: 45 inches
Comments: The water meter is embedded with contaminated material.
Approximate Square Footage: 56
- (Area D) Surface Material: lawn
Direction From Primary Structure: northeast, south, and east
Total Depth of Contamination: 12 inches
Comments: This is a trench built to house the water and sewer lines.
Approximate Square Footage: 528
- (Area E) Surface Material: gravel
Direction From Primary Structure: south
Other Directions: northwest of the garage
Total Depth of Contamination: 6 inches
Approximate Square Footage: 16
- (Area F) Surface Material: soil
Direction From Primary Structure: southeast
Other Directions: east of the garage
Total Depth of Contamination: 6 inches
Approximate Square Footage: 24

- (Area G) Surface Material: soil
Direction From Primary Structure: southeast
Other Directions: southeast of the garage
Total Depth of Contamination: 6 inches
Approximate Square Footage: 30
- (Area H) Surface Material: soil
Direction From Primary Structure: south
Other Directions: south of the garage
Total Depth of Contamination: 6 inches
Approximate Square Footage: 151
- (Area I) Surface Material: soil
Direction From Primary Structure: south
Other Directions: south and southwest of the garage
Total Depth of Contamination: 6 inches
Approximate Square Footage: 310
- (Area J) Surface Material: soil
Direction From Primary Structure: south
Other Directions: south of the garage
Total Depth of Contamination: 12 inches
Approximate Square Footage: 260

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-12297-RS, includes removal of all areas within the legal property boundaries 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.

Area A is located beyond the legal property boundaries in the street right-of-way. These areas are associated with a city water line that is bedded in tailings. These areas are not included in the remedial action for this property.

If the Department of Energy determines that the water line deposits should be removed, it is recommended that Area A be removed as part of a remedial action project GJ-97004-OT. This project would be performed in cooperation with the City of Grand Junction if water line improvements are made in this area. Remedial action project GJ-97004-OT would be the most efficient and cost-effective method of tailings removal. It would allow for identification of tailings involvement of other adjacent properties along the utility and their removal under a single subcontract utilizing a utility subcontractor.

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 \$2,082.

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	Sample Locations
Figure 3.3	Estimated Extent of Contamination

Official Survey Report

Team Leader Notes

Deconvolution Graphs (Apparent Radium-226 Concentration)

Gamma Scan Field Map

Radium Concentrations at Exterior Locations

DOE ID #GJ-12297-RS

2871 Orchard Avenue

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
1	129262	00	DS	2.8		*	South of Orchard Avenue
		03	TC	5.5		*	
		06	TC	6.1		*	DC = 66 inches Based on the deconvolution graph
		09	TC	6.3		*	
		12	TC	7.1		*	
		15	TC	7.9		*	
		18	TC	9.3		*	
		21	TC	10.4		*	
		24	TC	11.1		*	
		27	TC	11.3		*	
		30	TC	11.9		*	
		33	TC	12.9		*	
		36	TC	15.0		*	
		39	TC	17.4		*	
		42	TC	20.8		*	
		45	TC	24.1		*	
		48	TC	26.3		*	
		51	TC	25.9		*	
		54	TC	23.9		*	
		57	TC	21.3		*	
		60	TC	17.8		*	
		63	TC	14.2		*	
		66	TC	11.0		*	
2	135245	00	DS	2.1		*	North of primary structure
3	140275	00	DS	16.2		*	North of the primary structure
		03	TC	4.2		*	
		06	TC	4.2		*	DC = 6 inches Based on all available data
		09	TC	3.9		*	
		12	TC	3.7		*	
		15	TC	3.6		*	
		18	TC	3.5		*	
		21	TC	3.4		*	
		24	TC	3.5		*	
		27	TC	3.5		*	
		30	TC	3.5		*	
		33	TC	3.5		*	

Radium Concentrations at Exterior Locations

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
4	145275	00	DS	26.5		*	
		03	TC	13.3		*	North of water meter
		06	TC	11.3		*	
		09	TC	8.1		*	
		12	TC	6.5		*	DC = 45 inches Based on the deconvolution graph
		15	TC	5.7		*	
		18	TC	5.3		*	
		21	TC	5.3		*	
		24	TC	5.7		*	
		27	TC	6.3		*	
		30	TC	7.2		*	
		33	TC	8.0		*	
		36	TC	8.3		*	
		39	TC	7.3		*	
		42	TC	5.9		*	
		45	TC	5.0		*	
		48	TC	4.4		*	
		51	TC	4.1		*	
		54	TC	3.9		*	
5	161291	00	DS	1.9		*	East property line
		03	TC	4.7		*	
		06	TC	4.8		*	DC = 0 inches
		09	TC	4.3		*	
		12	TC	3.8		*	
		15	TC	3.6		*	
		18	TC	3.6		*	
		21	TC	3.6		*	
		24	TC	3.6		*	
		27	TC	3.7		*	
		30	TC	3.7		*	
6	170240	00	DS	1.4		*	Gas line
		26	DS	1.4		*	
7	170270	00	DS	12.0		*	Northeast property
8	173257	00	DS	<1.0		*	North of primary structure
9	175275	00	DS	11.1		*	Northeast of primary structure

Radium Concentrations at Exterior Locations

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
10	185273	00	DS	1.8		*	East of primary structure
11	189234	00	DS	1.2		*	West of the primary structure DC = 0 inches
		03	TC	3.2		*	
		06	TC	3.6		*	
		09	TC	3.7		*	
		12	TC	3.7		*	
		15	TC	3.7		*	
		18	TC	3.7		*	
		21	TC	3.7		*	
		24	TC	3.8		*	
		27	TC	3.8		*	
		30	TC	3.8		*	
		33	TC	3.9		*	
		36	TC	4.0		*	
		39	TC	3.9		*	
		42	TC	3.9		*	
		45	TC	3.9		*	
		48	TC	3.9		*	
		51	TC	4.0		*	
		54	TC	3.9		*	
12	191277	00	DS	34.1		*	East of the primary structure DC = 12 inches Based on the deconvolution graph
		03	TC	21.2		*	
		06	TC	15.7		*	
		09	TC	10.2		*	
		12	TC	6.8		*	
		15	TC	5.2		*	
		18	TC	4.5		*	
		21	TC	4.2		*	
		24	TC	4.1		*	
		27	TC	4.2		*	
		30	TC	4.2		*	
13	200260	00	DS	1.2		*	South of the primary structure
14	205260	00	DS	42.6		*	Sewer line DC = 12 inches Based on the deconvolution graph
		03	TC	21.8		*	
		06	TC	19.3		*	
		09	TC	12.7		*	
		12	TC	8.4		*	

Radium Concentrations at Exterior Locations

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2871 Orchard Avenue

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
14	205260	15	TC	6.1		*	
		18	TC	5.2		*	
		21	TC	4.7		*	
		24	TC	4.4		*	
		27	TC	4.3		*	
		30	TC	4.1		*	
		33	TC	4.0		*	
		36	TC	3.9		*	
		39	TC	3.9		*	
		42	TC	3.9		*	
		45	TC	4.0		*	
		48	TC	3.9		*	
15	205275	00	DS	14.5		*	South of primary
		06	DS	1.9		*	structure in garage
16	234245	00	DS	9.4		*	In driveway
		06	DS	1.7		*	
17	255285	00	DS	10.0		*	East of garage
		03	TC	4.0		*	
		06	TC	4.2		*	DC = 6 inches
		09	TC	4.0		*	Based on all
		12	TC	3.9		*	available data
		15	TC	3.8		*	
		18	TC	3.7		*	
		21	TC	3.7		*	
18	264255	00	DS	4.5		*	South of garage
		06	DS	2.6		*	
		12	DS	<1.0		*	
19	265265	03	TC	7.0		*	South of garage
		06	TC	7.3		*	
		09	TC	5.8		*	
		12	TC	4.6		*	
		15	TC	4.2		*	DC = 12 inches
		18	TC	3.9		*	Based on the
		21	TC	3.8		*	deconvolution graph
		24	TC	3.8		*	
		27	TC	3.8		*	
		30	TC	3.8		*	

