

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-01207-RS  
ADDRESS: 505 WEST MAIN STREET

JULY 1985

FO

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT OFFICE

ALBUQUERQUE OPERATIONS OFFICE

DEPARTMENT OF ENERGY

BY

BENDIX FIELD ENGINEERING CORPORATION  
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DATE

July 31, 1985

REA01207:REA-GE005

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## **1.0 EXECUTIVE SUMMARY**

### **1.1 Introduction**

The location, DOE ID No. GJ-01207-RS, is a single-family residence located at 505 West Main Street, 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 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, 12 cu. yd.; interior, 0 cu. yd.

Areas A, B, C, E, and a portion of Areas D and F are 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 \$1,406. Remedial action on this property will take approximately 10 days to complete.

## 2.0 PROPERTY DESCRIPTION

### 2.1 General Description

Address: 505 West Main Street, Grand Junction, Colorado

Zoning: Residential (RSF-8)

Lot Size: Approximately 6,975 sf (0.16 acre)

Legal Description: West 45 feet of East 87 feet of Lot 2, Block 9, Mobley Subdivision, North of alley, West of Plank Avenue, City of Grand Junction, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 3 miles northwest 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:	Underground
Sewer:	Underground
Water:	Underground
Cable TV:	None

Bordering Properties:

North:	West Main Street
South:	Alley
East:	Single-family residence
West:	Single-family residence

### 2.2 Existing Facilities and Structures

Primary Structure:

Type:	Single-family residence
Size:	Approximately 1,000 sf
Construction Date:	1908
Construction:	Wood-frame with wood siding
Foundation:	Concrete footing with wood stem wall
Footing Depth:	Approximately 3" to 6" to bottom of footing from grade
Basement:	Partial
Crawl Space:	Yes
Condition:	Fair



Other Structures:

Type:	Shed
Size:	Approximately 80 sf
Construction:	Wood-framed
Foundation:	None
Condition:	Poor

Type:	Shed
Size:	Approximately 48 sf
Construction:	Wood-framed
Foundation:	None
Condition:	Poor

General Remarks:

The property has minimal landscaping with lawn in the front and mostly dirt in rear. The house is in fair condition. 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: One addition appears to have been added to the south end of the building.

Architectural Significance: Minimal

Historical Significance: None known

### **3.0 RADIOLOGIC SURVEY**

#### **3.1 Introduction**

Radiologic data were collected by Bendix at DOE ID No. GJ-01207-RS on February 28, 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 and south yards and associated with the city sidewalk.

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): 139 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: 12 to 15 uR/h  
Highest Inside Gamma Reading (HIG): 14 uR/h

Interior gamma exposure-rate measurements are summarized in Appendix Table 3.2. 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 Figure 3.4. 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 3.5 shows identified areas and estimated depths of contamination on this property, based on assessments of all measurements taken. As noted in this figure, areas that contain identified residual radioactive materials are:

- (AREA A) Contamination north of the primary structure, in the street right-of-way, extends to a depth of 74 inches beneath a 4-inch-thick uncontaminated concrete sidewalk. The total depth of contamination is 78 inches (approximately 260 sf; this area has been excluded).
- (AREA B) South of Area A in the street right-of-way and in the lawn, contamination extends to an estimated depth of 78 inches, based on information collected in Area A (approximately 138 sf; this area has been excluded).
- (AREA C) North of the primary structure in the street right-of-way and in the lawn, contamination extends to a depth of 51 inches (approximately 112 sf; this area has been excluded).
- (AREA D) East of Area C in the street right-of-way and partially extending over the legal property boundary, contamination in the lawn is 30 inches deep (approximately 35 sf within the legal property boundary; 107 sf in the street right-of-way, only this part of Area D has been excluded).
- (AREA E) Northeast of the primary structure, in the lawn, the depth of contamination is 18 inches (approximately 30 sf; this area has been excluded).
- (AREA F) A deposit under a portion of the 4-inch-thick uncontaminated north sidewalk extends to a total depth of 12 inches (approximately 45 sf within the legal property boundary; 13 sf in the street right-of-way, only this part of Area F has been excluded).
- (AREA G) Adjacent to the patio, contamination extends to a depth of 6 inches, based on data collected in Area I (approximately 56 sf).
- (AREA H) The soil south of the primary structure is contaminated to a depth of 12 inches (approximately 117 sf).
- (AREA I) Contamination in the south yard, along the west fence line, extends to a depth of 6 inches (approximately 66 sf).

#### 4.0 RECOMMENDED REMEDIAL ACTION

##### 4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-01207-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 3.5) and transport of removed material to the disposal site.

Areas A, B, C, E, and a portion of Areas D and F are located beyond the legal property boundaries in the street right-of-way. These areas are associated with a 48-inch diameter concrete storm sewer and a gas line that are bedded in tailings.

If the DOE determines that the storm sewer and gas line deposits should be removed, it is recommended that Areas A, B, C, E, and a portion of Areas D and F be removed as part of remedial action project DOE ID No. GJ-97003-OT. This project would be performed in cooperation with the City of Grand Junction if storm sewer or gas line improvements are made in this area. Remedial action project GJ-97003-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 utilities 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 \$1,406.

This remedial action will result in removal of the identified residual radioactive materials located within the legal property boundaries.

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 Gamma Scan
Figure 3.3a	Interior Gamma Exposure Rates (Crawl Space and Cellar)
Figure 3.3b	Interior Gamma Exposure Rates
Figure 3.4	Exterior Sample Locations
Figure 3.5	Estimated Extent of Contamination

Official Survey Report

Memo of Understanding

Team Leader Notes

Deconvolution Graphs (Apparent Radium-226 Concentration)



## 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.		
1	140260	00-02	SS			3.0	
		02-09	SS			231.2	
		03	TC	101.2		*	Front sidewalk
		06	BH	141.4	181.6	*	Auger refusal
		09	TC	162.7		*	Cave-in
		12	TC	175.8		*	
		15	TC	182.5		*	DC > 57 inches
		18	TC	186.3		*	Based on all
		21	TC	187.6		*	available data
		24	TC	187.6		*	
		27	TC	187.3		*	
		30	BH	186.7	202.6	*	
		33	TC	184.2		*	
		36	TC	181.9		*	
		39	TC	179.6		*	
		42	TC	175.5		*	
		45	TC	169.0		*	
		48	BH	163.0	167.4	*	
		51	TC	156.3		*	
		54	TC	148.5		*	
		57	TC	137.1		*	
2	140262	03	TC	92.5		*	City sidewalk
		06	TC	134.3		*	Auger refusal
		09	TC	156.5		*	Cave-in
		12	TC	168.4		*	
		15	TC	174.6		*	DC = 69 inches
		18	TC	178.1		*	Based on all
		21	TC	180.0		*	available data
		24	TC	180.5		*	
		27	TC	180.4		*	
		30	TC	181.6		*	
		33	TC	181.3		*	
		36	TC	179.9		*	
		39	TC	177.1		*	
		42	TC	174.6		*	
		45	TC	170.2		*	
		48	TC	165.0		*	
		51	TC	159.0		*	
		54	TC	147.0		*	
		57	TC	130.9		*	
		60	TC	115.1		*	
		63	TC	101.1		*	
		66	TC	87.3		*	

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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.		
2	140262	69	TC	77.6		*	
		72	TC	70.4		*	
		75	TC	60.9		*	
		78	TC	49.8		*	
		81	TC	44.1		*	
3	144254	03	TC	57.7		*	Hit water table
		06	TC	60.3		*	Depth refusal
		09	TC	85.0		*	
		12	TC	112.0		*	DC > 66 inches
		15	TC	128.8		*	Based on all
		18	TC	137.0		*	available data
		21	TC	137.4		*	
		24	TC	130.8		*	
		27	TC	122.6		*	
		30	TC	110.1		*	
		33	TC	97.2		*	
		36	TC	85.3		*	
		39	TC	76.5		*	
		42	TC	71.6		*	
		45	TC	69.9		*	
		48	TC	71.1		*	
		51	TC	71.4		*	
		54	TC	72.6		*	
		57	TC	75.7		*	
4	146240	60	TC	75.7		*	
		63	TC	73.7		*	
		66	TC	64.1		*	
		03	TC	33.7		*	Hit water table
		06	TC	52.3		*	Depth refusal
		09	TC	79.8		*	
		12	TC	113.3		*	DC = 51 inches
		15	TC	138.1		*	Based on the
		18	TC	149.6		*	deconvolution graph
		21	TC	152.5		*	
		24	TC	150.3		*	
		27	TC	143.9		*	
		30	TC	135.2		*	
		33	TC	124.1		*	
		36	TC	112.9		*	
		39	TC	99.8		*	
		42	TC	83.0		*	
		45	TC	64.5		*	



## 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	146240	48	TC	43.8		*	
		51	TC	26.8		*	
		54	TC	17.5		*	
		57	TC	11.4		*	
		60	TC	8.8		*	
		63	TC	7.2		*	
		66	TC	6.3		*	
		69	TC	6.3		*	
5	150254	03	TC	17.8		*	DC = 30 inches Based on the deconvolution graph
		06	BH	25.0	29.7	*	
		09	TC	31.1		*	
		12	BH	34.4	35.6	*	
		15	TC	33.9		*	
		18	BH	29.7	21.3	*	
		21	TC	24.0		*	
		24	BH	17.4	9.0	*	
		27	TC	12.3		*	
		30	TC	9.5		*	
		33	TC	8.0		*	
		36	TC	7.3		*	
		39	TC	6.8		*	
		42	TC	6.6		*	
		45	TC	6.5		*	
		48	BH	6.2	4.3	*	
		51	TC	5.6		*	
		54	TC	5.0		*	
		57	TC	4.3		*	
		60	TC	3.7		*	
		63	TC	3.3		*	
		66	TC	3.1		*	
		69	BH	3.0	1.2	*	
6	150260	03	TC	19.1		*	DC = 30 inches Based on the deconvolution graph
		06	TC	27.8		*	
		09	TC	31.9		*	
		12	TC	31.8		*	
		15	TC	30.8		*	
		18	BH	28.1	22.0	*	
		21	TC	24.8		*	
		24	TC	18.7		*	
		27	TC	12.9		*	
		30	TC	9.3		*	
		33	TC	7.3		*	

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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.		
6	150260	36	BH	6.1	2.7	*	
		39	TC	5.5		*	
		42	TC	5.3		*	
		45	TC	5.0		*	
		48	TC	4.8		*	
		51	TC	4.3		*	
		54	TC	3.8		*	
		57	TC	3.5		*	
		60	BH	3.3	1.2	*	
		63	TC	3.3		*	
		66	TC	3.3		*	
7	150270	03	TC	13.2		*	DC = 18 inches Based on the deconvolution graph
		06	BH	18.9	21.9	*	
		09	TC	24.6		*	
		12	TC	24.9		*	
		15	TC	18.8		*	
		18	BH	12.7	7.1	*	
		21	TC	9.1		*	
		24	TC	7.0		*	
		27	TC	5.8		*	
		30	TC	4.9		*	
		33	TC	4.7		*	
		36	TC	4.5		*	
		39	TC	4.6		*	
		42	BH	4.5	2.3	*	
		45	TC	4.4		*	
		48	TC	4.3		*	
8	153236	03	TC	3.5		*	DC = 0 inches  Elevated readings are shine from a nearby deposit
		06	TC	4.0		*	
		09	TC	4.4		*	
		12	TC	4.6		*	
		15	TC	4.7		*	
		18	TC	4.9		*	
		21	TC	5.1		*	
		24	TC	5.2		*	
		27	TC	5.2		*	
		30	TC	5.2		*	
		33	TC	5.4		*	
		36	TC	5.5		*	
		39	TC	5.6		*	
		42	TC	5.8		*	
		45	TC	5.7		*	

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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.		
8	153236	48	TC	5.6		*	
		51	TC	5.7		*	
		54	TC	5.3		*	
		57	TC	4.8		*	
		60	TC	4.4		*	
		63	TC	4.1		*	
		66	TC	3.7		*	
		69	TC	3.3		*	
		72	TC	3.2		*	
9	153245	03	TC	3.9		*	DC = 0 inches
		06	TC	4.1		*	
		09	TC	4.3		*	
		12	TC	4.3		*	
		15	TC	4.3		*	
		18	TC	4.5		*	
		21	TC	4.5		*	
		24	TC	4.6		*	
		27	TC	4.6		*	
		30	TC	4.6		*	
		33	TC	4.8		*	
		36	TC	4.9		*	
		39	TC	5.1		*	
		42	TC	5.1		*	
		45	TC	5.1		*	
		48	TC	5.0		*	
		51	TC	4.9		*	
		54	TC	4.6		*	
		57	TC	4.1		*	
10	158235	00	DS	1.1		*	West fence
11	160250	03	TC	2.9		*	Water line
		06	TC	3.1		*	
		09	TC	3.3		*	
		12	TC	3.4		*	
		15	TC	3.5		*	
		18	TC	3.6		*	
		21	TC	3.6		*	DC = 0 inches
		24	TC	3.6		*	
		27	TC	3.5		*	
		30	TC	3.4		*	
		33	TC	3.4		*	
		36	TC	3.3		*	

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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.		
11	160250	39	TC	3.3		*	
		42	TC	3.2		*	
		45	TC	3.3		*	
		48	TC	3.3		*	
		51	TC	3.4		*	
		54	TC	3.4		*	
		57	TC	3.3		*	
		60	TC	3.3		*	
		63	TC	3.2		*	
		66	TC	3.1		*	
12	160257	00-04	SS			4.4	Concrete core
		04-10	SS			29.5	
		03	TC	15.1		*	Sidewalk
		06	BH	17.5	7.8	*	
		09	TC	11.8		*	DC = 12 inches
		12	BH	8.2	3.0	*	Based on the
		15	TC	6.3		*	deconvolution graph
		18	BH	5.3	2.2	*	
		21	TC	4.8		*	
		24	TC	4.5		*	
		27	TC	4.2		*	
		30	BH	4.2	1.6	*	
		33	TC	4.0		*	
		36	TC	4.1		*	
13	160270	03	TC	3.1		*	DC = 0 inches
		06	TC	3.2		*	
		09	TC	3.5		*	
		12	TC	3.5		*	
		15	TC	3.7		*	
		18	TC	3.7		*	
14	166234	00	DS	2.0		*	West fence
15	179271	03	TC	3.2		*	Gas line
		06	TC	3.5		*	
		09	TC	3.6		*	DC = 0 inches
		12	TC	3.7		*	
		15	TC	3.7		*	
		18	TC	3.7		*	
		21	TC	3.7		*	
		24	TC	3.7		*	

## Radium Concentrations at Exterior Locations

DOE ID #GJ-01207-RS

505 West Main Street

Page 7 of 11

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
15	179271	27	TC	3.5		*	
		30	TC	3.4		*	
16	185234	00	DS	2.2		*	West fence
17	204234	00	DS	1.5		*	West fence
18	217235	03	TC	2.9		*	
		06	TC	3.1		*	
		09	TC	3.2		*	DC = 0 inches
		12	TC	3.4		*	
		15	TC	3.5		*	
		18	TC	3.6		*	
		21	TC	3.6		*	
		24	TC	3.6		*	
		27	TC	3.6		*	
19	222268	03	TC	3.4		*	Sewer line
		06	TC	3.8		*	
		09	TC	3.9		*	DC = 0 inches
		12	TC	3.8		*	
		15	TC	3.8		*	
		18	TC	3.7		*	
		21	TC	3.7		*	
		24	TC	3.7		*	
		27	TC	3.6		*	
		30	TC	3.5		*	
		33	TC	3.4		*	
		36	TC	3.4		*	
		39	TC	3.3		*	
		42	TC	3.3		*	
		45	TC	3.3		*	
20	223240	48	TC	3.2		*	
		51	TC	3.2		*	
		54	TC	3.0		*	
		57	TC	3.0		*	
		60	TC	2.9		*	
		63	TC	2.9		*	
		00	DS	3.1		*	Buried telephone
		36	DS	1.3		*	line
21	227237	03	TC	3.2		*	DC = 0 inches
		06	TC	3.5		*	

