

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-13972-RS
ADDRESS: 2355 H ROAD

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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DATE

July 26, 1985

REA13972:REA-KL015

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-13972-RS, is a single-family residence located at 2355 H Road, 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, 347 cu. yd.; interior, 26 cu. yd.

Estimated cost to perform remedial action, including dislocation when applicable, is \$23,996. Remedial action on this property will take approximately 30 days to complete.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 2355 H Road, Grand Junction, Colorado

Zoning: Agricultural Forestry Transitional (AFT)

Lot Size: Approximately 46,500 sf (1 acres)

Legal Description: Beg NW Cor NW4NE4 Sec 32 1N 1W S 734 ft to Wash Nely to a Pt 363 ft E + 435 ft S of Beg N 435 ft W 363 ft to Beg Exc Beg SD NW Cor Sec 32 S 734 ft to Wash Nely to a Pt due S of a Pt 263 ft E of SD NW Cor N to N L1 NW4NE4 W 263 ft to Beg., County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 6 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:	Overhead
Sewer:	Underground
Water:	Underground
Cable TV:	None

Bordering Properties:

North:	H Road
South:	Agricultural land
East:	Single-family residence
West:	Agricultural land

2.2 Existing Facilities and Structures

Primary Structure:

Type:	One and one-half story, single-family residence
Size:	Approximately 1,710 sf
Construction Date:	1900
Construction:	Wood-frame
Foundation:	Mud sill
Footing Depth:	None
Basement:	Part
Crawl Space:	None
Condition:	Fair

Other Structures:

Type:	Shed
Size:	Approximately 927 sf
Construction:	Wood-frame
Foundation:	None
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 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: Moderate

Architectural Significance: Minimal

Historical Significance: Minimal

Two copies of the REA (and photos of all sides of the structure) should be forwarded to the State Historic Preservation Officer.

3.0 RADIOLOGIC SURVEY

3.1 Introduction

Radiologic data were collected by Bendix at DOE ID No. GJ-13972-RS on April 15, 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. CDH records indicate contamination in the yard and associated with the bricks under the sidewalk. ORNL indicates contamination in the rock garden south of the house, the south yard, southeast and northwest of the gravel drive, and two small areas in the southern section of the property.

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): 380 uR/h

Exterior radium-concentration measurements are presented in Appendix Tables 3.1a and 3.1b. Grid-point survey results are shown in Appendix Figures 3.1a and 3.1b. Appendix Figures 3.2a and 3.2b present ranges of elevated gamma readings and indicate areas of possible contamination.

3.2.2 Interior Findings

Background Readings: 12 to 15 uR/h
Highest Inside Gamma Reading (HIG): 26 uR/h

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

3.3 Boreholes, Soil Samples, and Other Measurements

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

3.4 Radon/Radon Daughter Concentration (RDC)

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

3.5 Extent of Contamination

Appendix Figures 3.5a, 3.5b, and 3.5c show identified areas and estimated depths of contamination on this property, based on assessments of all measurements taken. As noted in these figures areas recommended for remedial action that contain identified residual radioactive materials are:

- (AREA A) The soil in the shed is contaminated. The total depth of contamination is 15 inches (approximately 143 sf).
- (AREA B) The dirt floor in the north section of the shed is covered with a contaminated tarp from the millsite. The soil beneath the tarp is contaminated to a depth of 6 inches (approximately 552 sf).
- (AREA C) The dirt floors in the south section of the shed and in the lean-to are contaminated to a depth of 12 inches (approximately 232 sf).
- (AREA D) A small deposit near the northeast property line is contaminated to a depth of 6 inches (approximately 72 sf).
- (AREA E) A contaminated deposit in the flower garden north of the primary structure, and along the driveway, is 15 inches deep (approximately 450 sf).
- (AREA F) The lawn northeast of the primary structure is contaminated to a depth of 6 inches (approximately 228 sf).
- (AREA G) Northeast of the primary structure, a 3-inch-thick concrete sidewalk is underlaid with contamination to an estimated total depth of 12 inches, based on information collected in Area M (approximately 96 sf).
- (AREA H) Along the north side of the primary structure, contamination extends to a depth of 6 inches (approximately 92 sf).
- (AREA I) Along the east property boundary, the soil in the driveway is contaminated to a depth of 6 inches (approximately 1,964 sf).

- (AREA J) A 3-inch-thick concrete sidewalk east of the primary structure is underlaid with contamination. The total depth of contamination is 12 inches, based on information collected in Area M (approximately 84 sf).
- (AREA K) A contaminated deposit running out from the southwest corner of the primary structure extends to a depth of 9 inches (approximately 175 sf).
- (AREA L) The brick paver sidewalk and underlying soil along the south foundation of the primary structure are contaminated to a total depth of 15 inches (approximately 65 sf).
- (AREA M) The lawn extending east and south of the primary structure is contaminated to a depth of 12 inches (approximately 5,280 sf).
- (AREA N) A contaminated tarpaulin, formerly used as an acid precipitation filter at the mill, is beneath a rock collection south of the primary structure. The soil beneath the tarpaulin is contaminated to a depth of 9 inches (approximately 240 sf).
- (AREA O) A deposit south of the primary structure is contaminated to a depth of 12 inches (approximately 200 sf).
- (AREA P) North of the shed, contamination extends to a depth of 9 inches (approximately 798 sf).
- (AREA Q) A portion of the lawn southwest of the primary structure is contaminated to a depth of 9 inches (approximately 325 sf).
- (AREA R) Contaminated bricks are piled along the east side of the shed (approximately 9 sf).
- (AREA S) Southeast of the shed, there is contamination extending to a depth of 9 inches (approximately 145 sf).
- (AREA T) A piece of contaminated canvas is presently being used to cover a pile of wood adjacent to the west side of the lean-to (may have been moved by owner).
- (AREA U) Southwest of the shed, contamination extends to a depth of 6 inches (approximately 480 sf).
- (AREA V) East of the primary structure, contamination extends beneath the rock bed to a depth of 12 inches, based on information collected in Area M (approximately 26 sf).
- (AREA W) The lawn southeast of the primary structure is contaminated to a depth of 15 inches, based on information collected in Area L (approximately 69 sf).

- (AREA X) A deposit near the south property boundary is contaminated to a depth of 6 inches (approximately 260 sf).
- (AREA Y) A pile of contaminated brick is located near the southeast property boundary (approximately 10 sf).
- (AREA Z) Southwest of Area X, contamination extends to a depth of 6 inches (approximately 42 sf).

(AREAS REQUIRING FURTHER INVESTIGATION DURING REMEDIAL ACTION)

After contamination is removed from the exterior, the interior southeast corner of the primary structure should be rescanned to confirm that elevated readings recorded in this area are shine from the contamination outside.

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-13972-RS, includes removal of all areas identified as containing radioactive material (as discussed in Section 3.5 and shown in Appendix Figures 3.5a, 3.5b, and 3.5c) 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 \$23,996.