Radium Concentrations at Exterior Locations

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
20	265283	00	DS	3.8		*	Southeast of garage
		06	DS	2.7		*	
		12	DS	<1.0		*	
21	275265	00	DS	2.9		*	South of the garage
		03	TC	4.4		*	
		06	TC	4.6		*	DC = 6 inches Based on all available data
		09	TC	4.1		*	
		12	TC	3.9		*	
		15	TC	3.7		*	
		18	TC	3.6		*	
		21	TC	3.7		*	
		24	TC	3.9		*	
		27	TC	3.8		*	
		30	TC	3.9		*	
22	283258	00	DS	7.4		*	South of the garage
		06	DS	2.5		*	
		12	DS	1.2		*	
23	283262	00	DS	8.4		*	South of the garage
		03	TC	7.9		*	
		06	TC	8.3		*	DC = 12 inches Based on the deconvolution graph
		09	TC	6.6		*	
		12	TC	5.1		*	
		15	TC	4.4		*	
		18	TC	4.0		*	
		21	TC	4.0		*	
		24	TC	3.9		*	
		27	TC	3.9		*	
		30	TC	4.0		*	

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

Notes: DC = Depth of Contamination
* = No Soil Sample Taken
[n] = Reading Taken n-Inches
Above Floor or Ground
Date of Survey = 06-12-85
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)
Primary Structure	*	*	*	*	13-16	*
Garage	*	*	*	*	13-16	*
Shed	*	*	*	*	15-16	*

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* A walking gamma scan was performed to confirm the absence of interior contamination at this location.

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-12297-RS

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<u>AREA</u>	<u>CALCULATIONS(ft)</u>	<u>SF</u>	<u>DEPTH(ft)</u>	<u>CF</u>	<u>CUBIC YARDS</u>
EXTERIOR					
B	5 x 6 =	30	x 0.5 =	15	
C	7 x 8 =	56	x 3.8 =	213	
D	57 x 6 =	342			
	9 x 5 =	45			
	6 x 21 =	126			
	3 x 5 =	15			
		<hr/> 528	x 1.0 =	528	
E	4 x 4 =	16	x 0.5 =	8	
F	6 x 4 =	24	x 0.5 =	12	
G	6 x 5 =	30	x 0.5 =	15	
H	21 x 4 =	84			
	5 x 5 =	25			
	7 x 6 =	42			
		<hr/> 151	x 0.5 =	76	
I	20 x 11 =	220			
	11 x 6 =	66			
	6 x 4 =	24			
		<hr/> 310	x 0.5 =	155	
J	12 x 10 =	120			
	5 x 4 =	20			
	12 x 10 =	120			
		<hr/> 260	x 1.0 =	260	
TOTAL VOLUME - EXTERIOR				= 1,282	= 1,282/27 = 47

Note: Calculations are based on deposits found within the legal property boundaries.

See Appendix Figure 3.3 For Areas

Table 4.2
Estimated Cost of Decontamination and Restoration
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EXTERIOR

Remove identified residual radioactive material 47 cy @ \$14.50/cy (machine-open)	\$ 682
Replace areas with topsoil 40 cy @ \$9.50/cy	380
Replace areas with compacted roadbase 7 cy @ \$11.50/cy	81
Replace areas with sod 614 sf @ \$.20/sf	123
	<hr/>
TOTAL EXTERIOR	\$ 1,266
TOTAL INTERIOR	0
ACCESS CONTROL	150
	<hr/>
SUBTOTAL	\$ 1,416
CONTINGENCY @ 5%	71
	<hr/>
SUBTOTAL	\$ 1,487
CONTRACTOR OVERHEAD & PROFIT @ 40%	595
	<hr/>
GRAND TOTAL	\$ 2,082

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FAV072585
REAL2297/REA-612/LMR

BEGINNING 396.0 FEET EAST OF THE NORTHWEST CORNER OF THE NE $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$ SECTION 7, T. 15, R. 1E., U.M., CITY OF GRAND JUNCTION, COLORADO; THENCE EAST 75.0 FEET, THENCE SOUTH 105.0 FEET, THENCE WEST 75.0 FEET, THENCE NORTH TO BEGINNING.