## Radium Concentrations at Exterior Locations

DOE ID #GJ-01207-RS

505 West Main Street

Page 8 of 11

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
21	227237	09	TC	3.6		*	
		12	TC	3.6		*	
		15	TC	3.6		*	
		18	TC	3.6		*	
		21	TC	3.5		*	
		24	TC	3.5		*	
		27	TC	3.4		*	
		30	TC	3.4		*	
		33	TC	3.2		*	
22	235258	00	DS	2.7		*	
		00-06	SS			5.8	
		03	TC	3.7		*	DC = 0 inches
		06	TC	3.9		*	
		09	TC	3.7		*	
		12	TC	3.6		*	
		15	TC	3.6		*	
		18	TC	3.6		*	
		21	TC	3.5		*	
		24	TC	3.5		*	
		27	TC	3.5		*	
		30	TC	3.5		*	
		33	TC	3.3		*	
		36	TC	3.2		*	
23	236270	03	TC	3.7		*	DC = 0 inches
		06	TC	4.0		*	
		09	TC	4.0		*	
		12	TC	3.8		*	
		15	TC	3.8		*	
		18	TC	3.9		*	
		21	TC	3.7		*	
		24	TC	3.7		*	
		27	TC	3.6		*	
		30	TC	3.6		*	
		33	TC	3.5		*	
24	240250	00-05	SS			2.2	Concrete core
		05-11	SS			2.1	
		03	TC	2.6		*	Sidewalk
		06	TC	3.2		*	
		09	TC	3.4		*	DC = 0 inches
		12	TC	3.6		*	
		15	TC	3.6		*	

## Radium Concentrations at Exterior Locations

DOE ID #GJ-01207-RS

505 West Main Street

Page 9 of 11

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
24	240250	18	TC	3.6		*	
		21	TC	3.6		*	
		24	TC	3.6		*	
		27	TC	3.7		*	
		30	TC	3.6		*	
		33	TC	3.6		*	
		36	TC	3.5		*	
		39	TC	3.5		*	
25	245265	03	TC	7.7		*	DC = 12 inches Based on the deconvolution graph
		06	TC	7.7		*	
		09	TC	6.1		*	
		12	TC	5.0		*	
		15	TC	4.3		*	
		18	TC	3.9		*	
		21	TC	3.7		*	
		24	TC	3.6		*	
		27	TC	3.6		*	
		30	TC	3.6		*	
		33	TC	3.7		*	
26	249272	00	DS	1.4		*	
27	278235	00	DS	1.6		*	
28	290240	00	DS	2.1		*	DC = 6 inches Based on all available data
		00-06	SS			4.7	
		03	TC	3.9		*	
		06	TC	4.0		*	
		09	TC	3.9		*	
		12	TC	3.8		*	
		15	TC	3.9		*	
		18	TC	3.8		*	
		21	TC	3.8		*	
		24	TC	3.9		*	
		27	TC	3.9		*	
29	290260	00	DS	<1.0		*	Background
		00-06	SS			3.0	
		03	TC	3.3		*	DC = 0 inches
		06	BH	3.6	<1.0	*	
		09	TC	3.6		*	
		12	BH	3.6	<1.0	*	
		15	TC	3.7		*	

## Radium Concentrations at Exterior Locations

DOE ID #GJ-01207-RS

505 West Main Street

Page 10 of 11

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
29	290260	18	TC	3.6		*	
		21	TC	3.6		*	
		24	BH	3.6	1.3	*	
		27	TC	3.6		*	
		30	TC	3.5		*	
30	293235	03	TC	3.5		*	DC = 0 inches
		06	TC	3.6		*	
		09	TC	3.7		*	
		12	TC	3.8		*	
		15	TC	3.8		*	
		18	TC	3.9		*	
		21	TC	3.9		*	
		24	TC	4.0		*	
		27	TC	4.1		*	
		30	TC	4.3		*	
		33	TC	4.2		*	
31	300265	03	TC	2.2		*	Sewer line
		06	TC	2.7		*	
		09	TC	3.2		*	DC = 0 inches
		12	TC	3.4		*	
		15	TC	3.6		*	
		18	TC	3.7		*	
		21	TC	3.6		*	
		24	TC	3.7		*	
		27	TC	3.5		*	
		30	TC	3.5		*	
		33	TC	3.5		*	
		36	TC	3.4		*	
		39	TC	3.3		*	
		42	TC	3.2		*	
		45	TC	3.1		*	
		48	TC	3.0		*	



## Radium Concentrations at Exterior Locations

DOE ID #GJ-01207-RS

505 West Main Street

Page 11 of 11

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
31	300265	51	TC	2.9		*	
		54	TC	2.8		*	
		57	TC	2.7		*	
		60	TC	2.5		*	
		63	TC	2.5		*	

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 = 03-01-85  
 Team Leader = RRV

Table 3.2  
Summary of Interior Gamma Exposure Rates

DOE ID #GJ-01207-RS      505 West Main Street      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)
CELLAR	11	13-15	14	11	14-15	15
CRAWL SPACE	*	*	*	*	12-15	*
GROUND FLOOR	*	*	*	*	12-14	*
SHED 1	09	13-14	14	08	13-15	14
SHED 2	11	13-14	13	11	13-15	14

=====

\* The CDH and ORNL data indicate the absence of interior contamination at this property. This information was investigated by performing walking gamma scans. These areas and the ranges of gamma measurements are shown in Appendix Figures 3.3a and 3.3b. Exposure rates in the cellar and sheds are shown in Appendix Figures 3.3a and 3.3b.

Table 4.1  
Area and Volume Calculations  
DOE ID No. GJ-01207-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					
F	3 x 18 =	54	x 0.3 =	16	
Volume of Concrete =				16 =	16/27 = 1
Contaminated Fill					
D	7 x 5 =	35	x 2.5 =	88	
F	3 x 15 =	45	x 0.7 =	32	
G	8 x 7 =	56	x 0.5 =	28	
H	13 x 9 =	117	x 1.0 =	117	
I	6 x 11 =	66	x 0.5 =	33	
Volume of Contaminated Fill =				298 =	298/27 = 11
TOTAL VOLUME - EXTERIOR					= 12

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

See Appendix Figure 3.5 For Areas

=====

Table 4.2  
Estimated Cost of Decontamination and Restoration  
DOE ID No. GJ-01207-RS

Page 1 of 1

---

EXTERIOR

Remove identified residual radioactive material

5 cy @ \$44/cy (manual-open) \$ 220

7 cy @ \$14.50/cy (machine-open) 102

Remove and replace concrete walk

54 sf @ \$3/sf 162

Replace roadbase

2 cy @ \$11.50/cy 23

Replace topsoil

10 cy @ \$9.50/cy 95

Replace sod

100 sf @ \$.50/sf 50

---

TOTAL EXTERIOR \$ 652

TOTAL INTERIOR 0

ACCESS CONTROL 200

---

SUBTOTAL \$ 852

CONTINGENCY @ 10% 85

---

SUBTOTAL \$ 937

CONTRACTOR OVERHEAD & PROFIT @ 50% 469

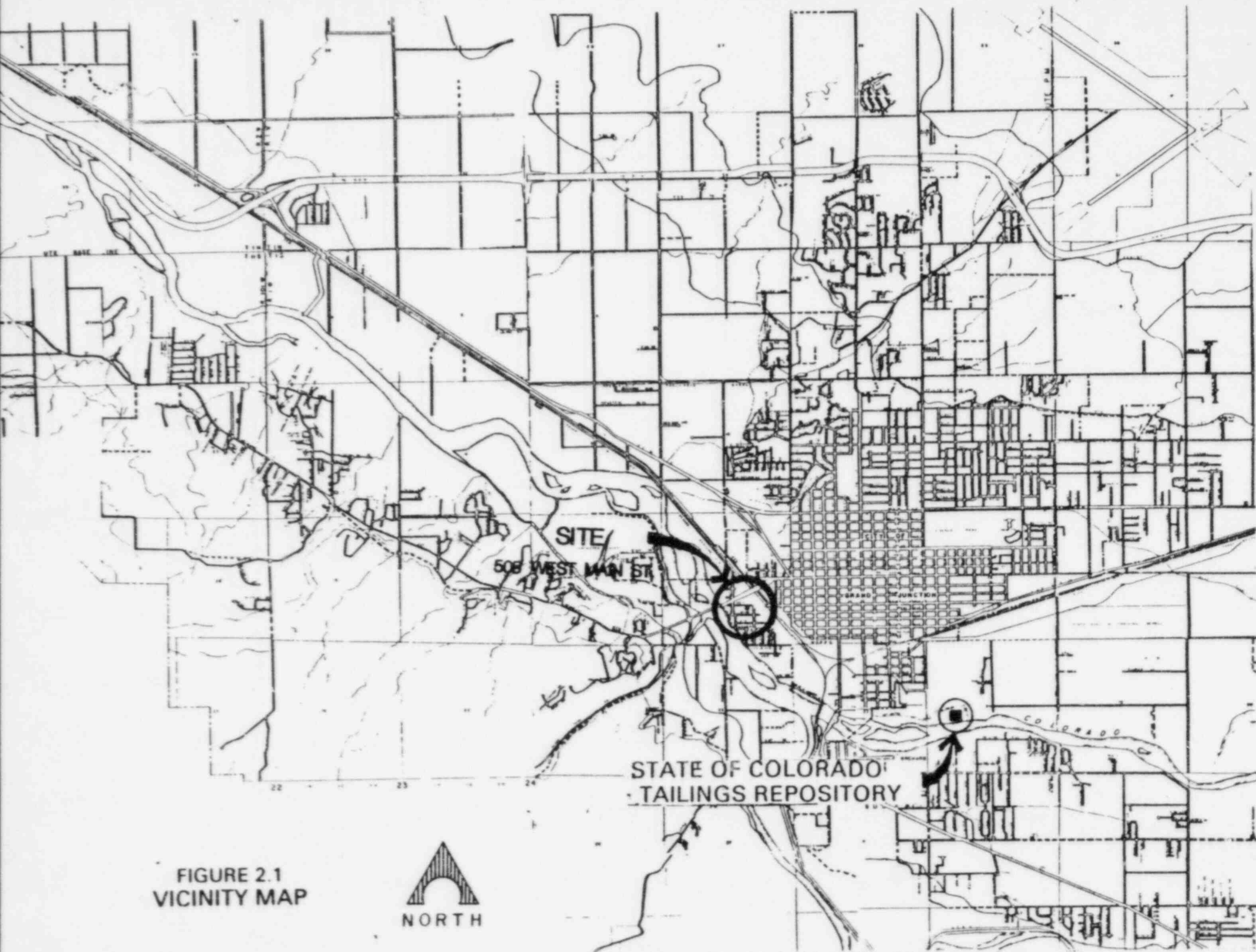
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GRAND TOTAL \$ 1,406

---


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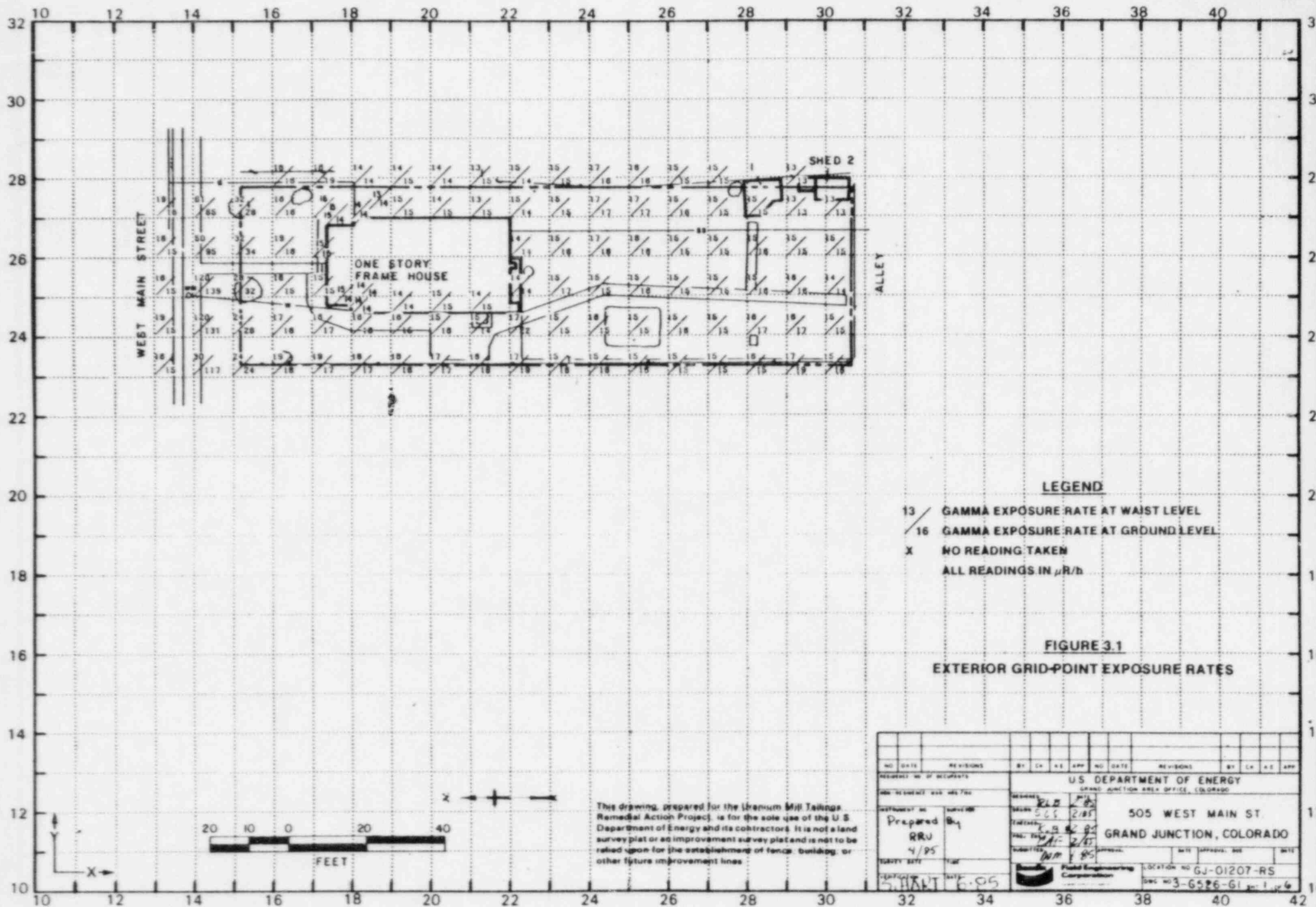
REA01207/REA-GE005/LMR