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

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

Appendix Figures:

Figure 2.1	Vicinity Map
Figure 2.2a	Site Plan
Figure 2.2b	Site Plan
Figure 3.1a	Exterior Grid-Point Exposure Rates
Figure 3.1b	Exterior Grid-Point Exposure Rates
Figure 3.2a	Exterior Gamma Scan
Figure 3.2b	Exterior Gamma Scan
Figure 3.3a	Interior Gamma Exposure Rates - Crawl Space/Cellar
Figure 3.3b	Interior Gamma Exposure Rates - Ground Floor
Figure 3.3c	Interior Gamma Exposure Rates and Sample Locations
Figure 3.4a	Exterior Sample Locations
Figure 3.4b	Exterior Sample Locations
Figure 3.5a	Interior Estimated Extent of Contamination
Figure 3.5b	Exterior Estimated Extent of Contamination
Figure 3.5c	Exterior Estimated Extent of Contamination

Official Survey Report

Memo of Understanding

Team Leader Notes

Deconvolution Graphs (Apparent Radium-226 Concentration)

Radium Concentrations at Exterior Locations

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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	140200	00	DS	<1.0		*	Northwest property line Background DC = 0 inches
		06	DS	<1.0		*	
		00	GS		<1.0	*	
		00-06	SS			2.1	
		03	TC	3.0		*	
		06	TC	3.3		*	
		09	TC	3.4		*	
		12	BH	3.5	<1.0	*	
		15	TC	3.5		*	
		18	TC	3.5		*	
		21	TC	3.4		*	
		24	BH	3.4	<1.0	*	
		27	TC	3.3		*	
		30	TC	3.5		*	
		33	TC	3.3		*	
		36	TC	3.3		*	
5	145218	00	DS	<1.0		*	Northwest property
6	145248	00	DS	1.7		*	North property
7	145263	00	DS	2.1		*	North property
		06	DS	1.6		*	
8	150240	00	DS	8.6		*	North of the primary structure Not mill tailings
		06	DS	6.8		*	
		12	DS	1.9		*	
9	155225	03	TC	8.9		*	North of the primary structure Not mill tailings DC = 0 inches
		06	TC	8.1		*	
		09	TC	6.3		*	
		12	TC	5.2		*	
		15	TC	4.7		*	
		18	TC	4.5		*	
		21	TC	4.4		*	
		24	TC	4.3		*	
		27	TC	4.3		*	
		30	TC	4.2		*	
		33	TC	4.0		*	
10	157256	00-08	SS			27.3	Along the north flower garden
		03	TC	13.3		*	

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	157256	06	BH	11.4	5.0	*	Not mill tailings DC = 0 inches
		09	TC	8.4		*	
		12	BH	5.9	2.5	*	
		15	TC	5.0		*	
		18	TC	4.4		*	
		21	TC	4.2		*	
		24	BH	4.0	1.6	*	
		27	TC	4.0		*	
		30	TC	3.9		*	
		33	TC	3.8		*	
		36	TC	3.8		*	
11	158242	03	TC	12.3		*	North of the primary structure in flower garden Not mill tailings DC = 0 inches
		06	TC	8.6		*	
		09	TC	5.9		*	
		12	TC	4.7		*	
		15	TC	4.2		*	
		18	TC	4.1		*	
		21	TC	4.1		*	
		24	TC	4.0		*	
		27	TC	3.9		*	
		30	TC	3.8		*	
		33	TC	3.8		*	
		36	TC	3.7		*	
12	159199	00	DS	2.3		*	Northwest yard
		06	DS	1.2		*	
13	160283	12-18	SS			2.3	Northeast property Not mill tailings
		00	DS	2.8		*	
		06	DS	2.4		*	
		12	DS	2.4		*	
14	171225	18	DS	1.0		*	North of the primary structure DC = 0 inches
		03	TC	4.4		*	
		06	TC	4.3		*	
		09	TC	4.1		*	
		12	TC	4.0		*	
		15	TC	3.9		*	
		18	TC	4.0		*	
		21	TC	4.0		*	
		24	TC	4.1		*	
		27	TC	4.0		*	

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.		
14	171225	30	TC	3.8		*	
		33	TC	3.8		*	
15	172212	00	DS	<1.0		*	North of the primary structure
		06	DS	1.2		*	
16	175283	00	DS	1.7		*	East of driveway
		06	DS	1.1		*	
		12	DS	<1.0		*	
17	183282	00	DS	2.6		*	East property
		06	DS	2.2		*	
		12	DS	1.2		*	
		18	DS	1.1		*	
18	185215	00-06	SS			1.8	North of the primary structure
		00	DS	<1.0		*	
		06	DS	1.4		*	
19	186245	00	DS	1.1		*	North property
20	186255	03	TC	5.0		*	North of the primary structure
		06	TC	5.4		*	
		09	TC	5.3		*	
		12	TC	5.1		*	DC = 15 inches Based on the deconvolution graph
		15	TC	4.7		*	
		18	TC	4.3		*	
		21	TC	4.1		*	
		24	TC	3.9		*	
		27	TC	3.8		*	
		30	TC	3.7		*	
		33	TC	3.7		*	
21	203247	00-06	SS			5.0	Northeast of the primary structure
		00	DS	2.3		*	
		06	DS	<1.0		*	
22	205258	03	TC	7.6		*	Northeast of the primary structure
		06	TC	7.2		*	
		09	TC	5.9		*	
		12	TC	4.9		*	DC = 15 inches Based on all available data
		15	TC	4.5		*	
		18	TC	4.2		*	
		21	TC	4.0		*	

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.		
22	205258	24	TC	4.0		*	
		27	TC	3.8		*	
		30	TC	3.7		*	
		33	TC	3.7		*	
		36	TC	3.6		*	
		39	TC	3.6		*	
23	205284	00	DS	2.1		*	East of driveway
		06	DS	1.5		*	
24	209239	00	DS	<1.0		*	North yard area
		06	DS	1.5		*	
25	224215	00	DS	1.8		*	North of the
		06	DS	1.6		*	primary structure
26	226255	00	GS		8.1	*	Sidewalk northeast
		00	DS	3.2		*	of the primary
		06	DS	3.9		*	structure
27	229204	00	DS	7.2		*	North side of the
		06	DS	1.5		*	primary structure
		03	TC	4.5		*	
		06	TC	4.4		*	
		09	TC	4.2		*	DC = 6 inches
		12	TC	4.1		*	Based on all
		15	TC	4.0		*	available data
		18	TC	3.8		*	
		21	TC	3.8		*	
		24	TC	3.9		*	
		27	TC	3.8		*	
		30	TC	3.8		*	
		33	TC	3.8		*	
		36	TC	3.7		*	
28	230215	00	DS	2.9		*	North side of the
		06	DS	2.4		*	primary structure
		12	DS	1.7		*	
29	230235	03	TC	10.3		*	Gas line
		06	TC	8.6		*	
		09	TC	6.5		*	
		12	TC	5.2		*	

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.		
29	230235	15	TC	4.6		*	DC = 12 inches
		18	TC	4.1		*	Based on the
		21	TC	4.0		*	deconvolution graph
		24	TC	3.9		*	
		27	TC	3.7		*	
		30	TC	3.8		*	
30	240240	00	DS	2.3		*	East property
31	240250	03	TC	6.1		*	East of the
		06	TC	6.4		*	primary structure
		09	TC	5.7		*	
		12	TC	4.9		*	DC = 12 inches
		15	TC	4.0		*	Based on the
		18	TC	4.0		*	deconvolution graph
		21	TC	4.0		*	
		24	TC	4.0		*	
		27	TC	3.9		*	
		30	TC	3.8		*	
		33	TC	3.7		*	
		36	TC	3.6		*	
32	245265	03	TC	5.0		*	East of the
		06	TC	4.7		*	primary structure
		09	TC	4.3		*	DC = 6 inches
		12	TC	4.1		*	Based on all
		15	TC	3.9		*	available data
		18	TC	3.9		*	
		21	TC	3.9		*	
		24	TC	3.8		*	
		27	TC	3.7		*	
		30	TC	3.7		*	
		33	TC	3.6		*	
33	248200	03	TC	5.2		*	Southwest corner of
		06	TC	5.2		*	primary structure
		09	TC	4.7		*	Water line
		12	TC	4.2		*	DC = 9 inches
		15	TC	4.2		*	Based on the
		18	TC	4.1		*	deconvolution graph
		21	TC	3.9		*	