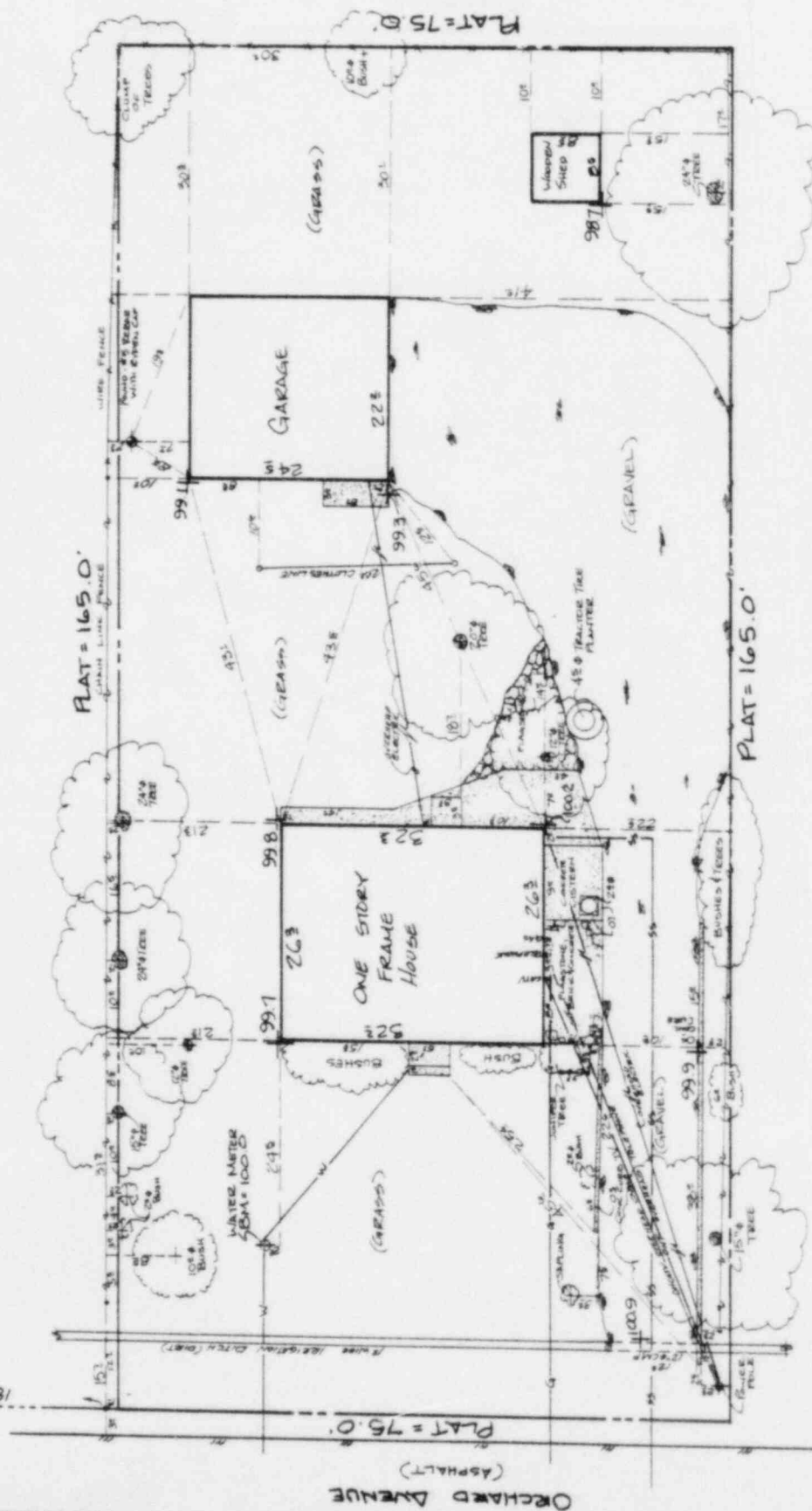
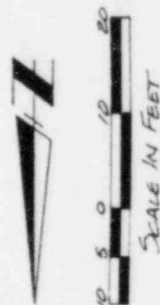
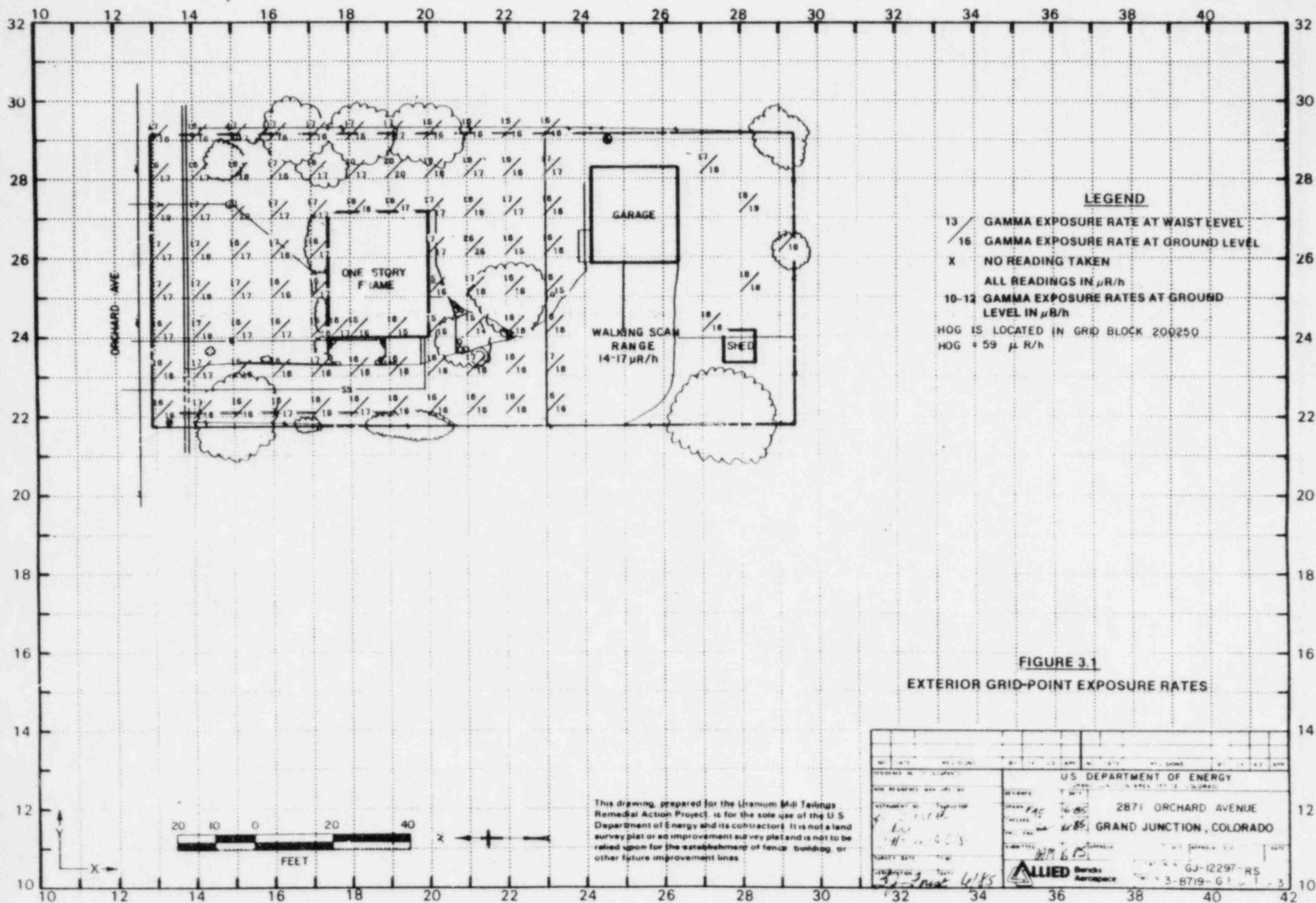