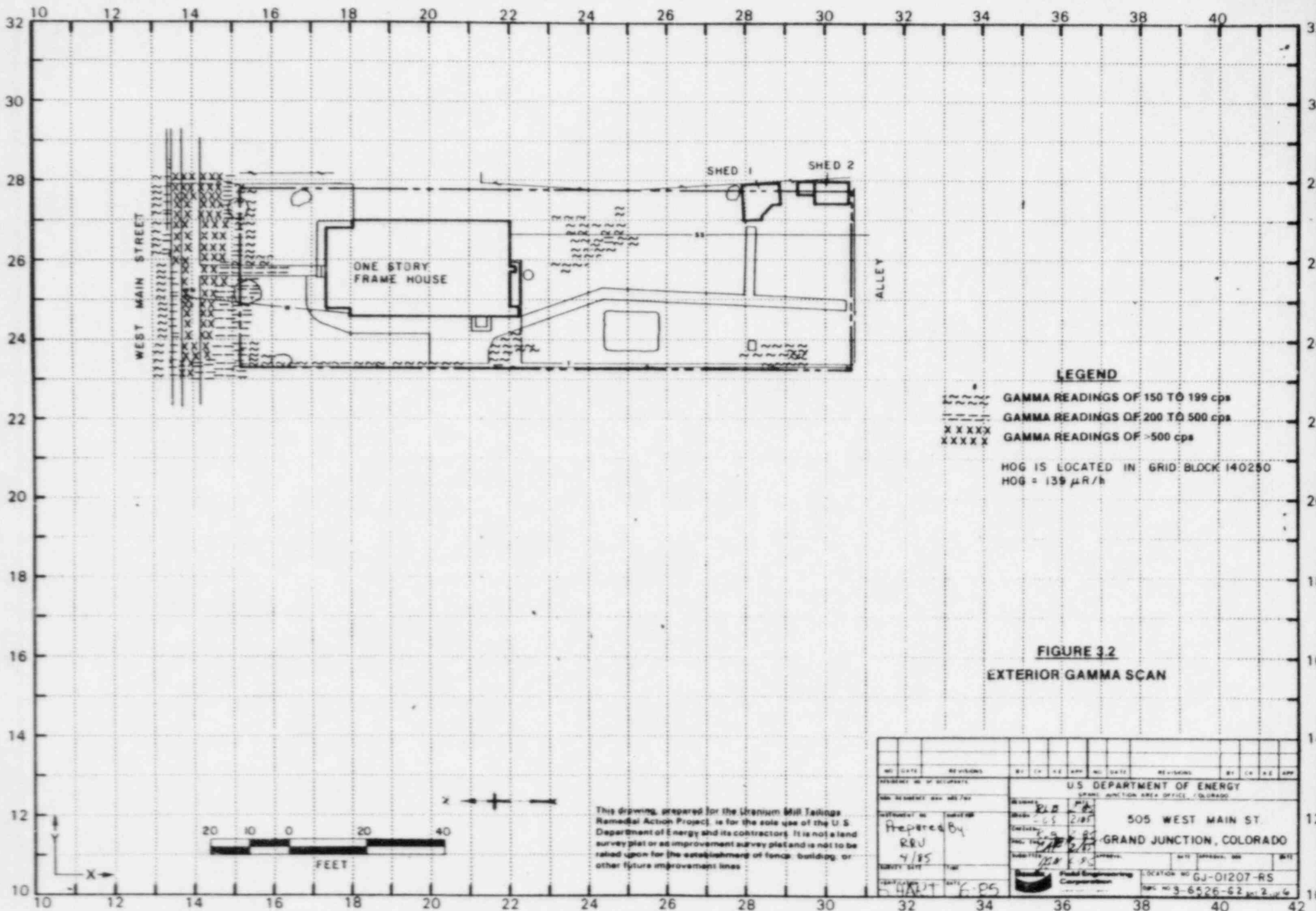
Hand-drawn site plan for a "ONE STORY FRAME SINGLE FAMILY HOUSE". The plan shows the house layout with various rooms and dimensions. Key features include a "ROSE GARDEN" (14' x 10'), a "BURIED TELEPHONE", and a "BURIED GATE". The plan is oriented with "WEST" at the top. A scale bar indicates 1 inch equals 10 feet. A north arrow points towards the top right. The plan is dated "JULY 1966" and includes a title block with the text: "This drawing prepared for the Uranium Mill Tailings Remedial Action Project, is for the site use of the U.S. Department of Energy and its contractors. It is not a land survey plot or an improvement survey plot and is not to be relied upon for the establishment of fence, building, or other future improvement lines."

FIGURE 2.2 SITE PLAN

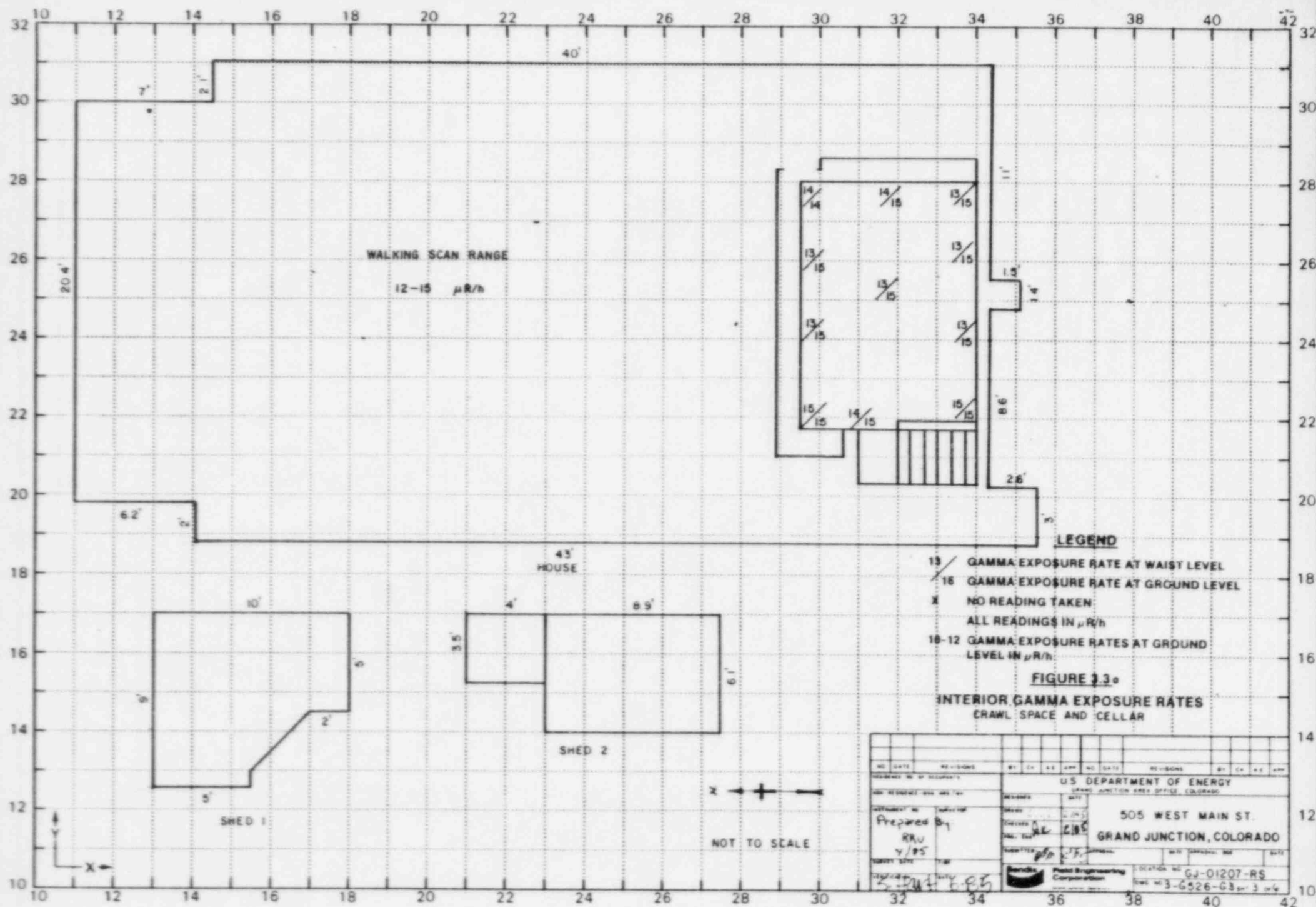
U.S. DEPARTMENT OF ENERGY GRAND JUNCTION AREA OFFICE, COLORADO	LOCATION NO. GJ01207RS
ADDRESS 505 WEST MAIN ST GRAND JUNCTION CO. 9	 Bureau of Land Management U.S. Department of the Interior
OWNER ROSA DE ROSE	TELE NONE
TENENT	TELE
BURY RLB1270	CH 106 2585