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.		
33	248200	24	TC	3.9		*	
		27	TC	3.8		*	
		30	TC	3.9		*	
		33	TC	3.8		*	
		36	TC	3.8		*	
		39	TC	3.7		*	
		42	TC	3.6		*	
		45	TC	3.6		*	
		48	TC	3.5		*	
		51	TC	3.3		*	
		54	TC	3.4		*	
		57	TC	3.4		*	
		60	TC	3.3		*	
		63	TC	3.2		*	
		66	TC	3.2		*	
34	260215	03	TC	3.6		*	Southwest corner of primary structure Sewer line DC = 0 inches
		06	TC	3.7		*	
		09	TC	3.6		*	
		12	TC	3.6		*	
		15	TC	3.6		*	
		18	TC	3.8		*	
		21	TC	3.8		*	
		24	TC	3.8		*	
		27	TC	3.9		*	
		30	TC	3.8		*	
		33	TC	3.8		*	
		36	TC	3.8		*	
		39	TC	3.7		*	
		42	TC	3.7		*	
		45	TC	3.6		*	
		48	TC	3.6		*	
		51	TC	3.6		*	
		54	TC	3.6		*	
35	260275	03	TC	3.3		*	In driveway DC = 6 inches Based on all available data
		06	TC	3.4		*	
		09	TC	3.6		*	
		12	TC	3.5		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-13972-RS

2355 H Road

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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.		
35	260275	15	TC	3.5		*	
		18	TC	3.4		*	
		21	TC	3.5		*	
		24	TC	3.6		*	
		27	TC	3.6		*	
		30	TC	3.7		*	
		33	TC	3.7		*	
		36	TC	3.6		*	
36	261233	00	GS		6.7	*	Brick sidewalk
37	262228	00-02	SS			3.1	Brick
		02-08	SS			61.8	Soil under brick
		03	TC	13.5		*	
		06	TC	15.5		*	DC = 15 inches
		09	TC	11.2		*	Based on all
		12	TC	8.2		*	data available
		15	TC	6.0		*	
		18	TC	4.9		*	
		21	TC	4.5		*	
		24	TC	4.1		*	
		27	TC	4.0		*	
		30	TC	3.9		*	
		33	TC	3.9		*	
		36	TC	3.8		*	
38	265240	04-08	SS			23.7	Beside brick
		03	TC	24.6		*	sidewalk
		06	TC	20.9		*	
		09	TC	14.6		*	DC = 9 inches
		12	TC	10.2		*	Based on all
		15	TC	7.3		*	data available
		18	TC	5.8		*	
		21	TC	4.9		*	
		24	TC	4.5		*	
		27	TC	4.2		*	
		30	TC	4.1		*	
		33	TC	4.0		*	
39	265255	03	TC	7.9		*	East of the
		06	TC	6.9		*	primary structure
		09	TC	5.8		*	DC = 12 inches
		12	TC	4.9		*	Based on the
		15	TC	4.5		*	deconvolution graph

Radium Concentrations at Exterior Locations

DOE ID #GJ-13972-RS

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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.		
39	265255	18	TC	4.2		*	
		21	TC	4.0		*	
		24	TC	3.8		*	
		27	TC	3.8		*	
		30	TC	3.7		*	
		33	TC	3.7		*	
		36	TC	3.7		*	
40	268225	00-06	SS			6.9	Rock garden area
		03	TC	8.7		*	
		06	TC	6.3		*	
		09	TC	5.1		*	DC = 9 inches
		12	TC	4.4		*	Based on all
		15	TC	4.1		*	available data
		18	TC	3.8		*	
		21	TC	3.8		*	
		24	TC	3.9		*	
		27	TC	3.8		*	
		30	TC	3.8		*	
		33	TC	3.8		*	
		36	TC	3.7		*	
41	270212	00	DS	2.5		*	South of the
		06	DS	1.1		*	primary structure
42	270286	00	DS	3.1		*	Driveway
		06	DS	1.4		*	
43	275215	03	TC	6.2		*	South yard
		06	TC	7.0		*	
		09	TC	6.2		*	DC = 12 inches
		12	TC	5.3		*	Based on the
		15	TC	4.7		*	deconvolution graph
		18	TC	4.3		*	
		21	TC	4.2		*	
		24	TC	4.2		*	
		27	TC	4.1		*	
		30	TC	4.1		*	
		33	TC	3.9		*	
		36	TC	3.9		*	
44	282249	03	TC	12.8		*	Southeast of the
		06	TC	10.2		*	primary structure
		09	TC	7.4		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-13972-RS

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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.		
44	282249	12	TC	5.6		*	DC = 12 inches
		15	TC	4.6		*	Based on the
		18	TC	4.3		*	deconvolution graph
		21	TC	4.0		*	
		24	TC	3.9		*	
		27	TC	3.8		*	
		30	TC	3.9		*	
		33	TC	3.9		*	
		36	TC	4.1		*	
45	283282	00	DS	2.4		*	Southeast property
		06	DS	1.2		*	
46	285235	03	TC	11.3		*	Backyard
		06	TC	8.7		*	
		09	TC	6.7		*	DC = 12 inches
		12	TC	5.3		*	Based on the
		15	TC	4.8		*	deconvolution graph
		18	TC	4.4		*	
		21	TC	4.2		*	
		24	TC	4.0		*	
		27	TC	3.9		*	
		30	TC	3.7		*	
		33	TC	3.7		*	
		36	TC	3.7		*	
47	286225	00	DS	2.4		*	South of the
		06	DS	1.9		*	primary structure
		12	DS	1.5		*	
48	295198	03	TC	5.8		*	South of the
		06	TC	6.2		*	primary structure
		09	TC	5.6		*	
		12	TC	5.0		*	DC = 12 inches
		15	TC	4.5		*	Based on the
		18	TC	4.2		*	deconvolution graph
		21	TC	4.0		*	
		24	TC	3.9		*	
		27	TC	3.9		*	
		30	TC	3.8		*	
		33	TC	3.8		*	
		36	TC	3.7		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-13972-RS

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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.		
49	295215	03	TC	5.3		*	South of the primary structure
		06	TC	5.3		*	
		09	TC	4.9		*	
		12	TC	4.5		*	DC = 9 inches Based on the deconvolution graph
		15	TC	4.3		*	
		18	TC	4.2		*	
		21	TC	4.1		*	
		24	TC	4.1		*	
		27	TC	4.0		*	
		30	TC	3.9		*	
		33	TC	3.9		*	
		36	TC	3.8		*	
50	295235	03	TC	5.0		*	South of the primary structure
		06	TC	5.2		*	
		09	TC	4.9		*	
		12	TC	4.5		*	DC = 12 inches Based on the deconvolution graph
		15	TC	4.3		*	
		18	TC	4.2		*	
		21	TC	4.3		*	
		24	TC	4.2		*	
		27	TC	4.1		*	
		30	TC	4.1		*	
		33	TC	3.9		*	
		36	TC	3.9		*	
51	295255	03	TC	5.6		*	North of shed
		06	TC	4.8		*	
		09	TC	4.4		*	
		12	TC	4.1		*	DC = 9 inches Based on all available data
		15	TC	4.0		*	
		18	TC	4.0		*	
		21	TC	3.8		*	
		24	TC	3.8		*	
		27	TC	3.7		*	
		30	TC	3.7		*	
		33	TC	3.6		*	
		36	TC	3.6		*	
52	296275	03	TC	4.3		*	In driveway North of shed
		06	TC	4.0		*	
		09	TC	3.7		*	