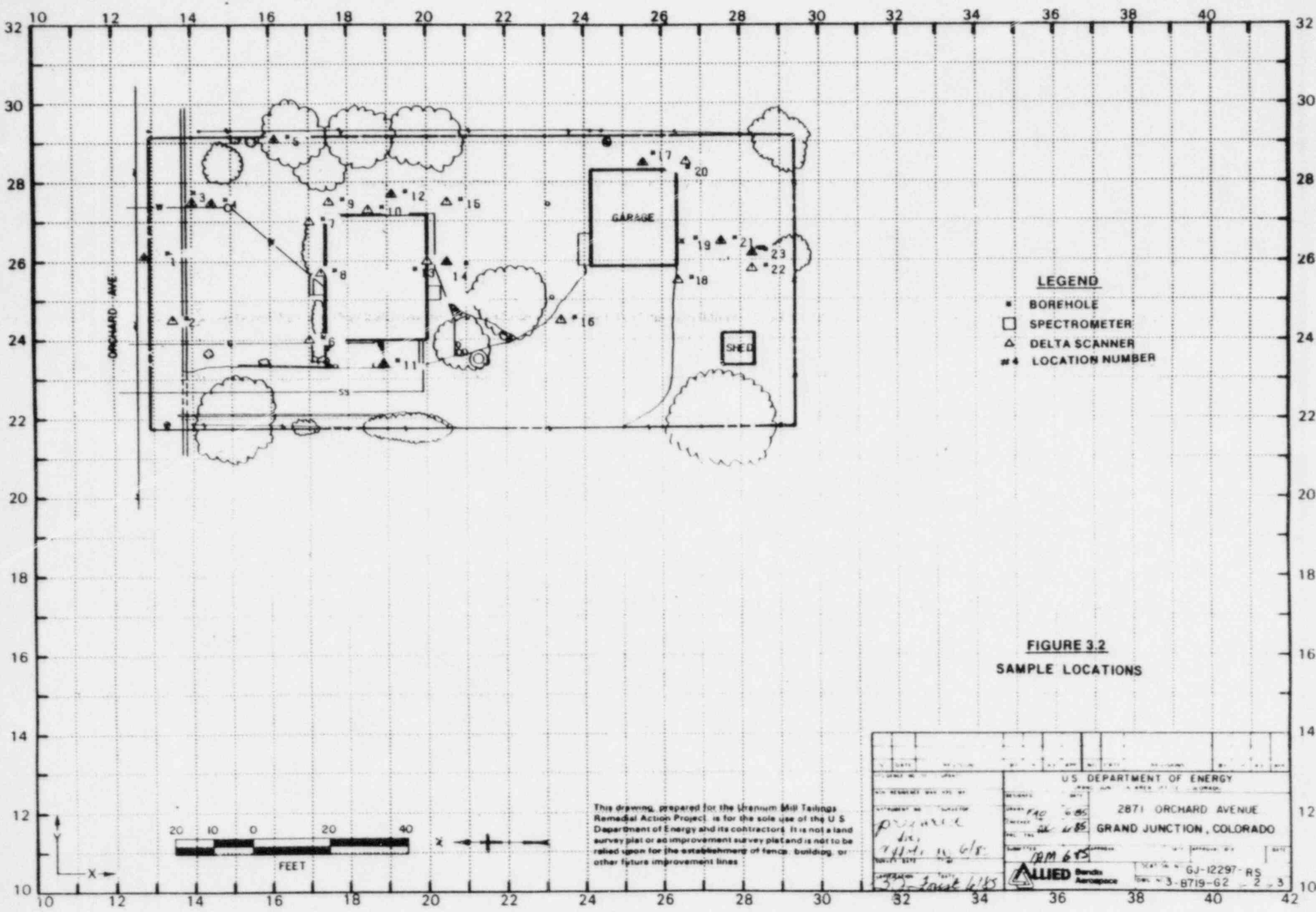
FIGURE 2.2 SITE PLAN

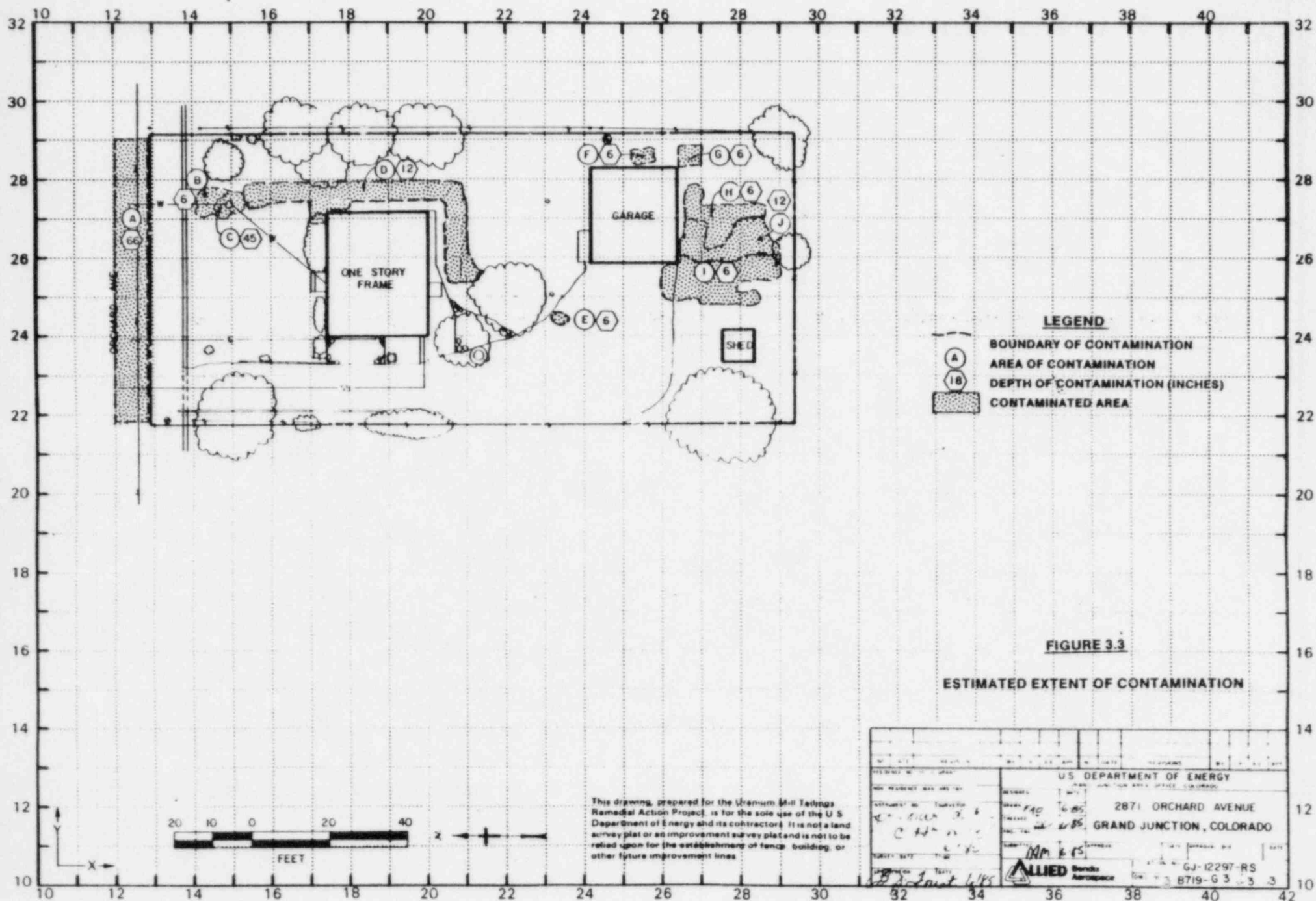
U.S. DEPARTMENT OF ENERGY
GRAND JUNCTION PROJECT OFFICE, COLORADO
ADDRESS: 2811 ORCHARD AVENUE
GRAND JUNCTION, COLORADO
BURNING NO. 3-CT (RAFT)
BURNING NO. 6-CT (RAFT)
DATE: 10-1-65
SHEET: 1 OF 1

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.









3/85

DOE ID NO. GJ-12297-RS Date 6-19-85

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

Official Survey Report

Property Address 2871 Orchard Avenue
Property Owner Irene DeRose
Address of Owner (if different from above) 3120 F Rd, Grand Jct., Colo
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/CDR
J. Themelis, Mgr. UMTRA Proj. Off.

EIG = 16 uR/h
EOG = 59 uR/h

ALLIED Bendix
Aerospace

Bendix Field Engineering Corporation
Grand Junction Operations
Grand Junction, Colorado

Date: June 12, 1985

To: Files

From: Carol Holmes

Subject: Team Leader Notes - GJ-12297-RS

Address: 2871 Orchard Avenue

Owner: Irene E. Derosé

Weather: Hot and dry.

Team Members

C. Holmes (Team Leader)
S. Garcia
R. Herman
G. Meeker

D. Dow
M. Duran
D. Krabacher

Instruments

Delta Scintillometer: C-3938, C-3936, C-3943
Total Count: C-3956
Crutch Scintillometer: C-1020, C-1236, C-1136

Gridding was only performed 30-feet around the primary structure and directly south of the garage, where contamination was found.

As a result of the water and sewer lines being incorrectly drawn-in on the maps, the water line was broken northeast of the house during augering.

It appears that a trench was built on the northeast and south sides of the house, where it houses both sewer and water lines.

Team Leader Notes
Carol Holmes
GJ-12297-RS
June 12, 1985
Page 2

There were slightly elevated readings along the south side of Orchard Avenue. There is probably a deep facility line or drain that is embedded in contaminated material.