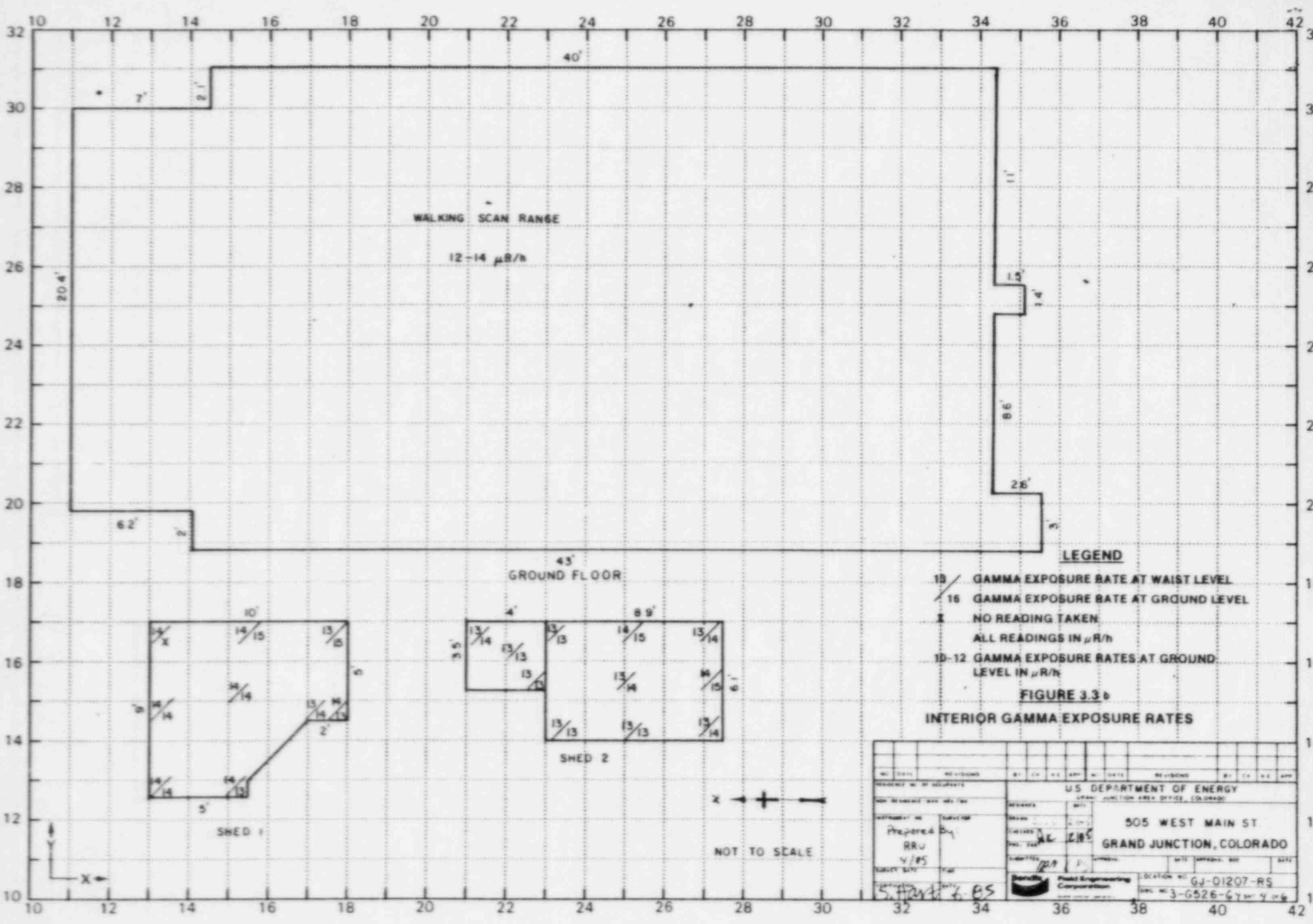




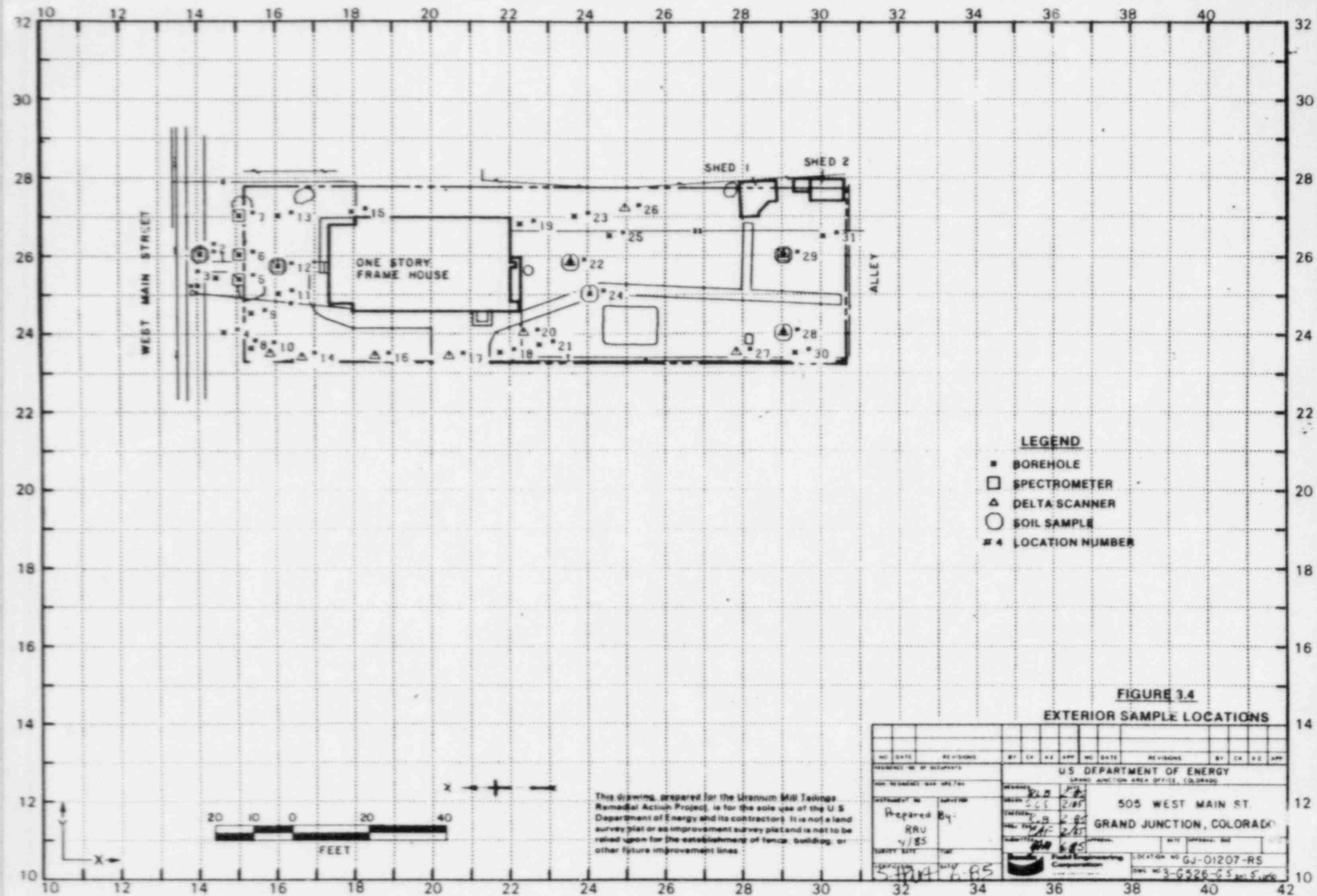


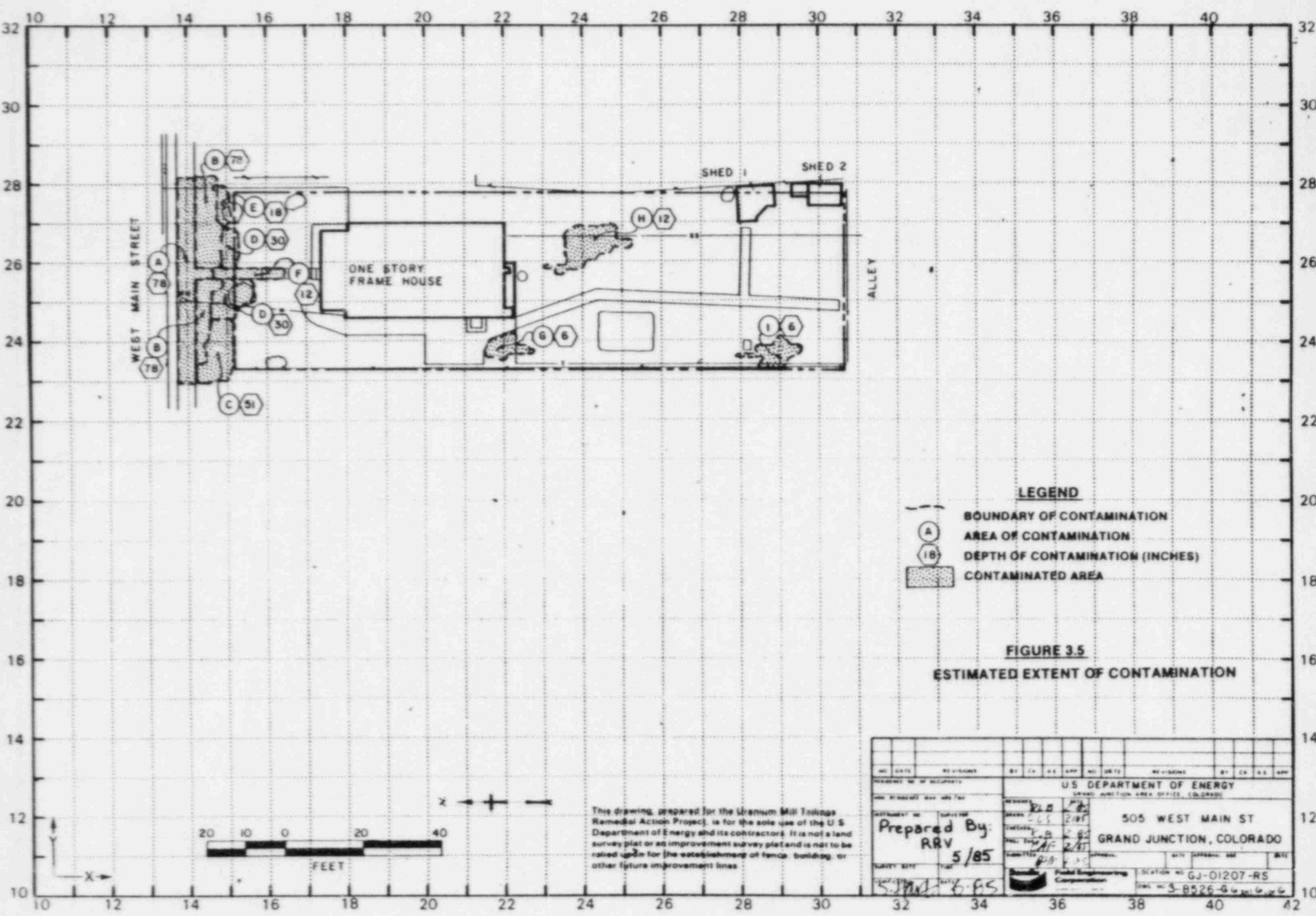


U.S. DEPARTMENT OF ENERGY									
GRAND JUNCTION AREA OFFICE, COLORADO									
505 WEST MAIN ST.					GRAND JUNCTION, COLORADO				
Prepared by RRV 4/85					Checked by J.E. ZHS				
Survey Date 5-24-85					Surveyed by J.E. ZHS				
Project Grand Junction Area Office					Location No. GJ-01207-RS				
Contract No. 3-6526-G3					Sheet No. 3 of 4				



NO. DATE		REVISIONS		BY	CHK	DATE	NO. DATE		REVISIONS		BY	CHK	DATE
PREPARED BY: RRU DATE: 4/85 CHECKED BY: [Signature] DATE: 5/85 APPROVED BY: [Signature] DATE: 5/85													
U.S. DEPARTMENT OF ENERGY GRAND JUNCTION AREA OFFICE, COLORADO 505 WEST MAIN ST. GRAND JUNCTION, COLORADO LOCATION NO: GJ-01207-RS PROJ. NO: 3-G526-GY-4-106													





**LEGEND**

- BOUNDARY OF CONTAMINATION
- (A) AREA OF CONTAMINATION
- (18) DEPTH OF CONTAMINATION (INCHES)
- [Shaded] CONTAMINATED AREA

**FIGURE 3.5**

**ESTIMATED EXTENT OF CONTAMINATION**

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		AS		APP		NO. DATE		REVISIONS		BY		CH		AS		APP	
<p align="center"><b>U. S. DEPARTMENT OF ENERGY</b>          GRAND JUNCTION AREA OFFICE, COLORADO</p> <p align="center">505 WEST MAIN ST          GRAND JUNCTION, COLORADO</p>																							
PREPARED BY: RRV 5/85												DATE: 5/85 PROJECT: 6-95											
SURVEY SITE:												LOCATION NO: GJ-01207-RS DRAWING NO: 3-8526-6											

3/85

DOE ID NO. GJ-01207-RS Date March 11, 1985

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

Official Survey Report

Property Address 505 West Main Street  
Property Owner Rosa Derosé  
Address of Owner (if different from above) \_\_\_\_\_  
Report Prepared By R.R. Vialpando

I. PRESENCE/ABSENCE OF RESIDUAL RADIOACTIVE MATERIALS

1 1 No evidence of residual radioactive material on surveyed property.

1 XX 1 Residual radioactive materials found at the following locations:

1 XX 1 In open areas.

1 1 Under or around exterior improvements.

1 1 Under or around a typically nonoccupied structure.

1 1 Under or around a typically occupied structure.

II. RESULTS OF RADIOLOGIC ASSESSMENT

1 1 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.

1 XX 1 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 = 14 uR/h  
HOG = 139 uR/h



## Bendix

### Field Engineering Corporation

Environmental Solutions

April 5, 1985

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

ATTN: Coleen Campbell

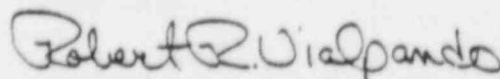
Dear Coleen:

The following is in regards to the issues which were discussed during the Technical Review concerning Department of Energy (DOE) Identification (ID) number GJ-01207-RS (505 West Main Street), conducted on 29 March 1984. My comments are as follows:

1. The property west, adjacent to 505 West Main Street, has been surveyed (517 West Main Street, DOE ID number GJ-01208-RS). The property east, adjacent to 505 West Main Street, will be surveyed (501 West Main Street, DOE ID number GJ-13036-RS).
2. Area 'A' will be closely monitored during remedial action to ensure that all contamination is removed.
3. At location number 17, a depth delta was performed because of a buried telephone line.
4. Area 'H' is contaminated to a depth of 6-inches, which is based on a soil sample taken from location number 26.

Thank you for your time and cooperation. If you should have additional questions or comments please feel free to contact me at 242-8621, extension 472.

Sincerely,



Robert R. Vialpando  
Assistant, Field Service II

RRV:pr

**INTERNAL  
MEMORANDUM**

Bendix Field Engineering Corporation  
Grand Junction Projects Office

Date: March 1, 1985  
To: Files  
From: Robert R. Vialpando  
Subject: Team Leader Notes - GJ-01207-RS

---

Address: 505 West Main Street  
Owner: Rosa DeRose  
Telephone: None

Date: February 28, 1985

Team Members

R. Vialpando (Team Leader)	M. Duran
K. Cary	N. Wallace
P. Hardy	M. Dexter
S. Larsen	H. Mattison
D. Martz	R. Wilkins.

Instruments

Scintillometers - C-1184, C-1149, C-1185, C-1127, C-1128

BFEC Deltas - C-3942, C-3943, C-3941

PRS-1 - C-3956

Total Count - C-3573

GAD 6 Downhole Spectrometer - C-3361

We were unable to contact the homeowner (out of town) but we were able to contact her son (J. J. DeRose, telephone number 243-0648) and approval for survey was obtained.

Colorado Department of Health (CDH) and Oak Ridge National Laboratory (ORNL) data indicate areas of contamination to be in the front yard, backyard, and under the city sidewalk.

Date: March 1, 1985

Temperature: Clear and warm.

Bendix Team Members were met by J. J. DeRose (homeowner's son) on arrival to the property. Access to perform interior scan was made possible through Mr. DeRose. We started with the first floor; the cellar and crawl space were scanned. No elevated readings were discovered in the house.

On the exterior, 10-foot grids were laid out. This property is approximately 45-feet x 155-feet in size. An exterior gamma scan and grid points were performed to verify data taken by CDH and ORNL. Readings taken by the team members were essentially the same as that of CDH and ORNL. Elevated readings were located in the front yard, backyard, and along the east and west property lines. Auger holes were drilled and then logged with the total count and spectrometer instruments in these locations. The sewer, water, and gas lines were investigated with boreholes and then logged with the total count instrument. A buried telephone line was investigated with a depth delta. No elevated readings were discovered near these utility lines. Four deltas at the surface were taken along the west fence to verify that the elevated readings were caused by shine from the property adjacent to 505 West Main. Two concrete cores were drilled through the sidewalks, one core was drilled through the sidewalk on the property, and one core was drilled through the City sidewalk. Visible tailings were sighted at this location. Five soil samples were taken from the property.

During the survey, a neighbor of Mrs. DeRosa (homeowner), Frank Mancuso who lives adjacent to 505 West Main, stated that a storm drain running east and west in the easement was buried in tailings. Boreholes were drilled and then logged with a total count instrument in this area. Visible tailings were sighted along with elevated readings on the total count instrument. This leads me to believe the information that Mr. Mancuso gave me as being true. The location of the storm drain is approximately four feet south of the City sidewalk, which is not shown on the property drawings.

Health and Safety provided a fan for ventilation while we were in the crawl space. All actions and jobs performed were of a safe manner. No accidents occurred while on the site survey visit.



Team Leader Notes  
Robert R. Vialpando  
March 1, 1985  
GJ-01207-RS  
Page 3

When the survey was completed, all team members were then frisked with the alpha scan instrument. All personnel were clean of contamination.

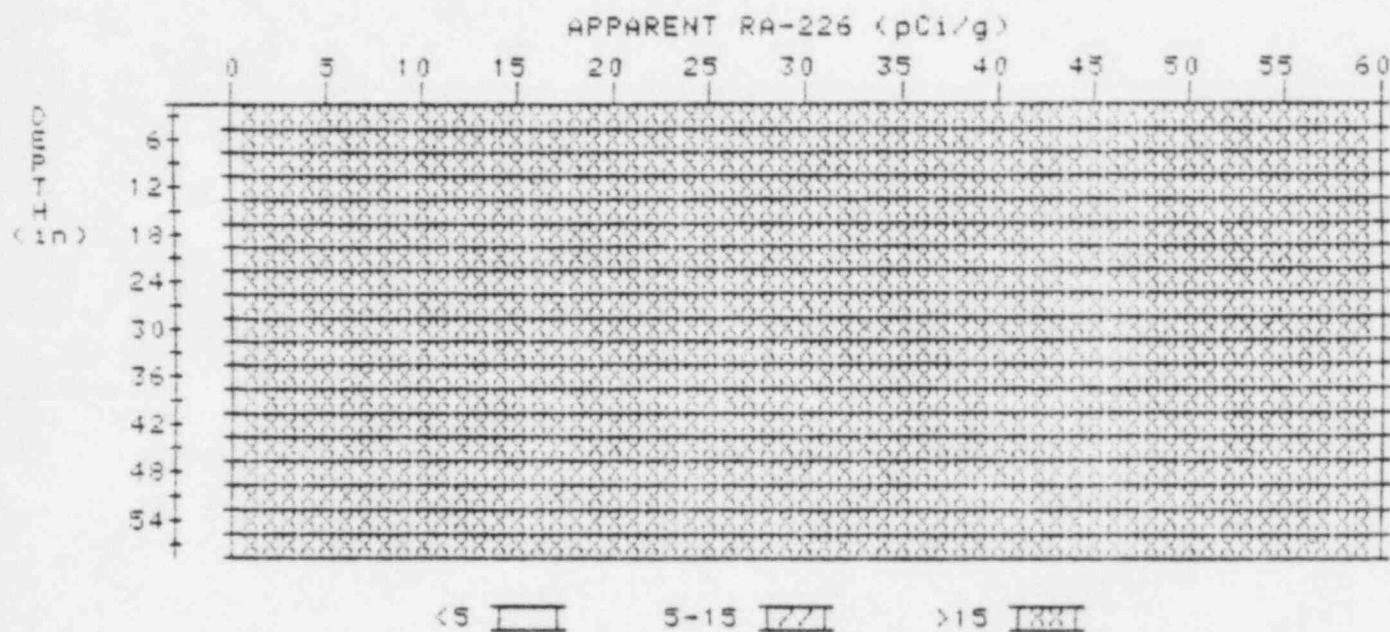
# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

1

PROPERTY NUMBER: GJ-01207-RS

HOLE NUMBER: 1

LOCATION: 140260



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	101.2	101.2
6	141.4	175.0
9	162.7	177.3
12	175.8	187.2
15	182.5	187.7
18	186.3	190.7
21	187.6	189.9
24	187.6	188.1
27	187.3	187.8
30	186.7	190.1
33	184.2	183.8
36	181.9	181.9
39	179.6	182.8
42	175.5	179.8
45	169.0	168.1
48	163.0	164.2
51	156.3	158.3
54	148.8	154.9