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.		
52	296275	12	TC	3.7		*	DC = 9 inches
		15	TC	3.6		*	Based on all
		18	TC	3.6		*	available data
		21	TC	3.6		*	
		24	TC	3.6		*	
		27	TC	3.5		*	
		30	TC	3.5		*	
		33	TC	3.5		*	
		36	TC	3.5		*	
		39	TC	3.5		*	
53	300285	00	DS	1.2		*	In driveway
54	302273	03	TC	11.5		*	In driveway
		06	TC	8.4		*	
		09	TC	5.9		*	DC = 9 inches
		12	TC	4.8		*	Based on the
		15	TC	4.3		*	deconvolution graph
		18	TC	4.1		*	
		21	TC	4.1		*	
		24	TC	4.1		*	
		27	TC	4.1		*	
		30	TC	4.1		*	
55	320220	03	TC	21.8		*	South yard
		06	TC	20.3		*	Leach field
		09	TC	14.6		*	
		12	TC	9.8		*	DC = 12 inches
		15	TC	6.8		*	Based on the
		18	TC	5.4		*	deconvolution graph
		21	TC	4.7		*	
		24	TC	4.3		*	
		27	TC	4.1		*	
		30	TC	4.0		*	
56	325195	03	TC	3.7		*	West side of
		06	TC	4.0		*	south yard
		09	TC	4.1		*	DC = 0 inches

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.		
56	325195	12	TC	3.9		*	
		15	TC	3.9		*	
		18	TC	3.8		*	
		21	TC	3.7		*	
		24	TC	3.7		*	
		27	TC	3.7		*	
		30	TC	3.6		*	
		33	TC	3.5		*	
		36	TC	3.5		*	
		39	TC	3.3		*	
57	325235	03	TC	7.7		*	South of the primary structure DC = 12 inches Based on the deconvolution graph
		06	TC	7.4		*	
		09	TC	6.1		*	
		12	TC	5.0		*	
		15	TC	4.4		*	
		18	TC	4.1		*	
		21	TC	4.0		*	
		24	TC	4.0		*	
		27	TC	3.9		*	
		30	TC	3.9		*	
		33	TC	3.7		*	
		36	TC	3.6		*	
58	330275	00	DS	2.4		*	East of shed
		06	DS	1.5		*	
59	340225	03	TC	12.4		*	South yard DC = 12 inches Based on all available data
		06	TC	9.7		*	
		09	TC	6.9		*	
		12	TC	5.4		*	
		15	TC	4.6		*	
		18	TC	4.1		*	
		21	TC	3.9		*	
		24	TC	3.8		*	
		27	TC	3.7		*	
		30	TC	3.6		*	
60	340230	03	TC	16.2		*	South yard DC = 12 inches Based on the deconvolution graph
		06	TC	11.5		*	
		09	TC	8.1		*	
		12	TC	5.9		*	
		15	TC	5.0		*	

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.		
60	340230	18	TC	4.4		*	
		21	TC	3.9		*	
		24	TC	3.9		*	
		27	TC	3.6		*	
		30	TC	3.7		*	
		33	TC	3.5		*	
61	340243	03	TC	9.5		*	West of shed
		06	TC	7.9		*	
		09	TC	6.5		*	DC = 12 inches
		12	TC	5.3		*	Based on the
		15	TC	4.7		*	deconvolution graph
		18	TC	4.2		*	
		21	TC	4.1		*	
		24	TC	3.9		*	
62	342196	00	DS	1.7		*	West of ditch
		06	DS	1.2		*	
63	344264	03	TC	3.8		*	East of shed
		06	TC	3.8		*	
		09	TC	3.8		*	DC = 0 inches
		12	TC	3.8		*	
		15	TC	3.8		*	
		18	TC	3.7		*	
		21	TC	3.8		*	
		24	TC	3.7		*	
		27	TC	3.7		*	
		30	TC	3.6		*	
		33	TC	3.6		*	
		36	TC	3.5		*	
64	345208	00	DS	3.7		*	Southwest yard
		06	DS	2.9		*	
		03	TC	4.2		*	DC = 0 inches
		06	TC	4.6		*	
		09	TC	4.3		*	
		12	TC	3.9		*	
		15	TC	3.9		*	
		18	TC	3.8		*	
		21	TC	3.7		*	
		24	TC	3.6		*	
		27	TC	3.6		*	
		30	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.		
64	345208	33	TC	3.3		*	
		36	TC	3.2		*	
		39	TC	3.0		*	
65	355260	00	DS	2.3		*	Southeast of shed
		06	DS	2.7		*	
66	365235	03	TC	7.5		*	South yard
		06	TC	7.7		*	
		09	TC	6.0		*	
		12	TC	4.8		*	DC = 12 inches Based on the deconvolution graph
		15	TC	4.3		*	
		18	TC	4.1		*	
		21	TC	3.8		*	
		24	TC	3.6		*	
		27	TC	3.6		*	
		30	TC	3.4		*	
		33	TC	3.3		*	
		36	TC	3.2		*	
67	365245	00	DS	4.6		*	South of shed DC = 12 inches
		06	DS	3.3		*	
		12	DS	1.7		*	
68	365258	03	TC	5.3		*	Southeast of shed
		06	TC	5.3		*	
		09	TC	4.8		*	
		12	TC	4.3		*	DC = 9 inches Based on the deconvolution graph
		15	TC	3.9		*	
		18	TC	3.8		*	
		21	TC	3.8		*	
		24	TC	3.6		*	
		27	TC	3.6		*	
69	370210	00	DS	2.3		*	North property
		06	DS	1.5		*	
70	375213	00-06	SS			3.1	North property
		00	DS	3.6		*	
		06	DS	1.4		*	

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.		
71	375224	00	DS	2.5		*	North property
		06	DS	1.1		*	
72	380215	00	DS	1.4		*	North property
		06	DS	<1.0		*	

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 = 04-15-85
Team Leader = CH

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.		
73	225285	00	DS	2.6		*	South of the primary structure
		06	DS	<1.0		*	
74	235225	00	DS	1.0		*	South of the primary structure
75	237262	00	DS	<1.0		*	South of the primary structure
76	237278	00	DS	42.2		*	South property DC = 6 inches
		06	DS	2.3		*	
		12	DS	2.0		*	
		18	DS	1.4		*	
77	238273	03	TC	3.6		*	South property DC = 0 inches
		06	TC	3.6		*	
		09	TC	3.5		*	
		12	TC	3.6		*	
		15	TC	3.6		*	
		18	TC	3.7		*	
		21	TC	3.8		*	
		24	TC	3.8		*	
		27	TC	3.9		*	
		30	TC	4.0		*	
78	250255	00	DS	<1.0		*	South property
79	250260	03	TC	14.3		*	South property DC = 6 inches Based on the deconvolution graph
		06	TC	8.4		*	
		09	TC	5.7		*	
		12	TC	4.5		*	
		15	TC	4.0		*	
		18	TC	3.9		*	
		21	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.		
79	250260	24	TC	3.9		*	
		27	TC	4.0		*	
		30	TC	4.1		*	

Tool 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 = 04-15-85
Team Leader = CH

Radium Concentrations at Interior Locations

DOE ID #GJ-13972-RS

2355 H Road

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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		00-02	SS			665.1	Brick
		03	TC	60.3		*	In shed
		06	TC	51.2		*	
		09	TC	35.6		*	DC = 15 inches
		12	TC	25.2		*	Based on the
		15	TC	17.1		*	deconvolution graph
		18	TC	11.7		*	
		21	TC	8.3		*	
		24	TC	6.4		*	
		27	TC	5.3		*	
		30	TC	4.7		*	
		33	TC	4.2		*	
		36	TC	4.0		*	
2		00	DS	2.7		*	Inside shed
		06	DS	2.0		*	By south shelves
		00-06	SS			4.7	
3		00	DS	4.4		*	South section of
		06	DS	2.9		*	shed
		12	DS	1.2		*	