The downhole scintillometer was used for boreholes at grid locations 200230 (which was suppose to be the sewer line), 205260 (foundation/footing), and 185273 (foundation/footing). All three boreholes were not contaminated. See data sheet for exact information.

There were no other complications.

Date: June 27, 1985

There is additional information about an area along Orchard Avenue, north of the primary structure, that should be included in the team leader notes.

Borehole number 1, along the street shows contamination to a depth of 66 inches. A 10-foot by 70-foot area was called because of another property on the same side of the street and a few properties east where deep contamination was also discovered. As mentioned in the previous pages, it is probably a deep utility line or drain that extends all along the south side of Orchard Avenue in this area.

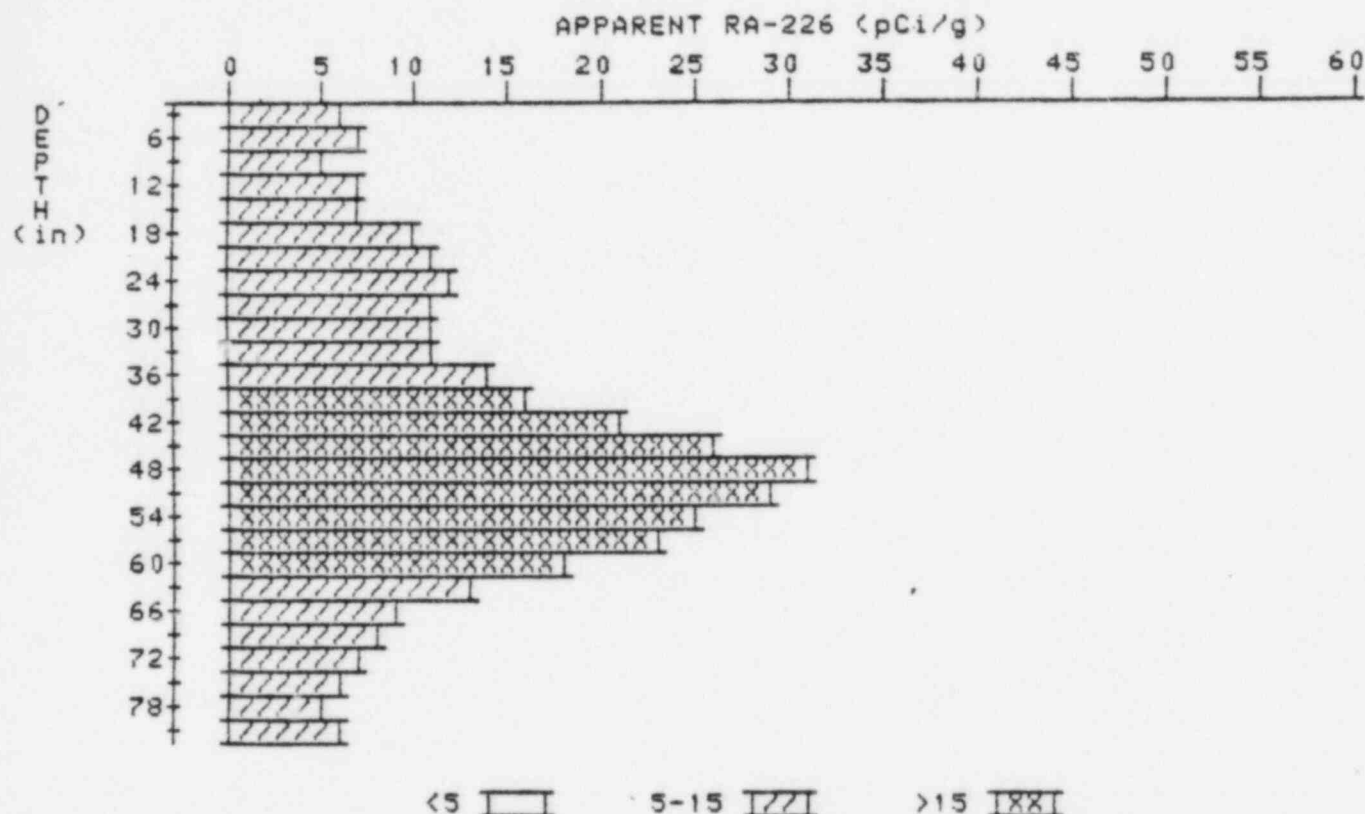
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

1

PROPERTY NUMBER: GJ-12297-RS

HOLE NUMBER: 1

LOCATION: 129262



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.5	5.5
6	6.1	6.8
9	6.3	5.2
12	7.1	7.1
15	7.9	6.8
18	9.3	9.8
21	10.4	11.1
24	11.1	12.0
27	11.3	10.6
30	11.9	11.2
33	12.9	10.9
36	15.0	14.5

39	17.4	15.6
42	20.8	21.0
45	24.1	26.1
48	26.3	30.9
51	25.9	28.7
54	23.9	25.0
57	21.3	22.9
60	17.8	18.0
63	14.2	13.5
66	11.0	8.7
69	9.1	8.0
72	7.8	7.3
75	6.8	6.3
78	6.1	5.4
81	5.8	5.8

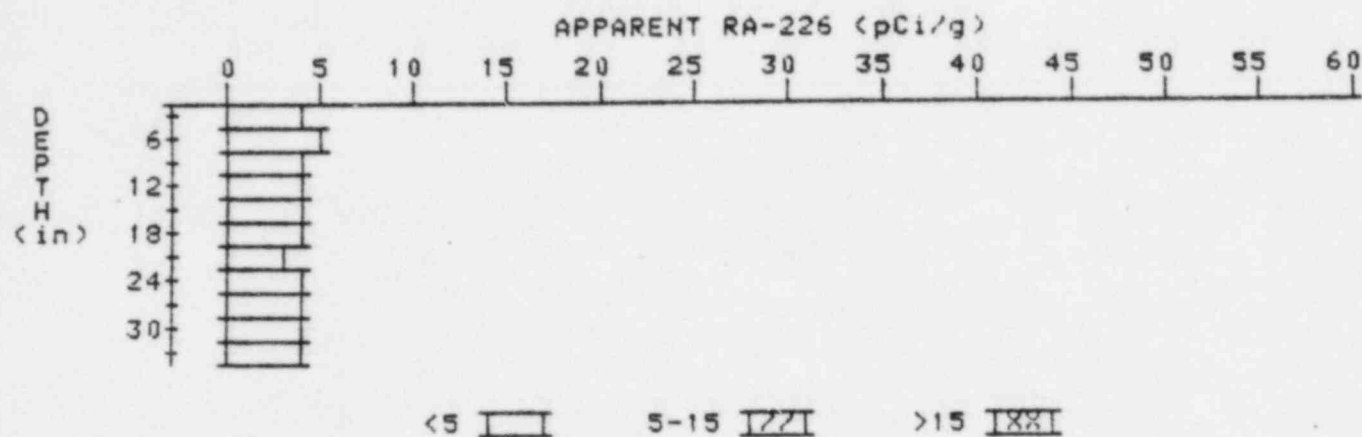
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

3

PROPERTY NUMBER: GJ-12297-RS

HOLE NUMBER: 3

LOCATION: 140275



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.2	4.2
6	4.2	4.7
9	3.9	3.7
12	3.7	3.5
15	3.6	3.6
18	3.5	3.5
21	3.4	3.0
24	3.5	3.7
27	3.5	3.5
30	3.5	3.5
33	3.5	3.5