57

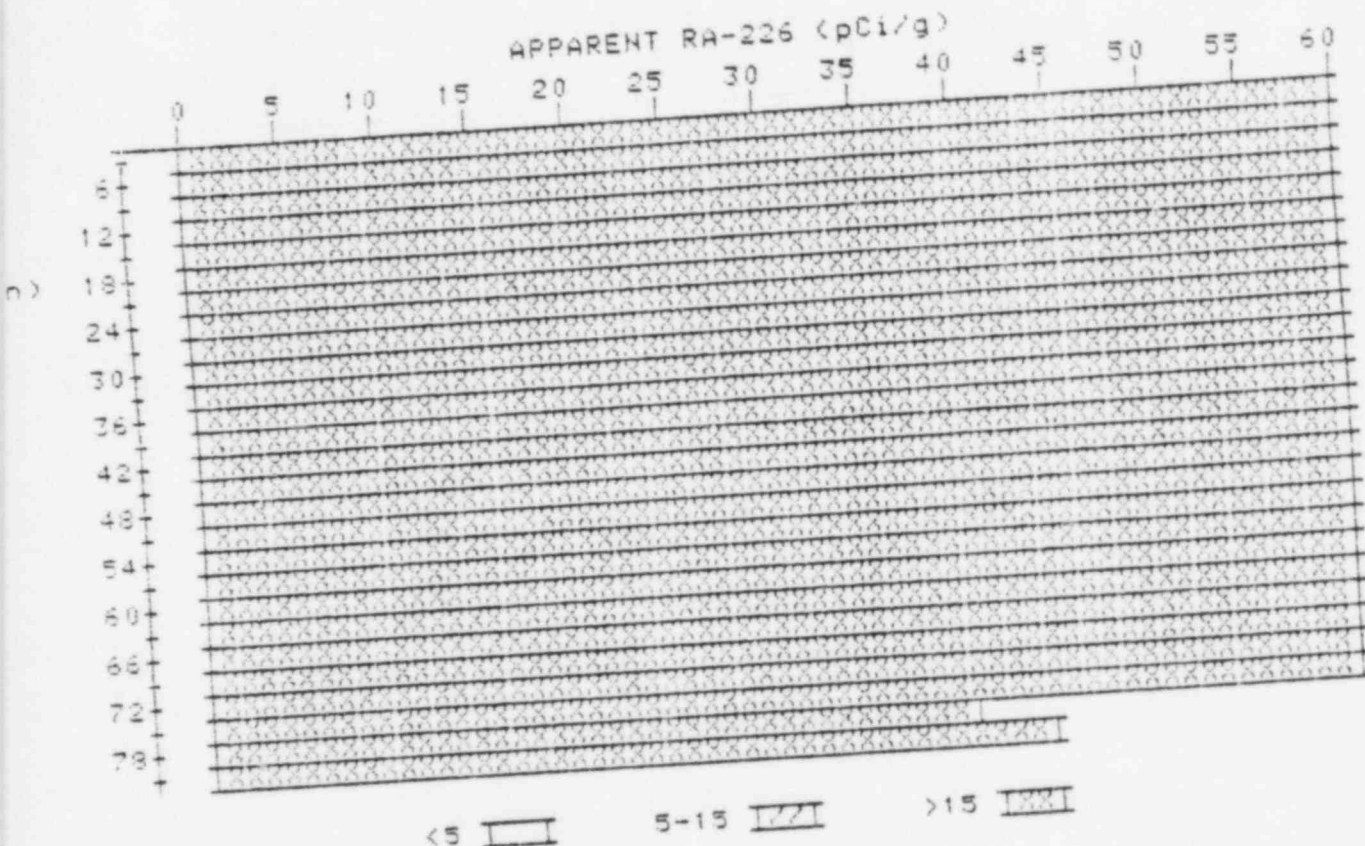
137.1

137.1

# PARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

2

PERTY NUMBER: GJ-01207-RS  
HOLE NUMBER: 2  
LOCATION: 140262



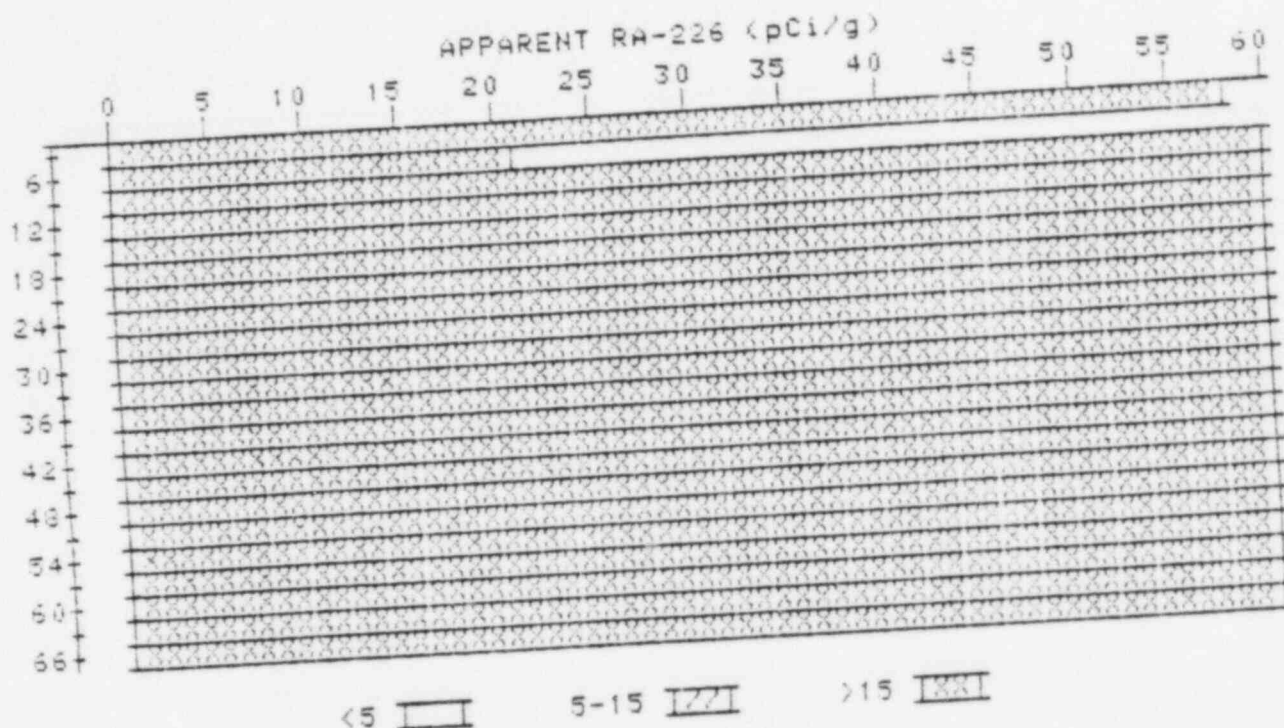
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	92.5	92.5
6	134.3	169.1
9	156.5	174.8
12	168.4	178.5
15	174.6	179.4
18	178.1	180.9
21	180.0	182.5
24	180.5	181.6
27	180.4	178.1
30	181.6	184.3
33	181.3	183.3
36	179.9	182.4

39	177.1	176.6
42	174.6	178.0
45	170.2	171.6
48	165.0	166.4
51	159.0	169.7
54	147.0	154.3
57	130.9	130.4
60	115.1	111.9
63	101.1	100.7
66	87.3	80.0
69	77.6	73.2
72	70.4	74.5
75	60.9	63.7
78	49.8	40.2
81	44.1	44.1

# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

3

PROPERTY NUMBER: GJ-01207-RS  
HOLE NUMBER: 3  
LOCATION: 144254



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	57.7	57.7
6	60.3	21.0
9	85.0	30.9
12	112.0	130.1
15	128.8	144.1
18	137.0	150.9
21	137.4	149.8
24	130.8	133.6
27	122.6	130.2
30	110.1	110.8
33	97.2	95.4
36	85.3	79.8
39	76.5	69.6
42	71.6	65.9
45	69.9	64.7
48	71.1	72.7

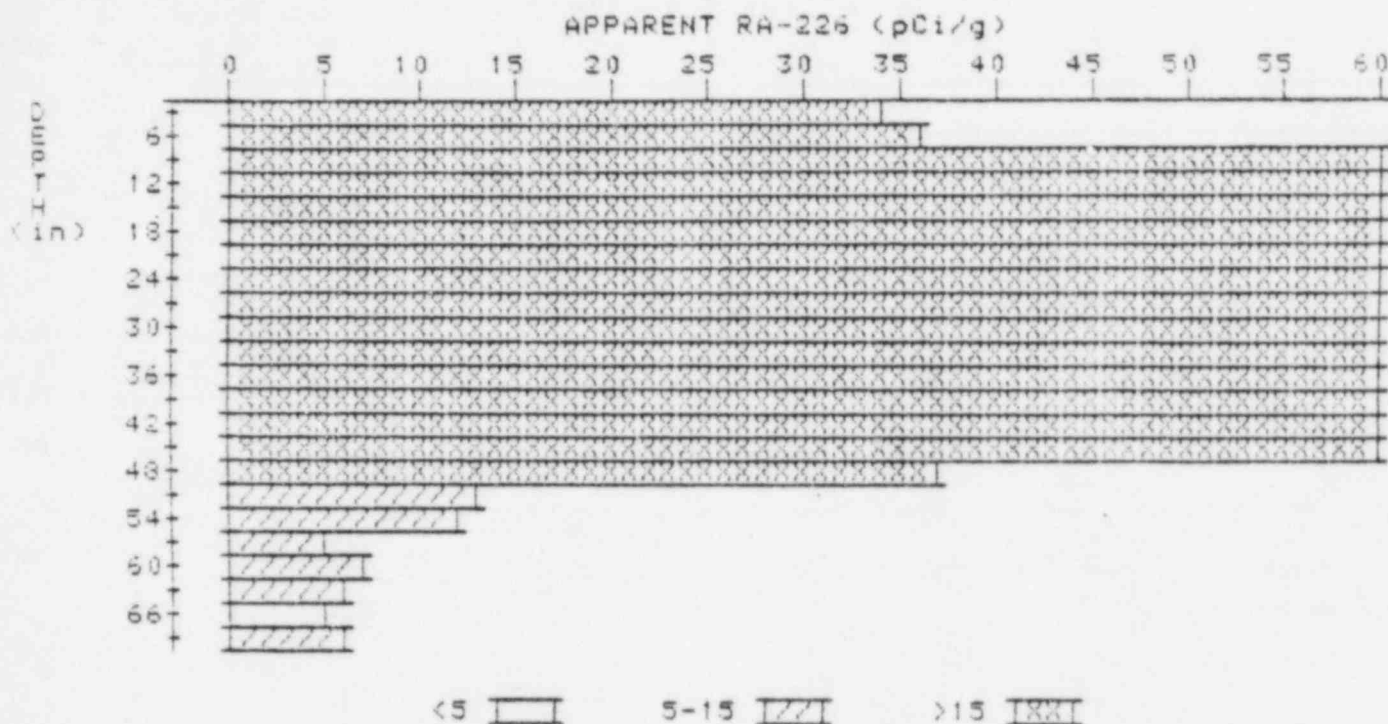
51	71.4	69.8
54	72.6	69.2
57	75.7	81.2
60	75.7	79.3
63	73.7	87.2
66	64.1	64.1



# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

4

PROPERTY NUMBER: GJ-01207-RS  
HOLE NUMBER: 4  
LOCATION: 146240



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	33.7	33.7
6	52.3	36.5
9	79.8	69.1
12	113.3	128.8
15	138.1	161.7
18	149.6	164.9
21	152.5	161.6
24	150.3	157.8
27	143.9	148.0
30	135.2	139.5
33	124.1	124.3
36	112.9	116.3
39	99.8	106.4
42	83.0	86.0
45	64.5	68.4

48  
51  
54  
57  
60  
63  
66  
69

43.8  
26.8  
17.5  
11.4  
8.8  
7.2  
6.3  
6.3

37.2  
13.1  
11.8  
5.2  
7.0  
6.0  
4.7  
6.3

# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

5

PROPERTY NUMBER: GJ-01207-RS

HOLE NUMBER: 5

LOCATION: 150254



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	17.3	17.3
6	25.0	27.0
9	31.1	36.1
12	34.4	41.2
15	33.9	40.5
18	29.7	32.4
21	24.0	25.6
24	17.4	14.7
27	12.3	8.2
30	9.5	7.2
33	8.0	6.6
36	7.3	6.9
39	6.6	6.3
42	6.6	6.4
45	6.6	6.9

48  
51  
54  
57  
60  
63  
66  
69

5.2  
5.6  
5.0  
4.3  
3.7  
3.3  
3.1  
3.0

5.1  
5.6  
5.2  
4.1  
3.3  
2.9  
2.9  
3.0

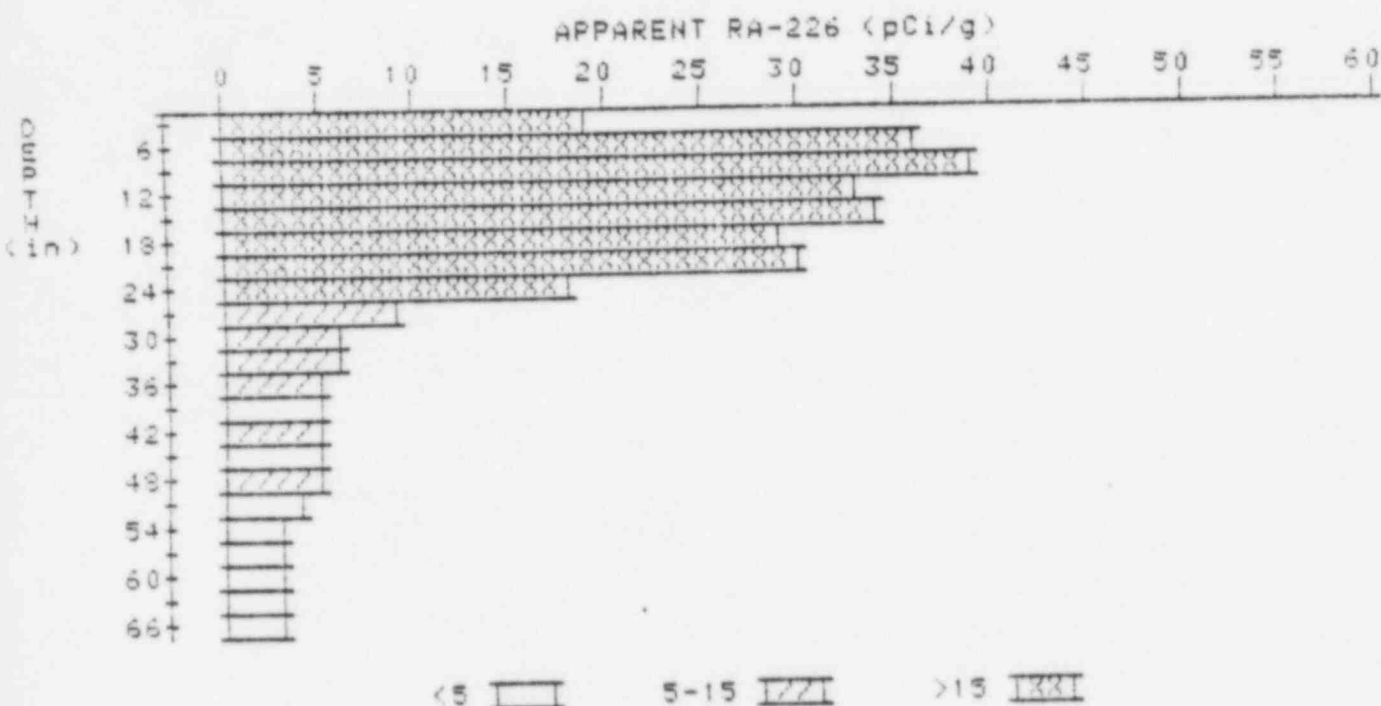
# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

6

PROPERTY NUMBER: GJ-01207-RS

HOLE NUMBER: 6

LOCATION: 150260



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	19.1	19.1
6	27.3	36.0
9	31.9	39.4
12	31.3	33.4
15	30.3	33.3
18	29.1	29.2
21	24.3	29.3
24	13.7	13.2
27	12.9	9.0
30	9.3	6.3
33	7.3	3.9
36	6.1	3.0
39	3.3	4.3
42	3.3	3.3
45	3.0	4.3
48	4.3	3.3

51  
54  
57  
60  
63  
66

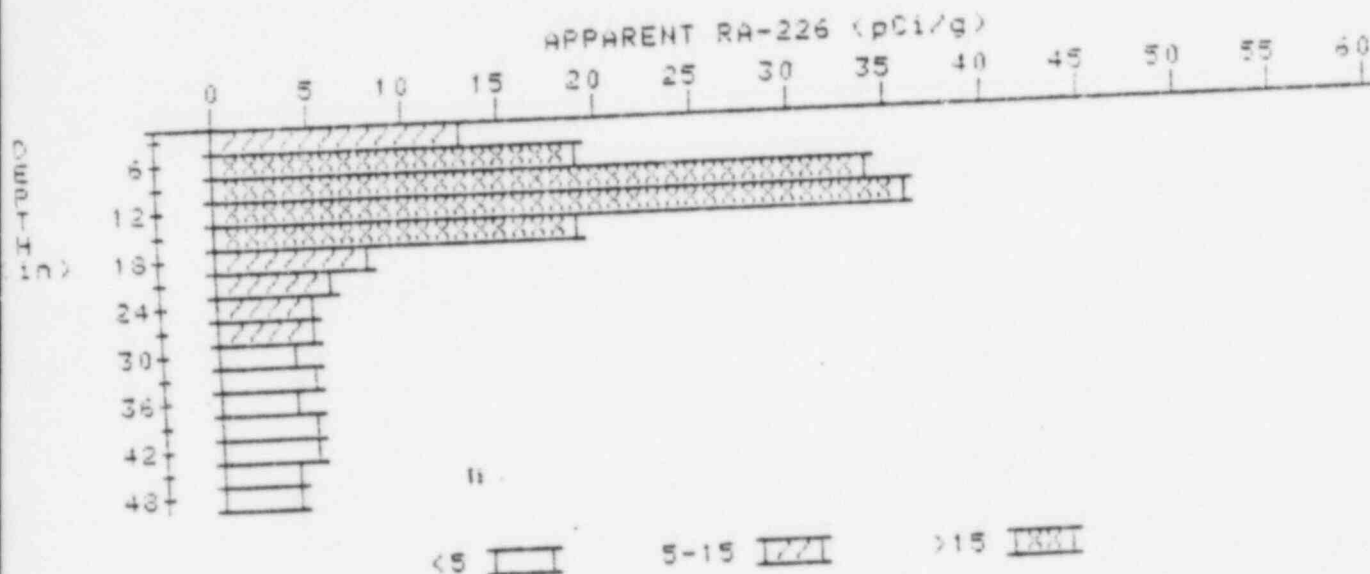
4. 3  
5. 3  
5. 3  
5. 3  
5. 3  
5. 3  
5. 3