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

Notes: DC = Depth of Contamination
* = No Soil Sample Taken
[n] = Reading Taken n-Inches
Above Floor or Ground
Date of Survey = 04-15-85
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)
CELLAR	05	16-21	17	05	15-19	16
ROOM A	05	15-17	16	05	14-16	15
ROOM B	04	17-26	20	04	17-20	19
ROOM C	02	14-15	15	02	14	14
ROOM D	05	13-16	14	05	12-17	14
ROOM E	06	15-16	15	06	14-16	15
SHED	10	18-134	43	10	19-412	80
LEAN-TO	05	21-31	27	05	21-60	34

*Exposure Rates and Room Locations Shown in Appendix Figures 3.3a, 3.3b, and 3.3c

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-13972-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>
INTERIOR					
Contaminated Fill					
A	13 x 11	= 143	x 1.3	= 186	
B	24 x 23	= 552	x 0.5	= 276	
C	13 x 14	= 182			
	10 x 5	= 50			
		<u>232</u>	x 1.0	= 232	
TOTAL VOLUME - INTERIOR				= 694	= 694/27 = 26
EXTERIOR					
Concrete and Brick Pavers					
G	3 x 32	= 96	x 0.3	= 29	
J	4 x 5	= 20			
	1 x 2	= 2			
	1 x 2	= 2			
	1 x 2	= 2			
	2 x 10	= 20			
	2 x 19	= 38			
		<u>84</u>	x 0.3	= 25	
*L	5 x 13	= 65	x 0.3	= 20	
Volume of Concrete and Brick Pavers				= 74	= 74/27 = 3
Contaminated Fill					
D	12 x 6	= 72	x 0.5	= 36	
E	8 x 15	= 120			
	4 x 17	= 68			
	5 x 26	= 130			
	6 x 22	= 132			
		<u>450</u>	x 1.3	= 585	

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-13972-RS

Page 2 of 3

<u>AREA</u>	<u>CALCULATIONS(ft)</u>	<u>SF</u>	<u>DEPTH(ft)</u>	<u>CF</u>	<u>CUBIC YARDS</u>
F	4 x 26 4 x 10 7 x 12	= 104 = 40 = 84			
		228	x 0.5	= 114	
G	3 x 32	= 96	x 0.7	= 67	
H	4 x 23	= 92	x 0.5	= 46	
I	7 x 30 2 x 10 18 x 65 12 x 2 18 x 30	= 210 = 20 = 1,170 = 24 = 540			
		1,964	x 0.5	= 982	
J	4 x 5 2 x 13 2 x 19	= 20 = 26 = 38			
		84	x 0.7	= 59	
K	25 x 7	= 175	x 0.8	= 140	
L	5 x 13	= 65	x 1.0	= 65	
M	20 x 27 40 x 32 35 x 80 20 x 33	= 540 = 1,280 = 2,800 = 660			
		5,280	x 1.0	= 5,280	
N	20 x 12	= 240	x 0.8	= 192	
O	20 x 10	= 200	x 1.0	= 200	
P	21 x 38	= 798	x 0.8	= 638	
Q	13 x 25	= 325	x 0.8	= 260	
R	3 x 3	= 9	x 0.5	= 5	
S	5 x 29	= 145	x 0.8	= 116	

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-13972-RS

Page 3 of 3

<u>AREA</u>	<u>CALCULATIONS(ft)</u>	<u>SF</u>	<u>DEPTH(ft)</u>	<u>CF</u>	<u>CUBIC YARDS</u>
T	(contaminated tarp apparently moved by owner)				
U	24 x 20 =	480	x 0.5 =	240	
V	2 x 13 =	26	x 1.0 =	26	
W	3 x 23 =	69	x 1.3 =	90	
X	13 x 20 =	260	x 0.5 =	130	
Y	2 x 5 =	10	x 0.3 =	3	
Z	6 x 7 =	42	x 0.5 =	21	
Volume of Contaminated Fill				= 9,295	= 9,295/27 = 344
TOTAL VOLUME - EXTERIOR					= 347

* Area L is a brick paver sidewalk

See Appendix Figures 3.5a, 3.5b, and 3.5c For Areas

Table 4.2
Estimated Cost of Decontamination and Restoration
DOE ID No. GJ-13972-RS

Page 1 of 2

INTERIOR

Remove identified residual radioactive material 26 cy @ \$44/cy	\$ 1,144
Undermine and shore walls, wood-frame 228 lf @ \$3/lf	684
1" x 6" x 10' #3 grade fir bracing 18 ea @ \$1.93/ea	35
Pour concrete grade beam and pads (this volume is equal to fill removed) 9 cy @ \$175/cy	1,575
Replace compacted roadbase 17 cy @ \$11.50/cy	196
	<hr/>
TOTAL INTERIOR	\$ 3,634