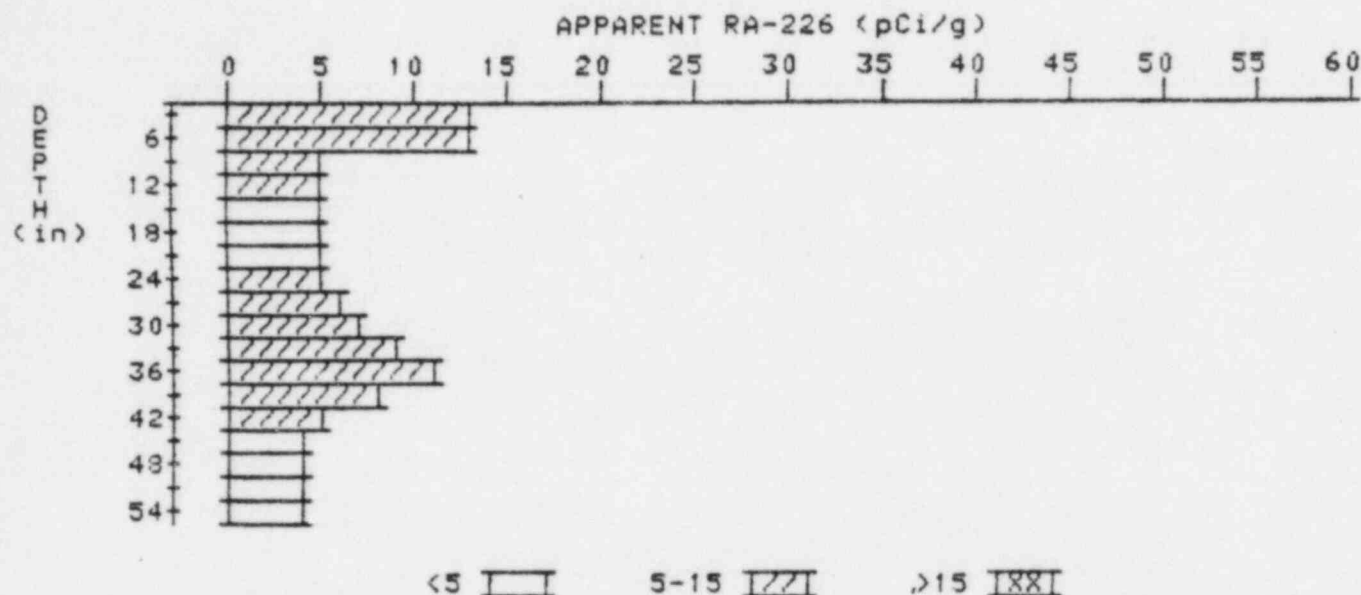
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

4

PROPERTY NUMBER: GJ-12297-RS

HOLE NUMBER: 4

LOCATION: 145275



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	13.3	13.3
6	11.3	13.4
9	8.1	5.3
12	6.5	5.1
15	5.7	5.0
18	5.3	4.6
21	5.3	4.6
24	5.7	5.3
27	6.3	5.8
30	7.2	7.4
33	8.0	8.9
36	8.3	10.6
39	7.3	8.0
42	5.9	5.0
45	5.0	4.5
48	4.4	3.9
51	4.1	3.9
54	3.9	3.9

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

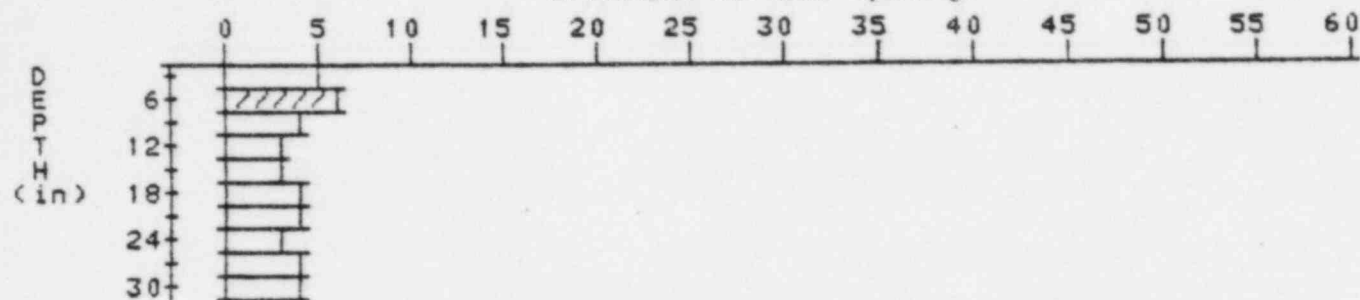
5

PROPERTY NUMBER: GJ-12297-R5

HOLE NUMBER: 5

LOCATION: 161291

APPARENT RA-226 (pCi/g)



<5  5-15  >15 

Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
=====		
3	4.7	4.7
6	4.8	5.9
9	4.3	4.3
12	3.8	3.3
15	3.6	3.2
18	3.6	3.6
21	3.6	3.6
24	3.6	3.4
27	3.7	3.9
30	3.7	3.7

APPARENT RADIUM-226 CONCENTRATION 11

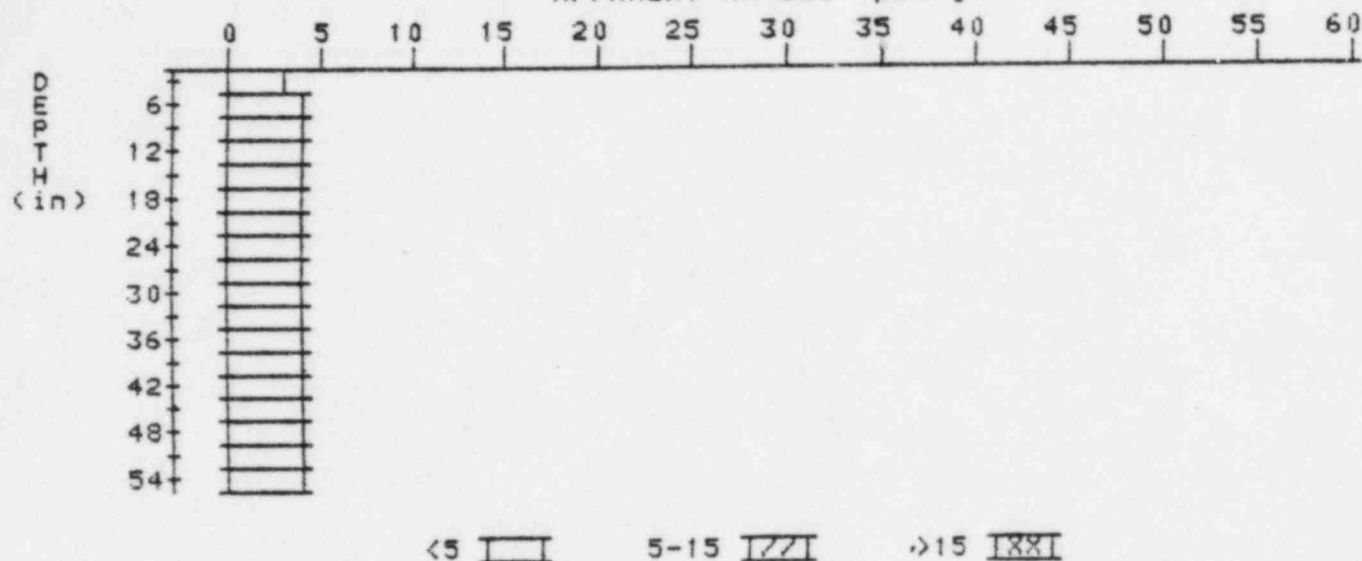
DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-12297-RS