4. 3  
5. 3  
5. 3  
5. 3  
5. 3  
5. 3  
5. 3

# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

7

PROPERTY NUMBER: GJ-01207-RS  
HOLE NUMBER: 7  
LOCATION: 150270



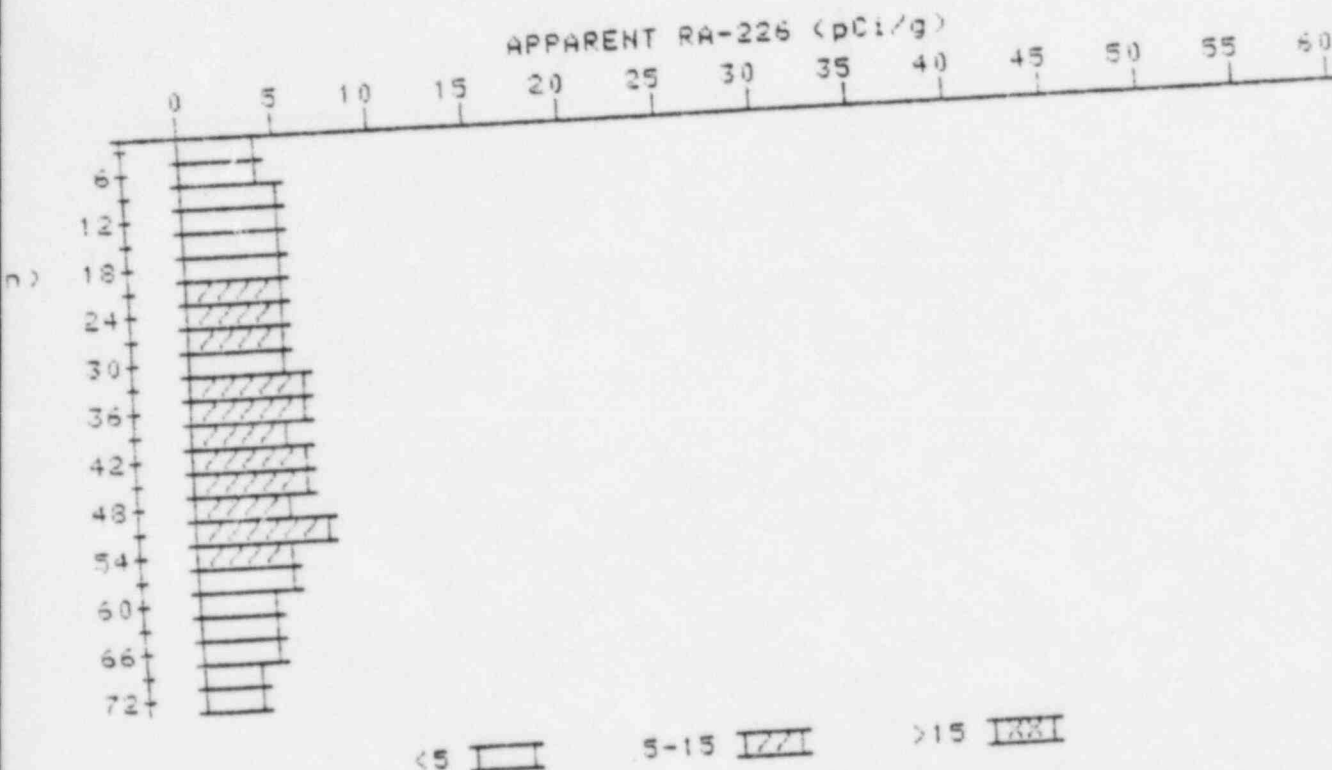
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	13.2	13.2
6	13.9	13.9
9	24.6	34.2
12	24.9	36.3
15	13.3	13.3
18	12.7	3.3
21	9.1	5.4
24	7.0	5.4
27	5.8	5.3
30	4.9	5.7
33	4.7	4.7
36	4.5	4.0
39	4.6	5.0
42	4.5	4.5
45	4.4	4.4
48	4.3	4.3



# PARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

8

PROPERTY NUMBER: GJ-01207-RS  
HOLE NUMBER: 8  
LOCATION: 153236



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.5	3.5
6	4.0	4.2
9	4.4	4.6
12	4.6	4.8
15	4.7	4.8
18	4.9	4.9
21	5.1	5.1
24	5.2	5.4
27	5.2	5.6
30	5.2	5.6
33	5.4	5.8
36	5.8	6.0
39	6.0	6.4
42	6.0	6.4
45	6.1	6.4

48  
51  
54  
57  
60  
65  
66  
69  
72

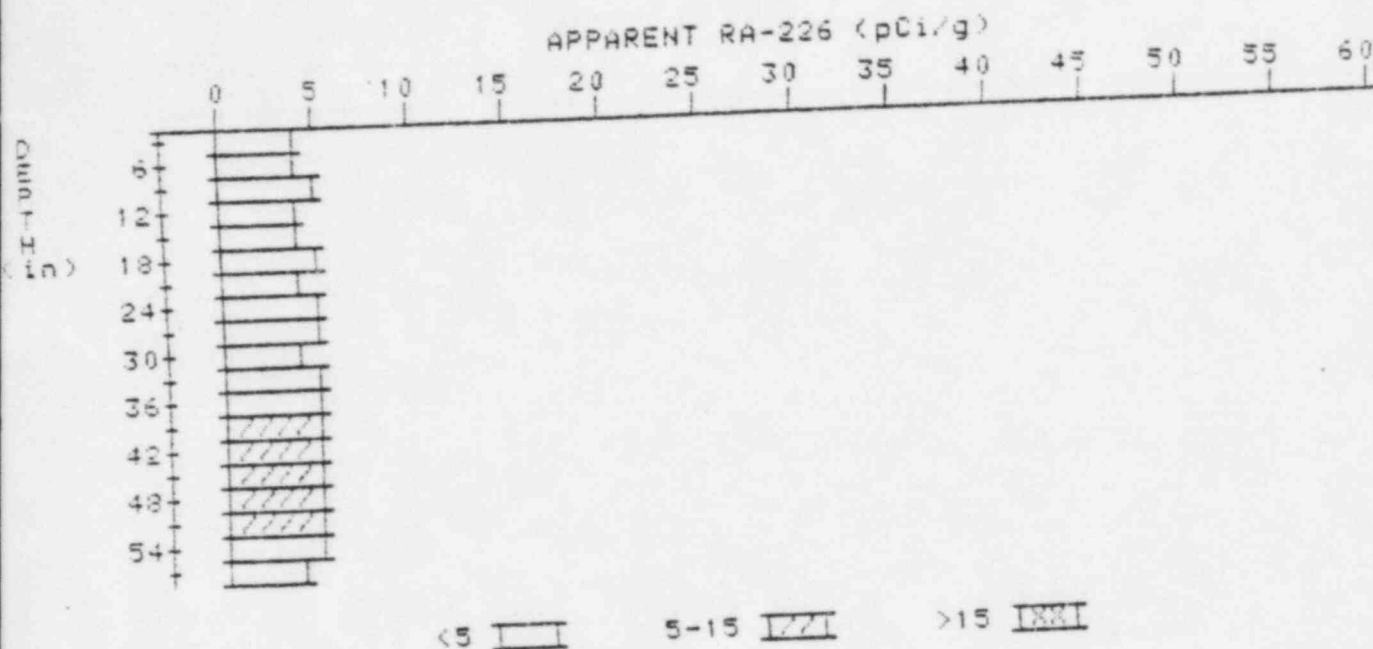
55  
55.5  
55.5  
4.8  
4.4  
4.1  
5.7  
5.3  
5.2

55  
55.5  
55.5  
4.8  
4.2  
4.5  
5.7  
5.6  
5.2

# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

9

PROPERTY NUMBER: GJ-01207-RS  
HOLE NUMBER: 9  
LOCATION: 153245

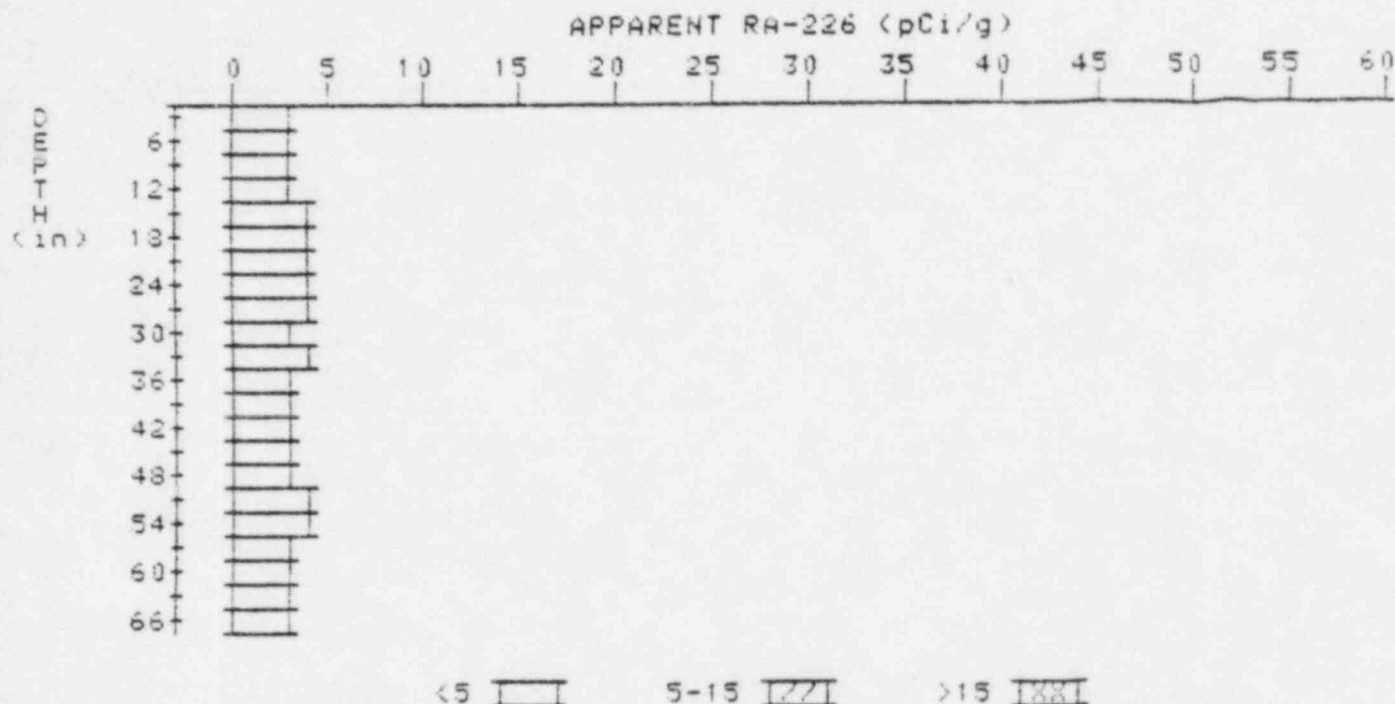


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.9	3.9
6	4.1	4.1
9	4.3	4.7
12	4.3	4.3
15	4.3	3.9
18	4.5	4.9
21	4.5	4.3
24	4.6	4.3
27	4.6	4.6
30	4.6	4.2
33	4.8	5.0
36	4.9	4.7
39	5.1	5.8
42	5.1	5.1
45	5.1	5.3
48	5.0	5.0
51	4.9	5.3
54	4.6	5.0



# APPARENT RADIUM-226 CONCENTRATION 11 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-01207-RS  
HOLE NUMBER: 11  
LOCATION: 160250



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

51  
54  
57  
60  
63  
66

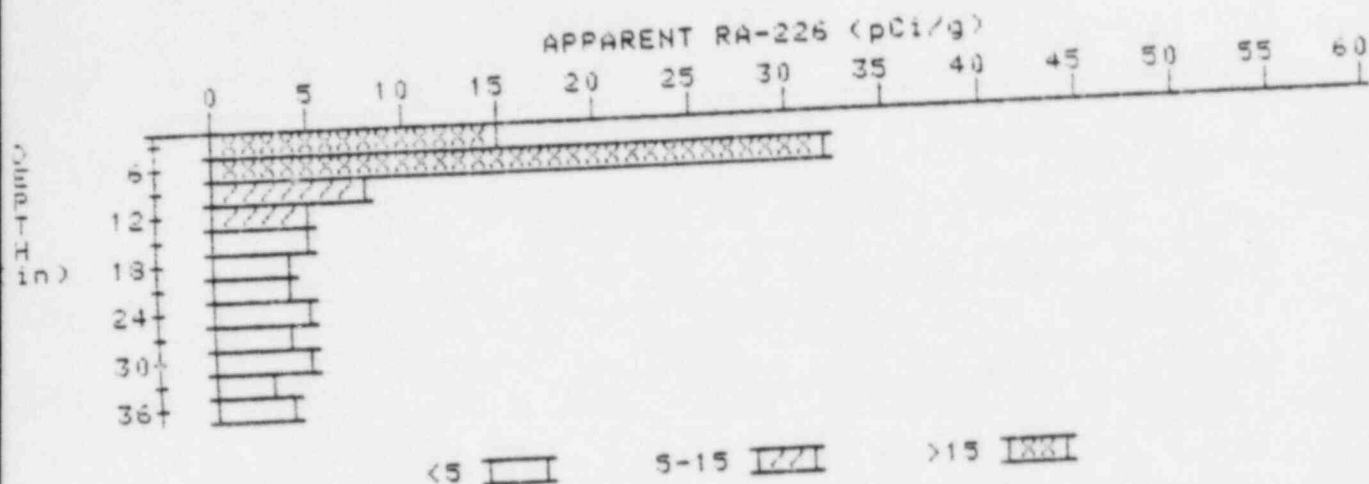
3.4  
3.4  
3.3  
3.3  
3.2  
3.1

3.6  
3.6  
3.1  
3.5  
3.2  
3.1

# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

12

PROPERTY NUMBER: GJ-01207-RS  
HOLE NUMBER: 12  
LOCATION: 160257

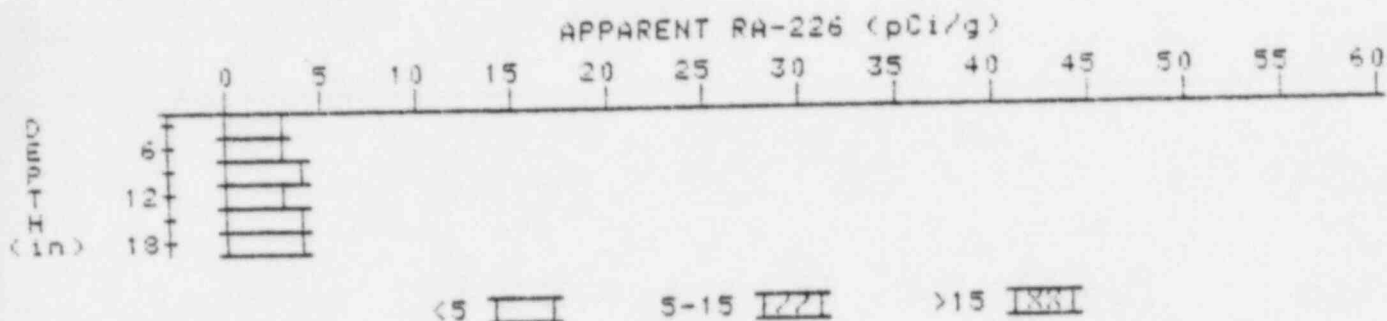


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	15.1	15.1
6	17.5	31.9
9	11.8	8.1
12	8.2	5.2
15	6.3	4.7
18	5.3	4.4
21	4.8	4.4
24	4.5	4.3
27	4.2	3.7
30	4.2	4.6
33	4.0	3.5
36	4.1	4.1