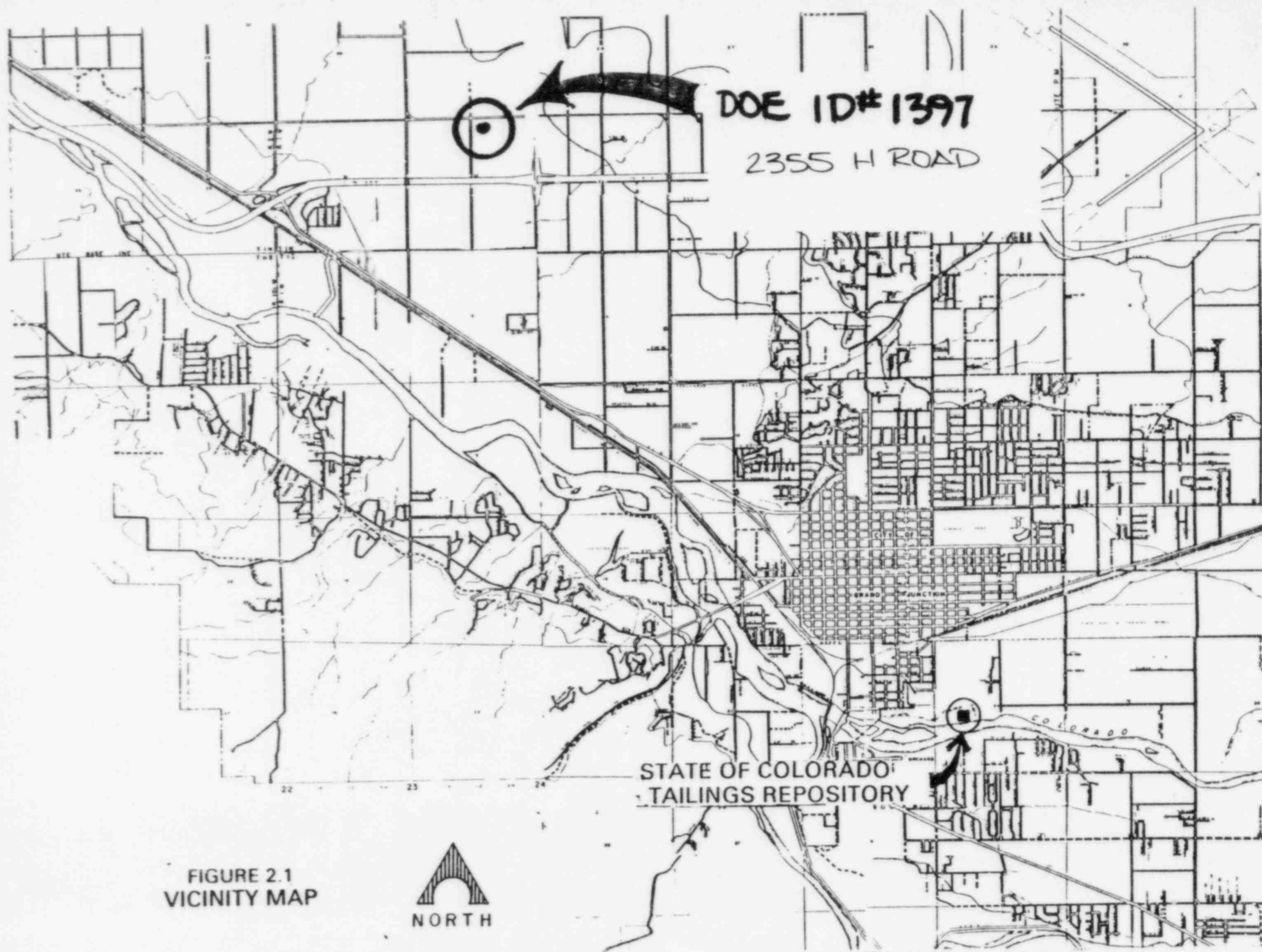
EXTERIOR

Remove identified residual radioactive material 293 cy @ \$14.50/cy (machine) 51 cy @ \$44/cy (manual)	\$ 4,249 2,244
Replace compacted roadbase 79 cy @ \$11.50/cy	909
Replace topsoil 257 cy @ \$9.50/cy	2,442
Replace sandfill 1 cy @ \$10/cy	10
Replace soil/weed-free compost 7 cy @ \$12.50/cy	88
Remove and replace concrete sidewalks 180 sf @ \$3/sf	540
Remove concrete steps 1 cy @ \$100/cy	100
Replace concrete steps 1 cy @ \$175/cy	175

Remove/replace metal fence		
42 lf @ \$1/lf	\$	42
Replace sod		
5,747 sf @ \$.25/sf		1,437
Replace shrubs		
9 ea @ \$20/ea		180