HOLE NUMBER: 11

LOCATION: 189234

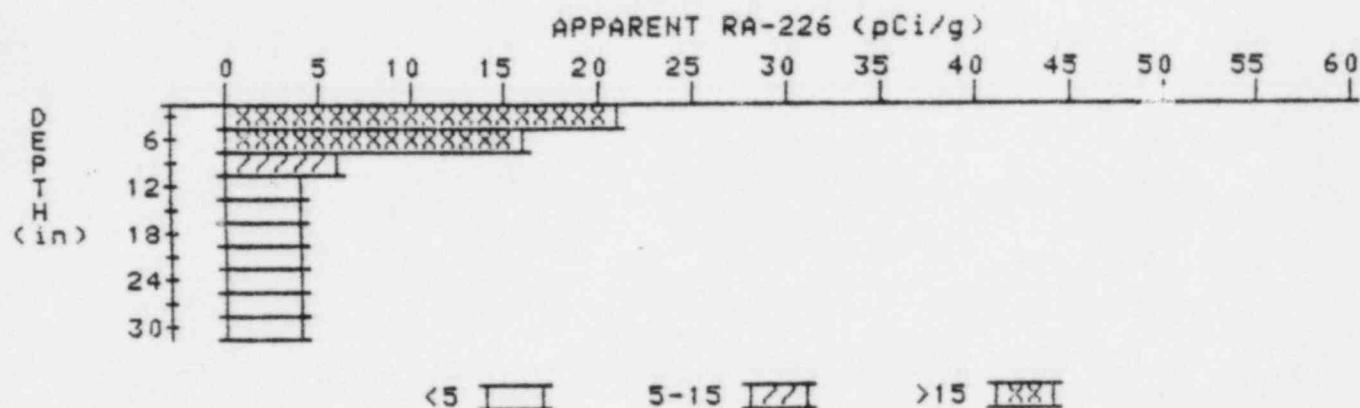
APPARENT RA-226 (pCi/g)



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.2	3.2
6	3.6	4.1
9	3.7	3.9
12	3.7	3.7
15	3.7	3.7
18	3.7	3.7
21	3.7	3.5
24	3.8	4.0
27	3.8	3.8
30	3.8	3.6
33	3.9	3.9
36	4.0	4.4
39	3.9	3.7
42	3.9	3.9
45	3.9	3.9
48	3.9	3.7
51	4.0	4.4
54	3.9	3.9

APPARENT RADIUM-226 CONCENTRATION 12 DECONVOLUTION GRAPH

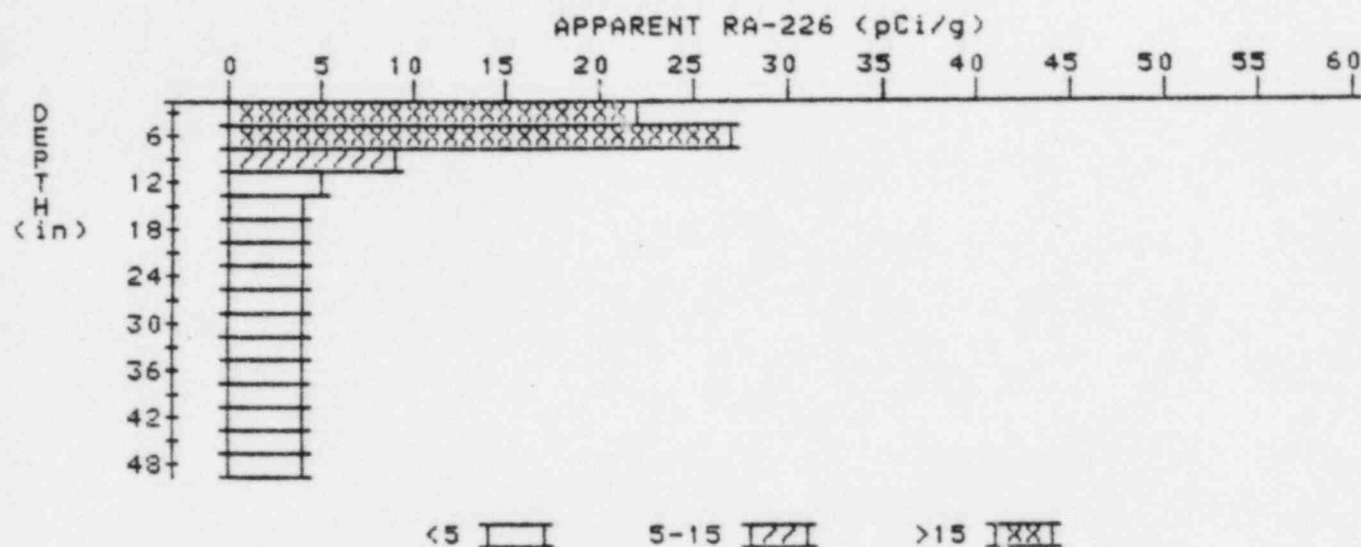
PROPERTY NUMBER: GJ-12297-RS
HOLE NUMBER: 12
LOCATION: 191277



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	21.2	21.2
6	15.7	15.7
9	10.2	6.5
12	6.8	3.6
15	5.2	3.6
18	4.5	3.8
21	4.2	3.8
24	4.1	3.7
27	4.2	4.4
30	4.2	4.2

APPARENT RADIUM-226 CONCENTRATION 14 DECONVOLUTION GRAPH

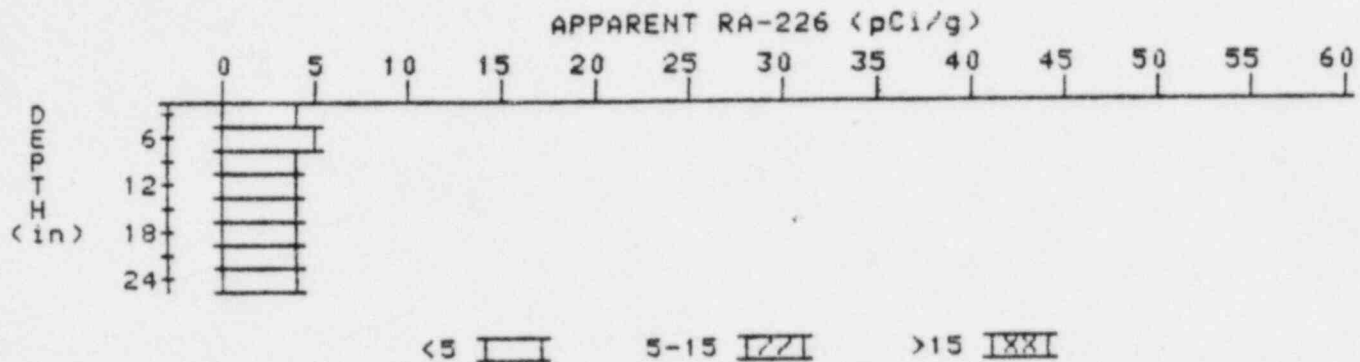
PROPERTY NUMBER: GJ-12297-RS
HOLE NUMBER: 14
LOCATION: 205260