# APPARENT RADIUM-226 CONCENTRATION 13 DECONVOLUTION GRAPH

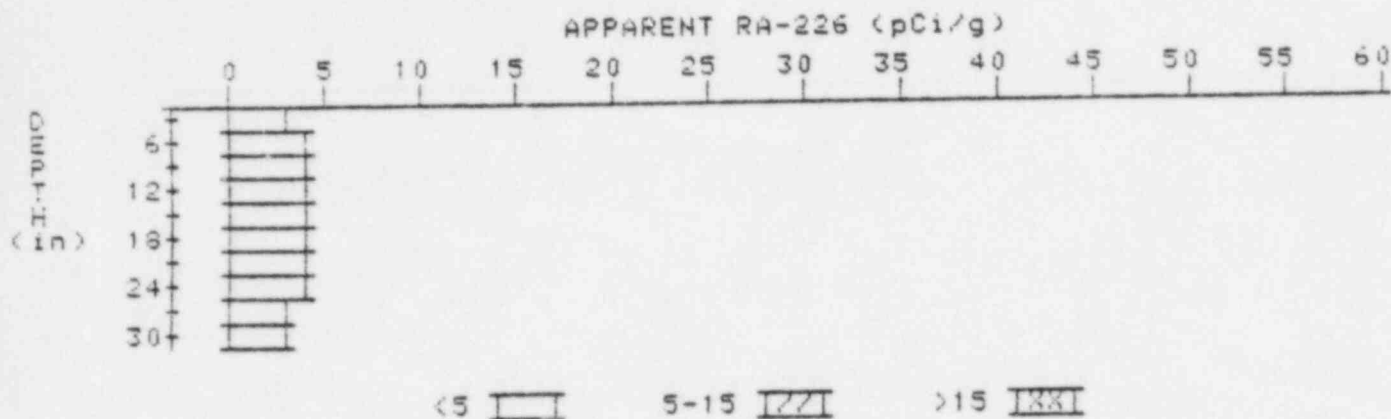
PROPERTY NUMBER: GJ-01207-RS  
HOLE NUMBER: 13  
LOCATION: 160270



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.1	3.1
6	3.2	2.9
9	3.5	4.0
12	3.5	3.1
15	3.7	4.1
18	3.7	3.7

# APPARENT RADIUM-226 CONCENTRATION 15 DECONVOLUTION GRAPH

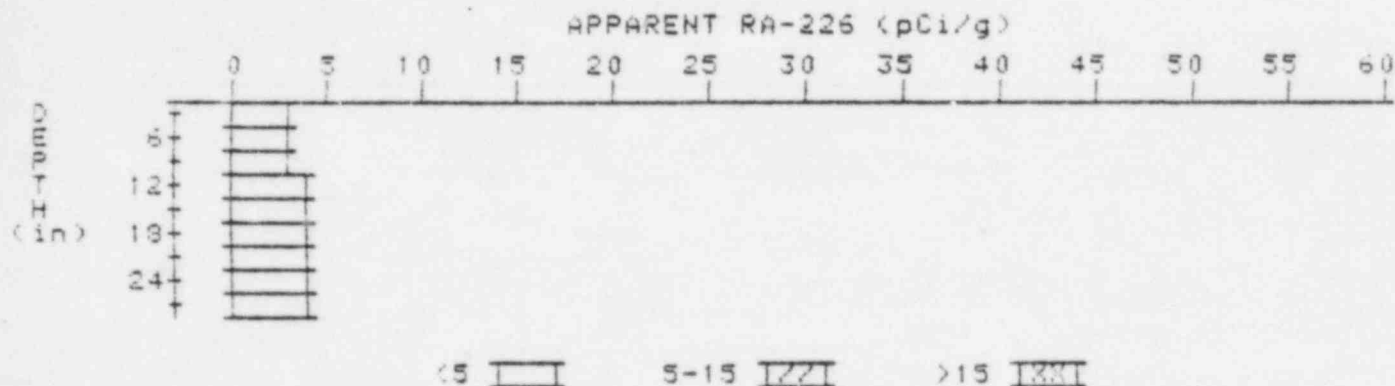
PROPERTY NUMBER: GJ-01207-RS  
HOLE NUMBER: 15  
LOCATION: 179271



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.2	3.2
6	3.5	3.9
9	3.6	3.6
12	3.7	3.9
15	3.7	3.7
18	3.7	3.7
21	3.7	3.7
24	3.7	4.1
27	3.5	3.3
30	3.4	3.4

# APPARENT RADIUM-226 CONCENTRATION 18 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-01207-RS  
HOLE NUMBER: 18  
LOCATION: 217235

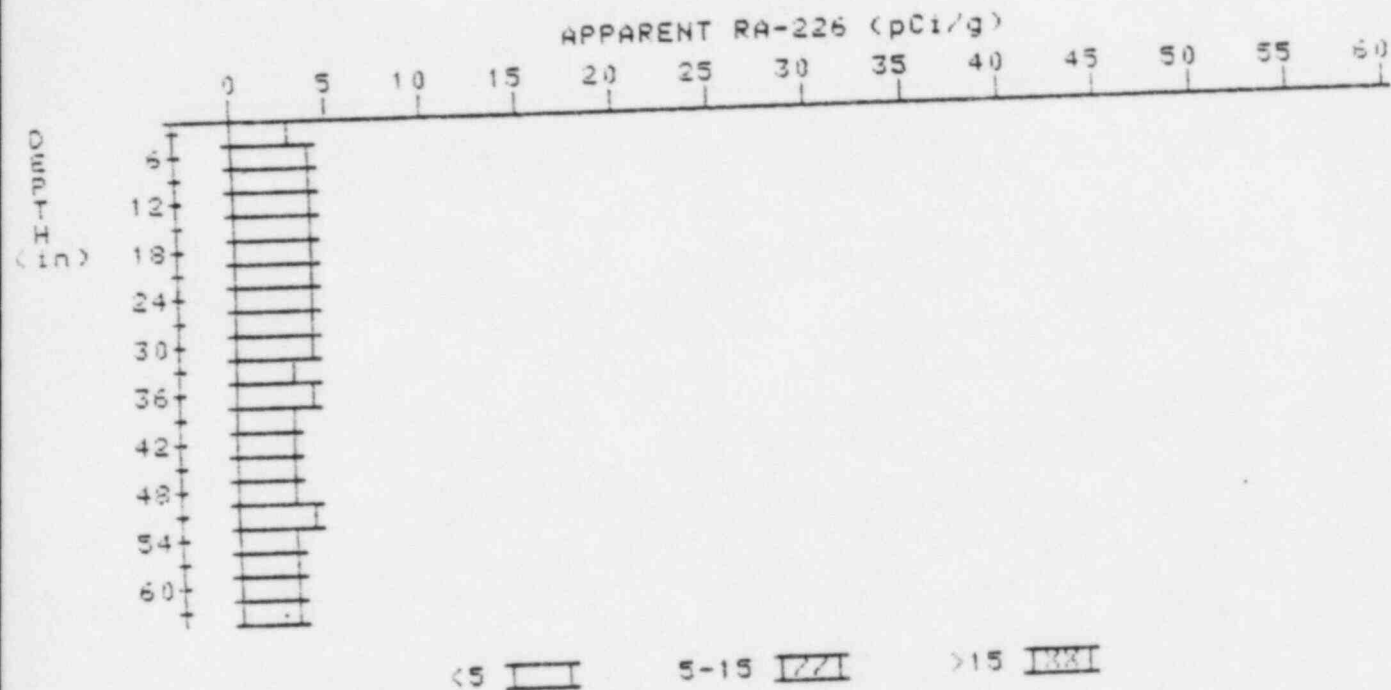


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.9	2.9
6	3.1	3.3
9	3.2	3.0
12	3.4	3.6
15	3.5	3.5
18	3.6	3.8
21	3.6	3.6
24	3.6	3.6
27	3.6	3.6

# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

19

PROPERTY NUMBER: GJ-01207-RS  
HOLE NUMBER: 19  
LOCATION: 222268

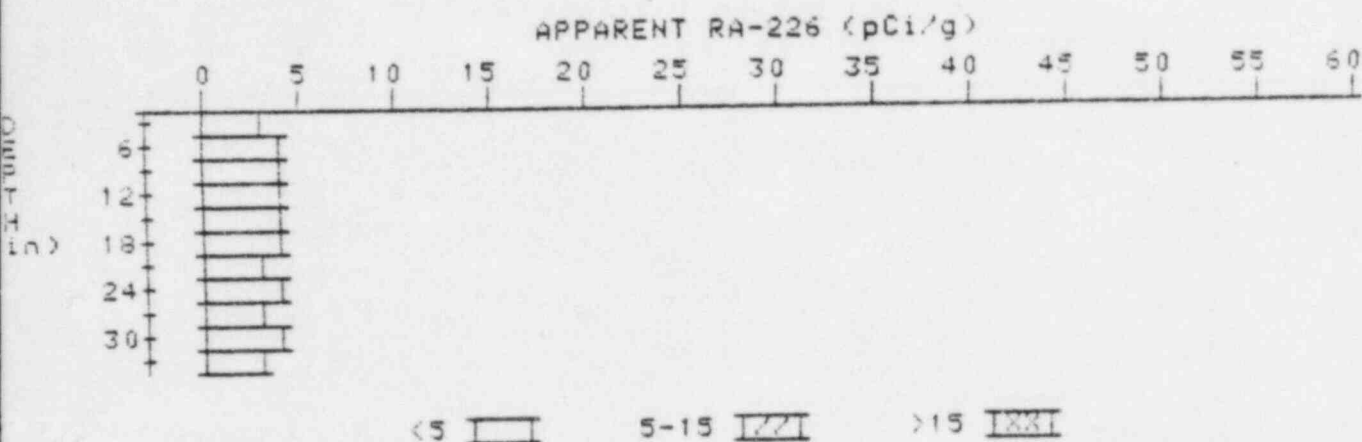


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.4	3.4
6	3.8	4.3
9	3.9	4.3
12	3.8	3.6
15	3.8	4.0
18	3.7	3.8
21	3.7	3.7
24	3.7	3.9
27	3.6	3.6
30	3.8	3.8
33	3.4	3.2
36	3.4	3.6
39	3.3	3.1
42	3.3	3.3
45	3.3	3.8
48	3.2	3.0
51	3.2	3.6

54	3.0	2.6
57	3.0	3.2
60	2.9	2.7
63	2.9	2.9

# APPARENT RADIUM-226 CONCENTRATION 21 DECONVOLUTION GRAPH

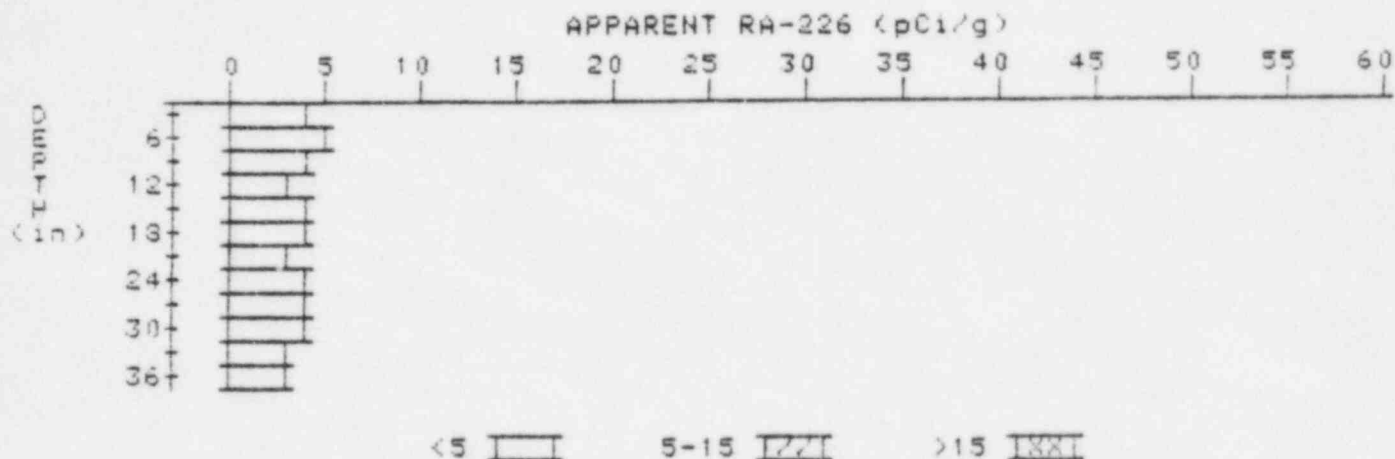
PROPERTY NUMBER: GJ-01207-RS  
HOLE NUMBER: 21  
LOCATION: 227237



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

# APPARENT RADIUM-226 CONCENTRATION 22 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-01207-RS  
HOLE NUMBER: 22  
LOCATION: 235258



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.7	3.7
6	3.9	4.6
9	3.7	3.5
12	3.6	3.4
15	3.6	3.6
18	3.6	3.8
21	3.5	3.3
24	3.5	3.5
27	3.5	3.5
30	3.5	3.9
33	3.3	3.1
36	3.2	3.2

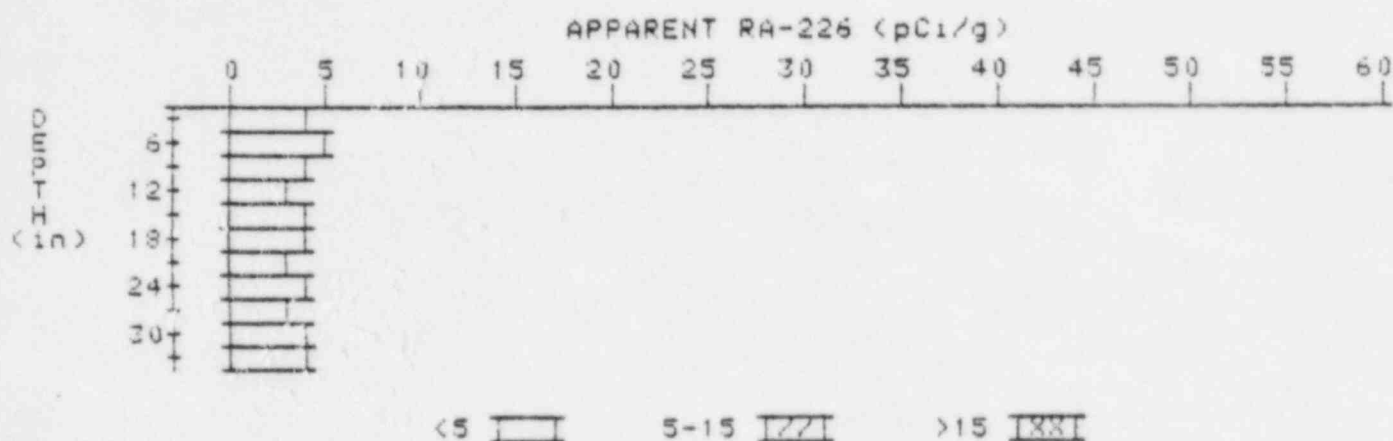


# APPARENT RADIUM-226 CONCENTRATION 23 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-01207-RS

HOLE NUMBER: 23

LOCATION: 23S270



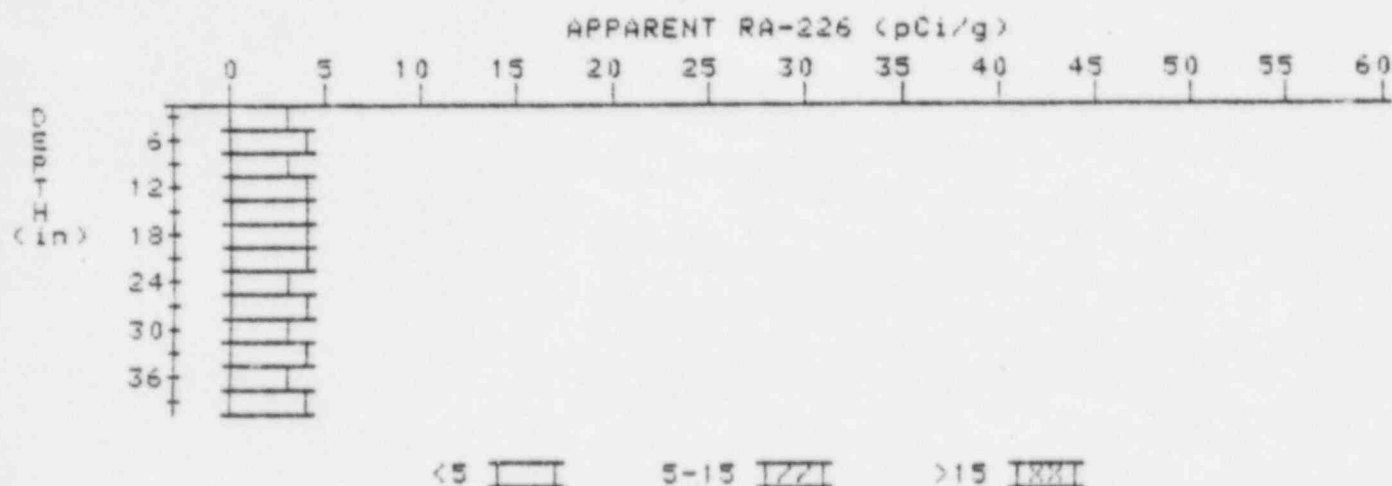
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.7	3.7
6	4.0	4.5
9	4.0	4.4
12	3.8	3.4
15	3.8	3.6
18	3.9	4.4
21	3.7	3.3
24	3.7	3.9
27	3.6	3.4
30	3.6	3.8
33	3.5	3.5