Replace trees		
1 ea @ \$30/ea		30
Replace flowers, perennial		
76 sf @ \$2/sf		152
Replace decorative rock		
240 sf @ \$2.50/sf		600
Replace brick pavers		
65 sf @ \$4.16/sf		270
Remove large tree		
1 ea @ \$100/ea		100
Remove small tree/shrubs		
10 ea @ \$5/ea		50
	TOTAL EXTERIOR	\$ 13,618
	TOTAL INTERIOR	3,634
	ACCESS CONTROL	200
	SUBTOTAL	\$ 17,452
	CONTINGENCY @ 10%	1,745
	SUBTOTAL	\$ 19,197
	CONTRACTOR OVERHEAD & PROFIT @ 25%	4,799
	GRAND TOTAL	\$ 23,996

=====

VD072585
REAL3972/REA-KL015/LMR



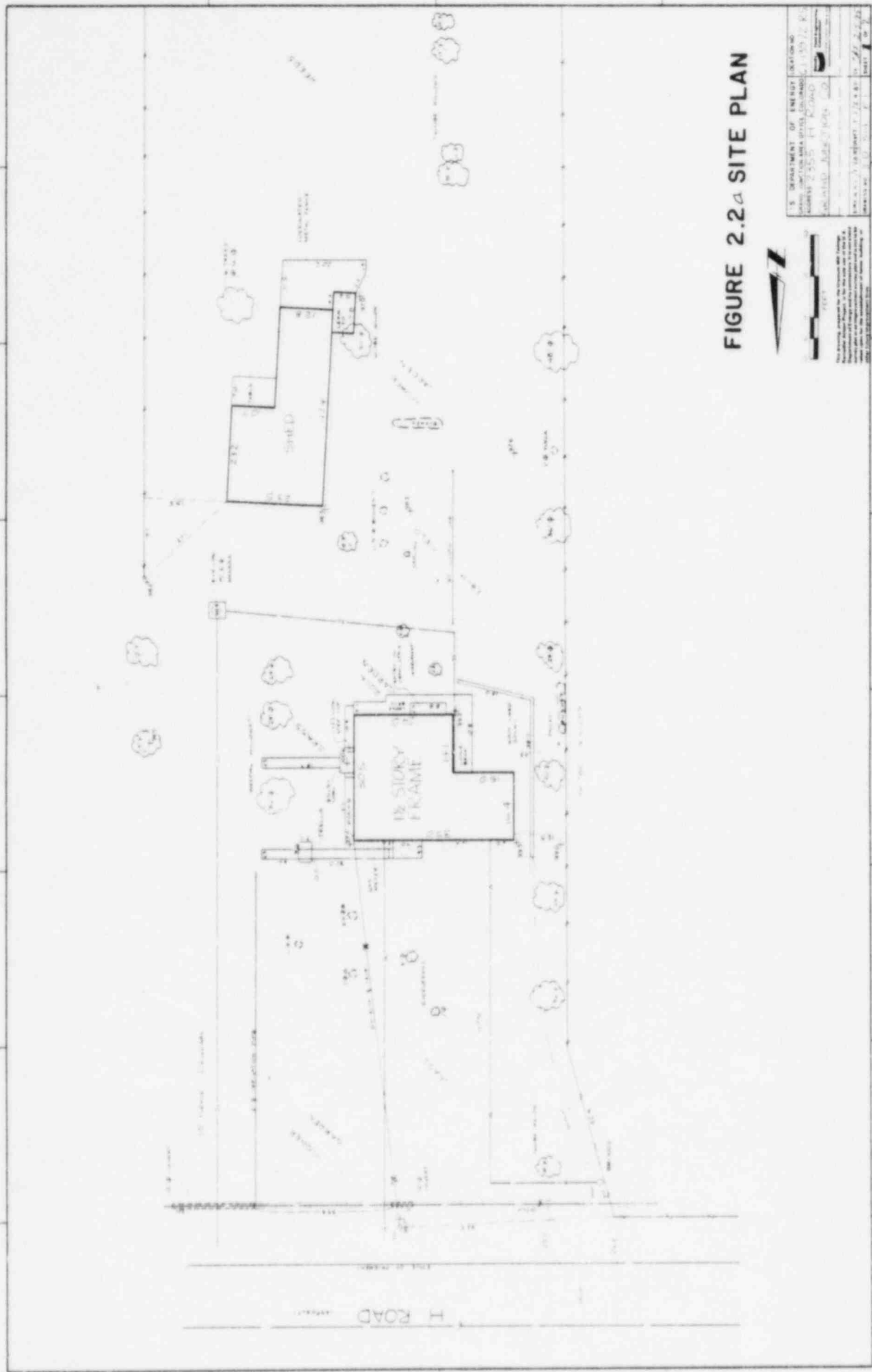
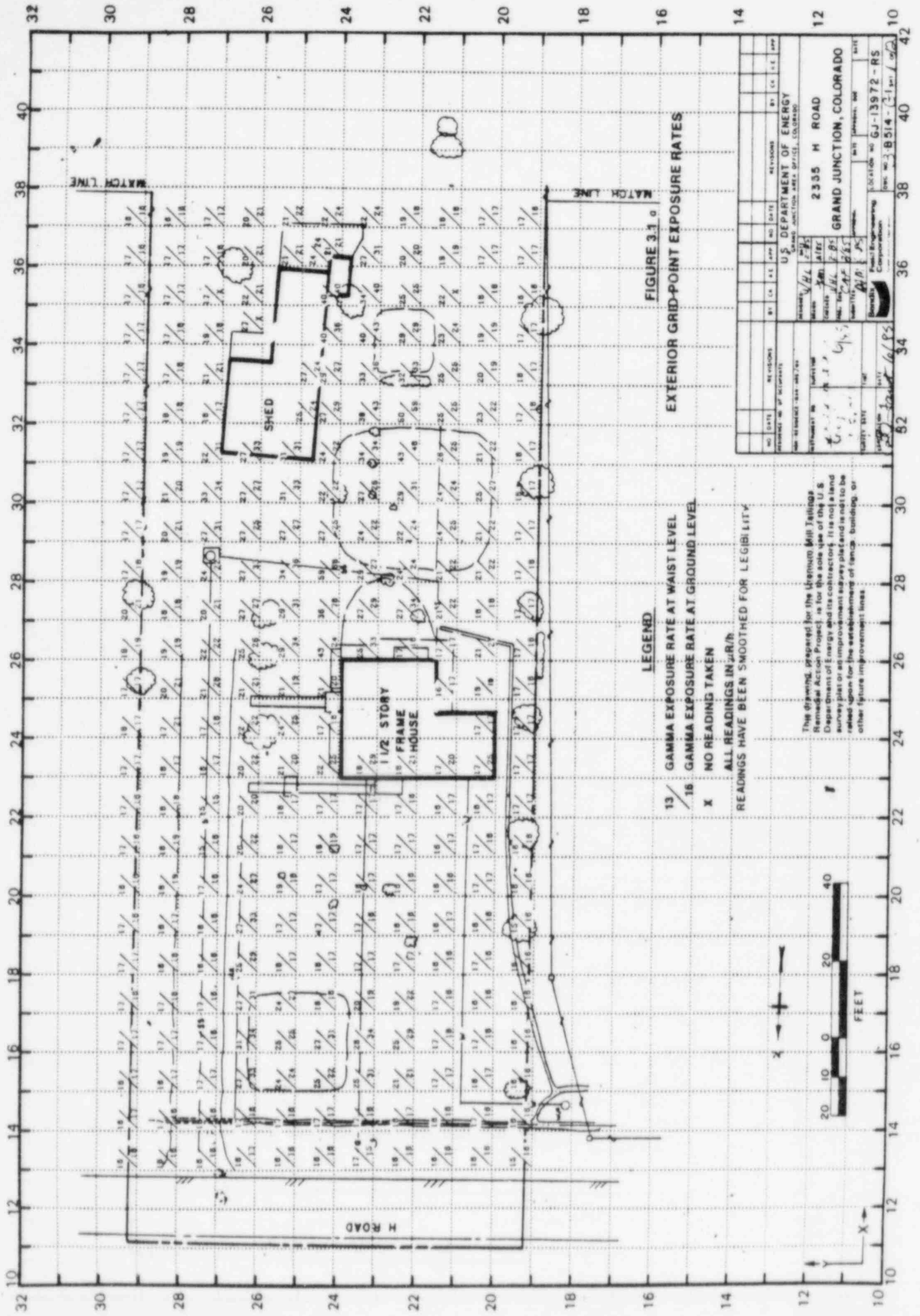
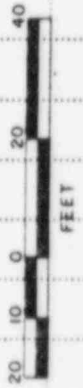