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	21.8	21.8
6	19.3	26.6
9	12.7	8.6
12	8.4	4.8
15	6.1	3.6
18	5.2	4.5
21	4.7	4.3
24	4.4	4.0
27	4.3	4.5
30	4.1	3.9
33	4.0	4.0
36	3.9	3.7
39	3.9	3.9
42	3.9	3.7
45	4.0	4.4
48	3.9	3.9

APPARENT RADIUM-226 CONCENTRATION 17 DECONVOLUTION GRAPH

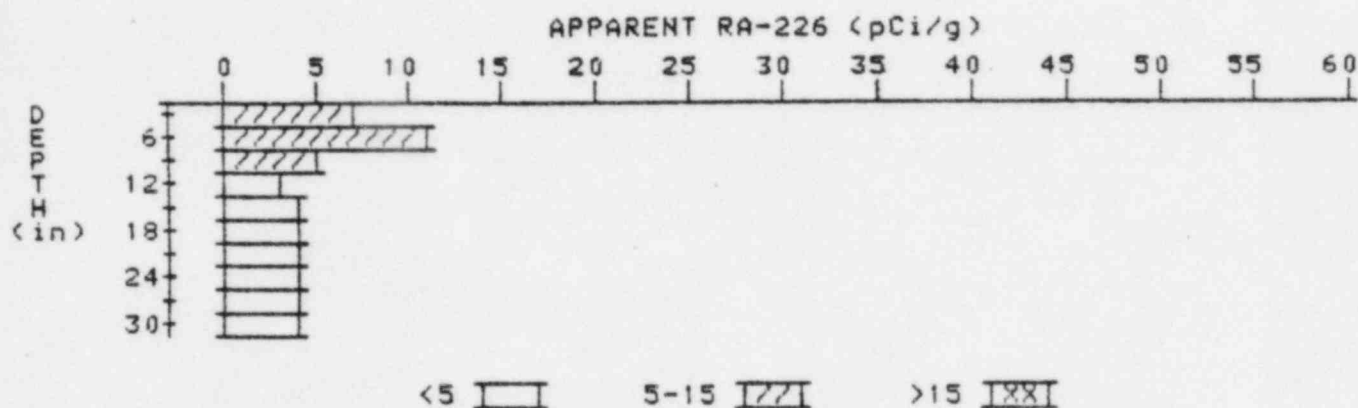
PROPERTY NUMBER: GJ-12297-RS
HOLE NUMBER: 17
LOCATION: 255285



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.0	4.0
6	4.2	4.9
9	4.0	3.8
12	3.9	3.9
15	3.8	3.8
18	3.7	3.5
21	3.7	3.5
24	3.8	3.8

APPARENT RADIUM-226 CONCENTRATION 19 DECONVOLUTION GRAPH

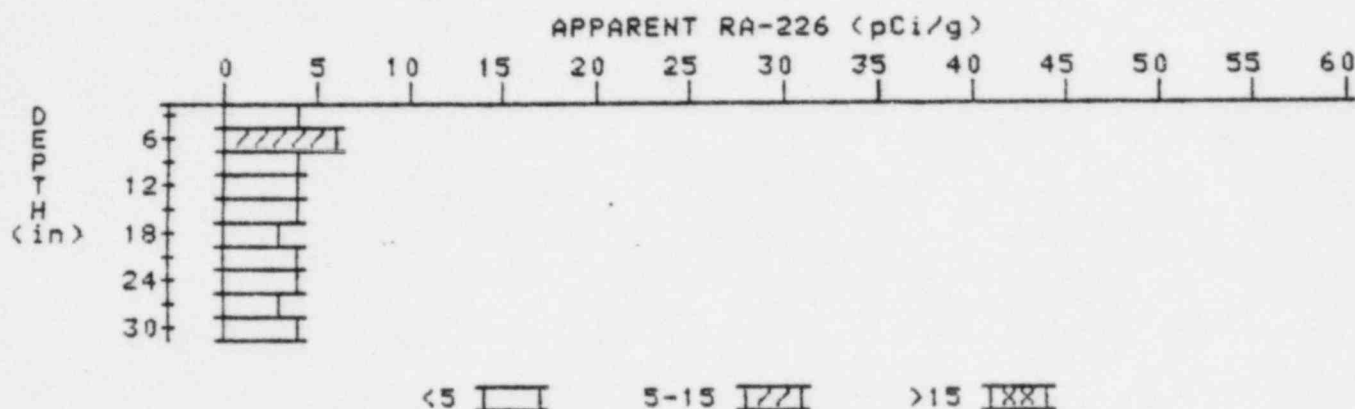
PROPERTY NUMBER: GJ-12297-R5
HOLE NUMBER: 19
LOCATION: 265265



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	7.0	7.0
6	7.3	10.5
9	5.8	5.3
12	4.6	3.2
15	4.2	4.0
18	3.9	3.5
21	3.8	3.6
24	3.8	3.8
27	3.8	3.8
30	3.8	3.8

APPARENT RADIUM-226 CONCENTRATION 21 DECONVOLUTION GRAPH

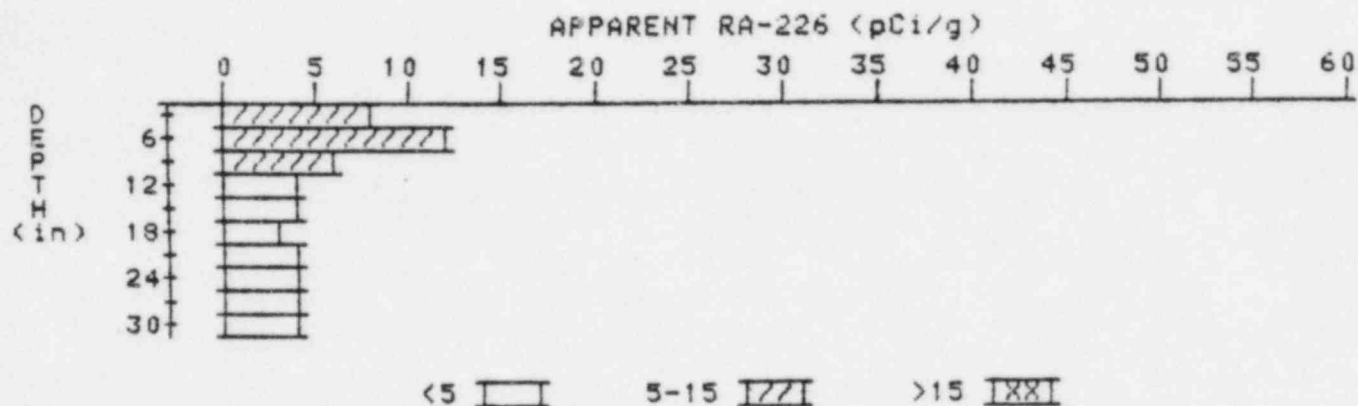
PROPERTY NUMBER: GJ-12297-RS
HOLE NUMBER: 21
LOCATION: 275265



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.4	4.4
6	4.6	5.8
9	4.1	3.6
12	3.9	3.9
15	3.7	3.5
18	3.6	3.2
21	3.7	3.5
24	3.9	4.4
27	3.8	3.4
30	3.9	3.9

APPARENT RADIUM-226 CONCENTRATION 23 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-12297-RS
HOLE NUMBER: 23
LOCATION: 283262



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	7.9	7.9
6	8.3	12.0
9	6.6	6.2
12	5.1	3.7
15	4.4	3.9
18	4.0	3.3
21	4.0	4.2
24	3.9	3.7
27	3.9	3.7
30	4.0	4.0