# APPARENT RADIUM-226 CONCENTRATION 24 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-01207-RS

HOLE NUMBER: 24

LOCATION: 240250

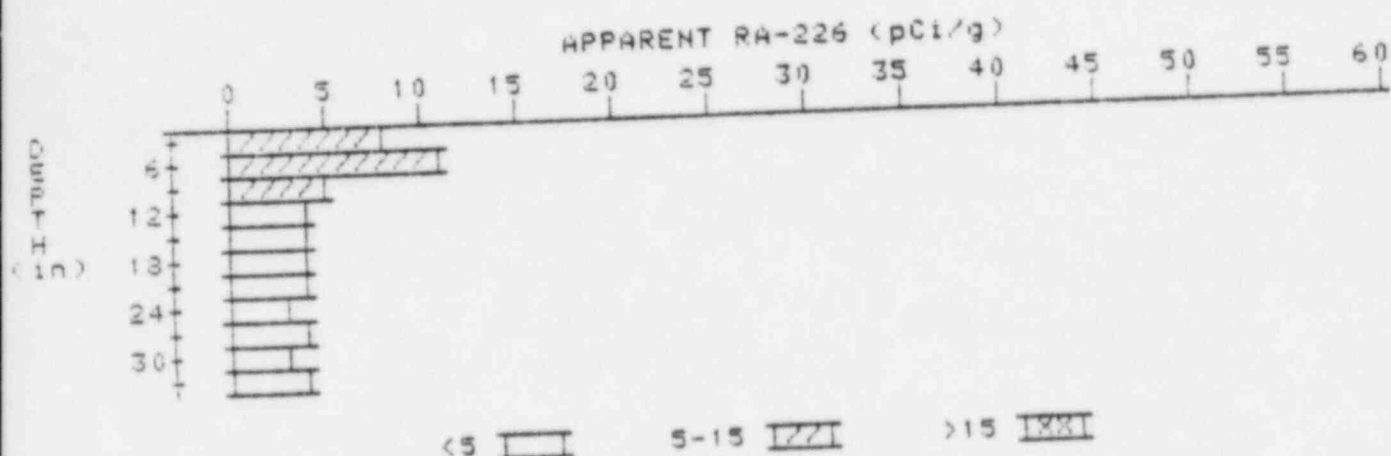


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.6	2.6
6	3.2	3.9
9	3.4	3.4
12	3.6	4.0
15	3.6	3.6
18	3.6	3.6
21	3.6	3.6
24	3.6	3.4
27	3.7	4.1
30	3.6	3.4
33	3.6	3.8
36	3.5	3.5
39	3.5	3.5

# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

25

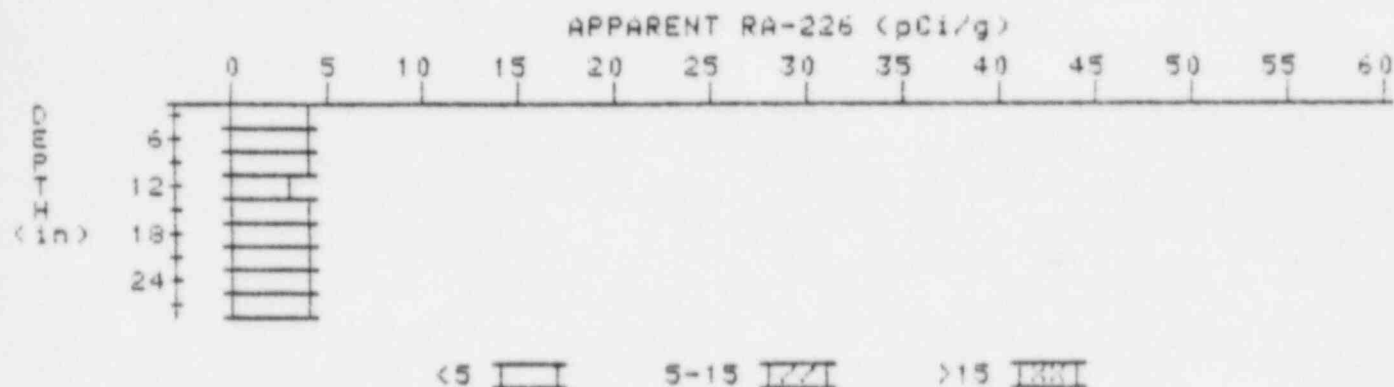
PROPERTY NUMBER: GJ-01207-RS  
HOLE NUMBER: 25  
LOCATION: 245265



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	7.7	7.7
6	7.7	10.5
9	6.1	5.2
12	5.0	4.3
15	4.3	3.8
18	3.9	3.5
21	3.7	3.5
24	3.6	3.4
27	3.6	3.6
30	3.6	3.4
33	3.7	3.7

# APPARENT RADIUM-226 CONCENTRATION 28 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-01207-RS  
HOLE NUMBER: 28  
LOCATION: 290240

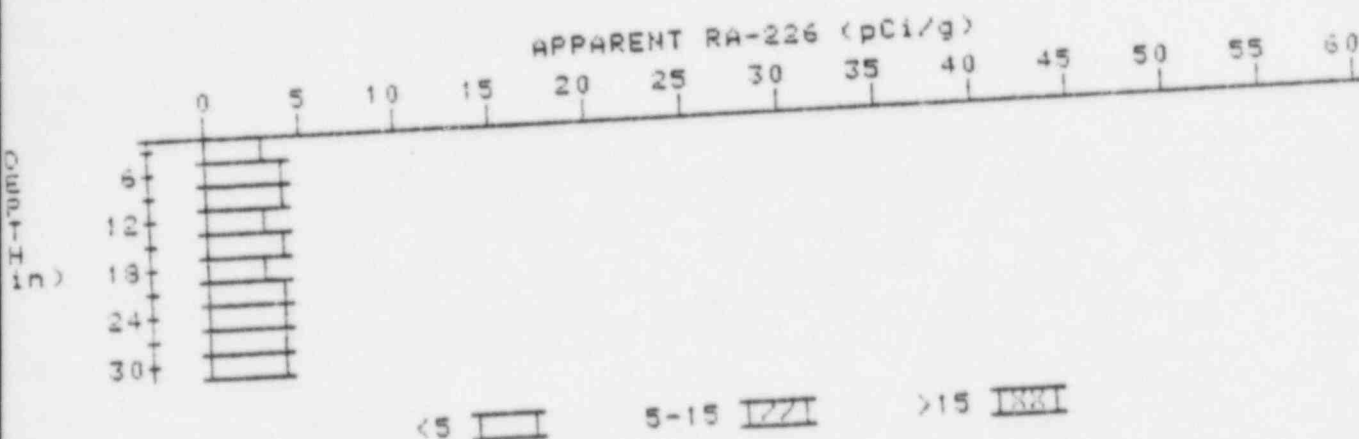


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.9	3.9
6	4.0	4.4
9	3.9	3.9
12	3.8	3.4
15	3.9	4.3
18	3.8	3.6
21	3.8	3.6
24	3.9	4.1
27	3.9	3.9

# APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

29

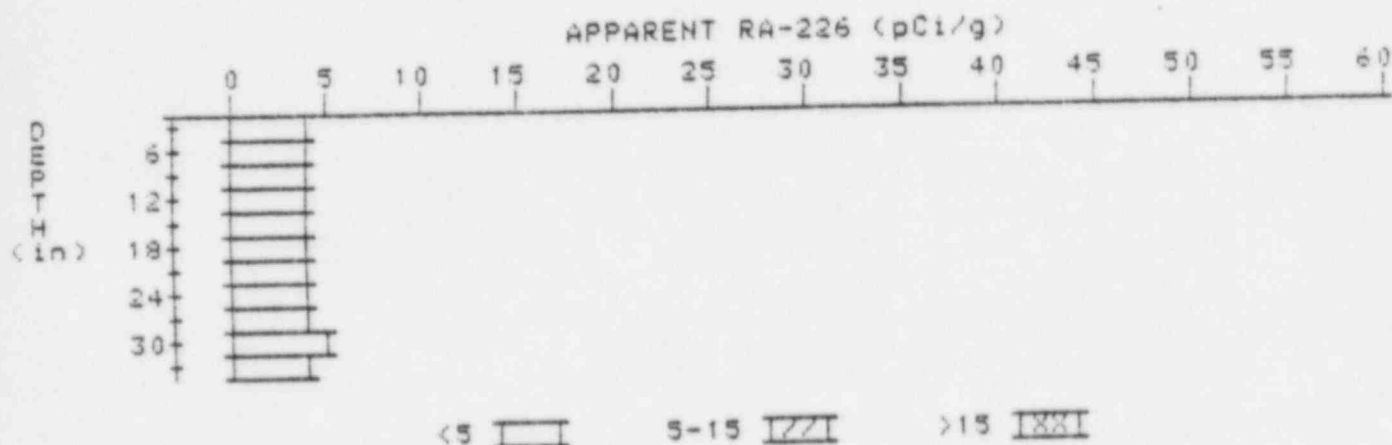
PROPERTY NUMBER: GJ-01207-RS  
HOLE NUMBER: 29  
LOCATION: 290260



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.3	3.3
6	3.6	4.1
9	3.6	3.6
12	3.6	3.4
15	3.7	4.1
18	3.6	3.4
21	3.6	3.6
24	3.6	3.6
27	3.6	3.6
30	3.8	3.8

# APPARENT RADIUM-226 CONCENTRATION 30 DECONVOLUTION GRAPH

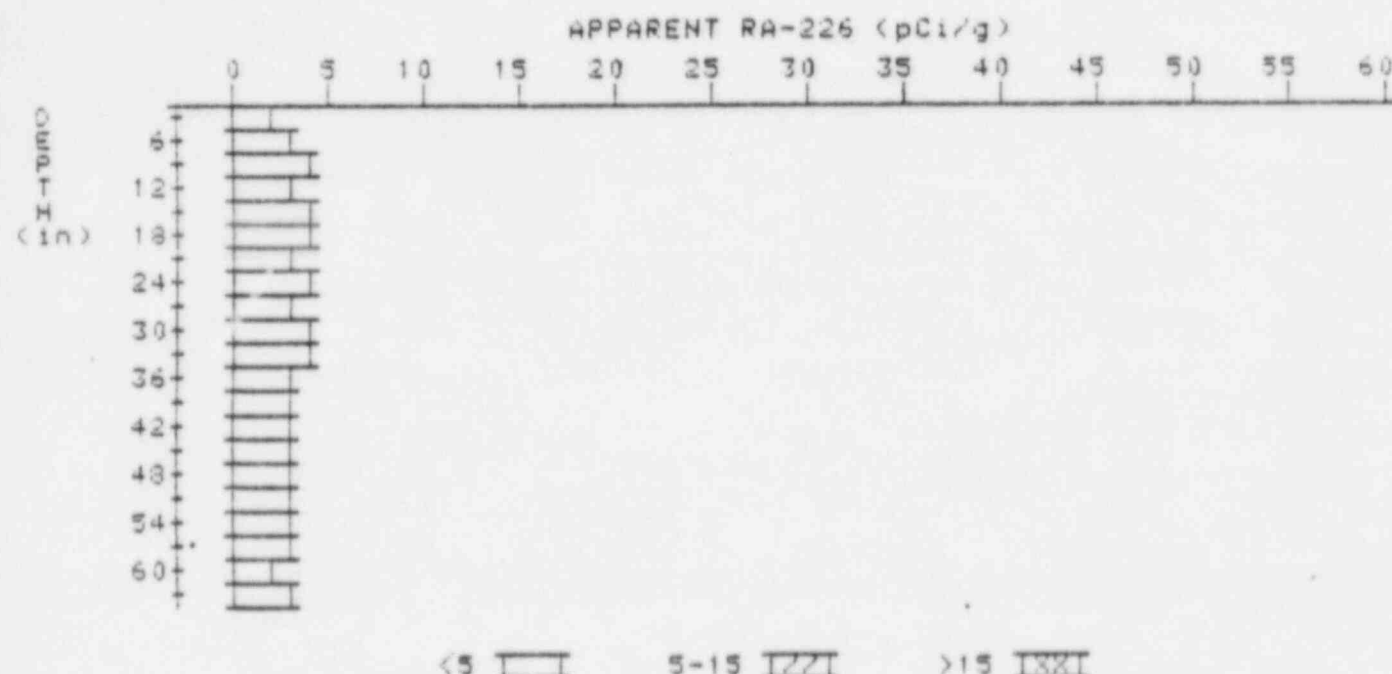
PROPERTY NUMBER: GJ-01207-RS  
HOLE NUMBER: 30  
LOCATION: 293235



Depth (in)	Apparent Radium-226 (pCi/g)	Apparent Radium-226 (pCi/g)
	Undeconvolved	Deconvolved
3	3.5	3.5
6	3.6	3.6
9	3.7	3.7
12	3.8	4.0
15	3.8	3.6
18	3.9	4.1
21	3.9	3.7
24	4.0	4.0
27	4.1	3.9
30	4.3	4.8
33	4.2	4.2

# APPARENT RADIUM-226 CONCENTRATION 31 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-01207-RS  
HOLE NUMBER: 31  
LOCATION: 300265



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.2	2.2
6	2.7	2.7
9	3.2	3.7
12	3.4	3.4
15	3.6	3.3
18	3.7	4.1
21	3.6	3.2
24	3.7	4.2
27	3.3	3.1
30	3.5	3.3
33	3.5	3.7
36	3.4	3.4
39	3.3	3.3
42	3.2	3.2
45	3.1	3.1
48	3.0	3.0
51	2.9	2.9

54  
57  
60  
63

2.8  
2.7  
2.5  
2.5

2.8  
2.9  
2.1  
2.5