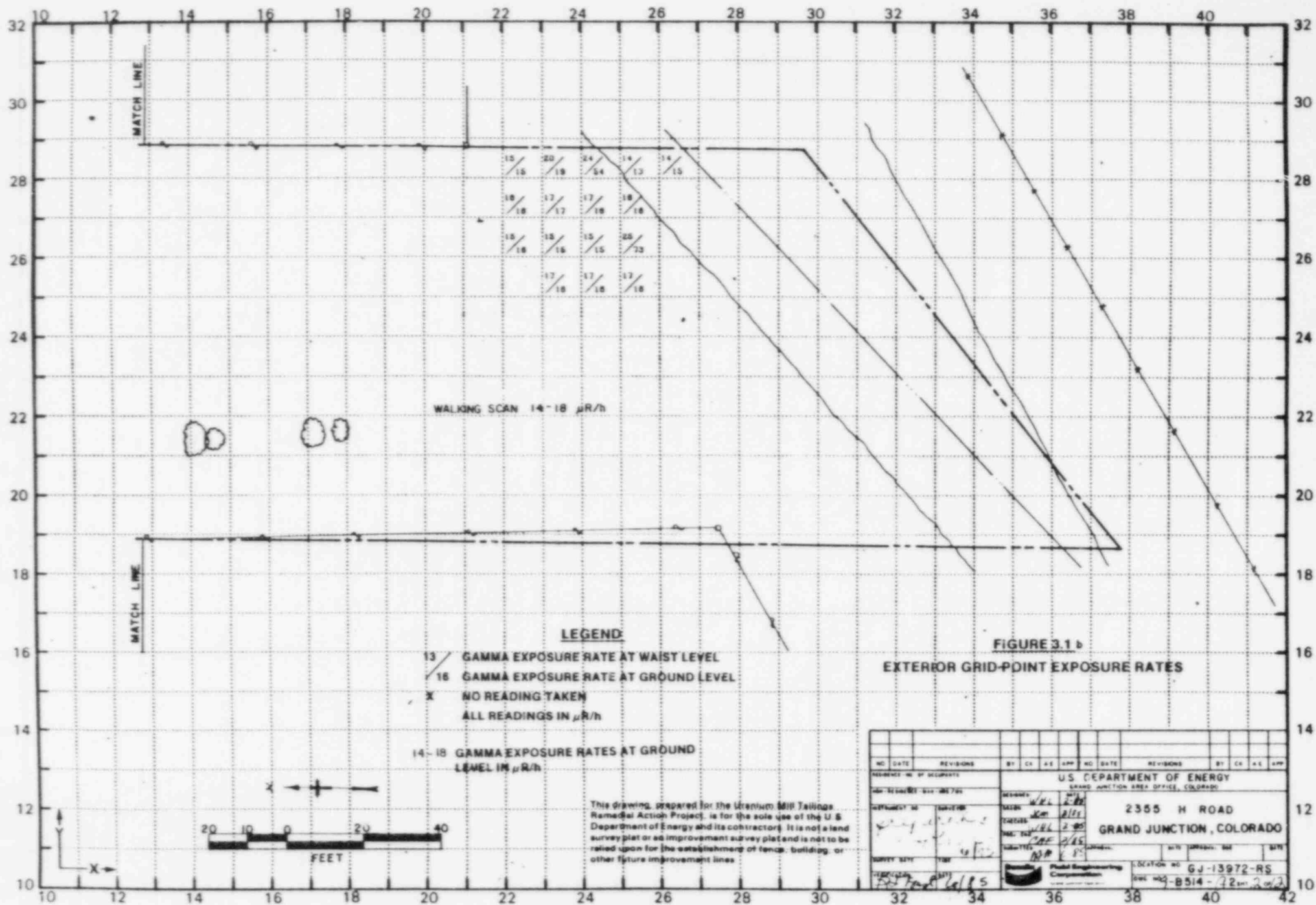
FIGURE 2.2a SITE PLAN

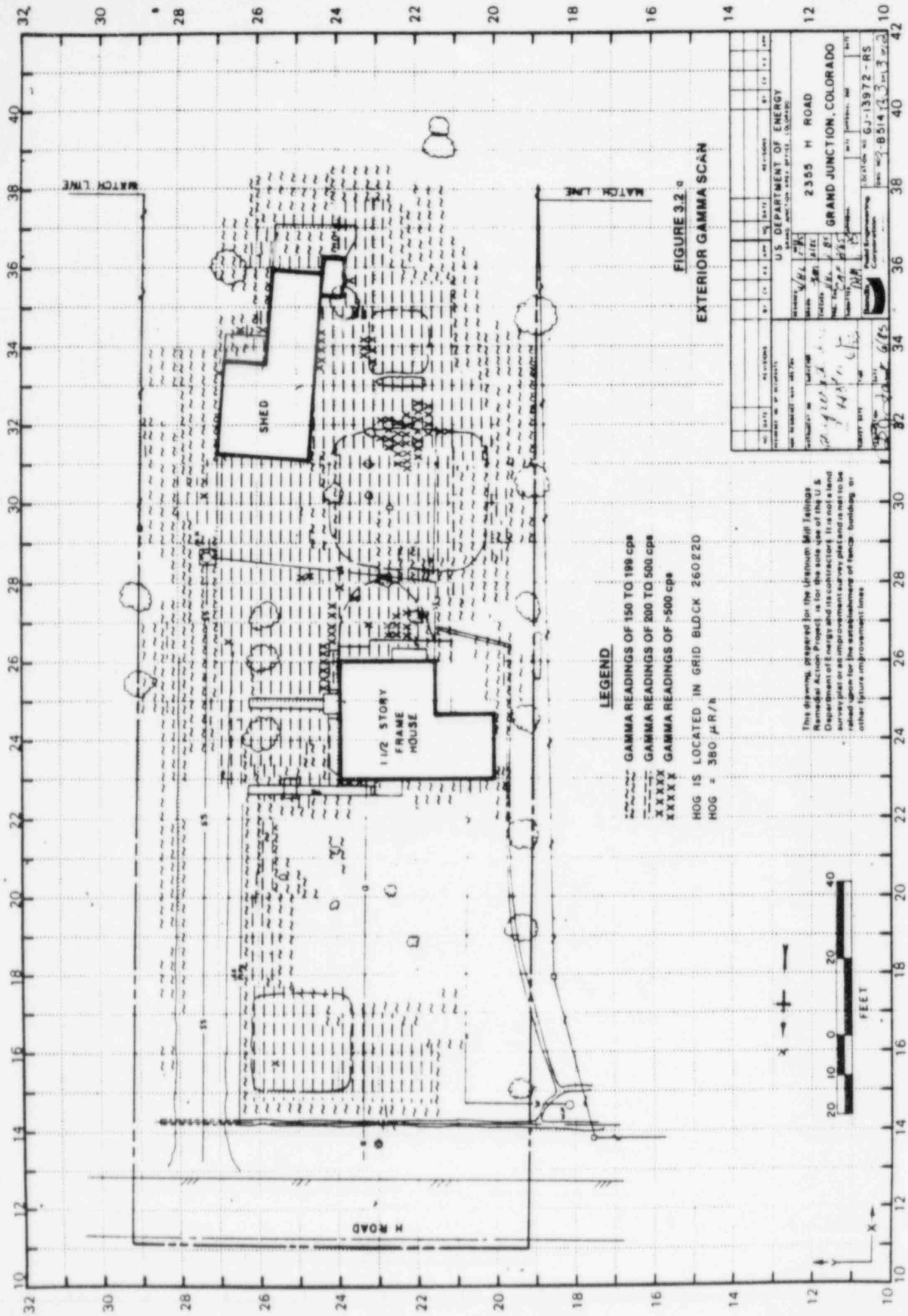


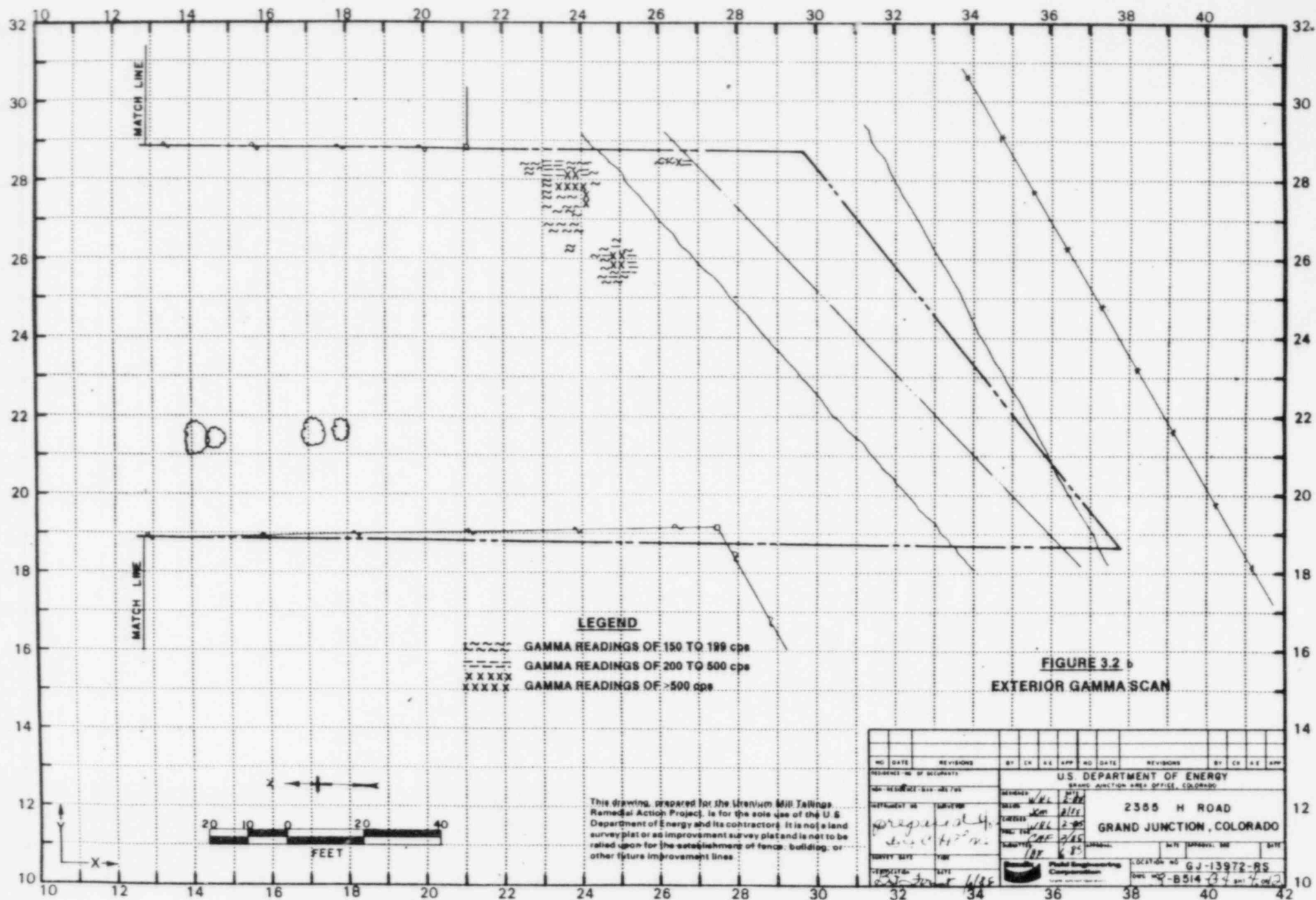
NO. DATE		REV. DATE		REV. DATE		REV. DATE		REV. DATE	
REVISION NO. OF REVISIONS		REVISION NO. OF REVISIONS		REVISION NO. OF REVISIONS		REVISION NO. OF REVISIONS		REVISION NO. OF REVISIONS	
U.S. DEPARTMENT OF ENERGY GRAND JUNCTION AREA OFFICE, COLORADO 2335 H ROAD GRAND JUNCTION, COLORADO 81501 Project No. GJ-13972-RS Date: 10/1/72 By: J. B. Smith Title: Environmental Engineer Checked: J. B. Smith Title: Environmental Engineer Approved: J. B. Smith Title: Environmental Engineer									

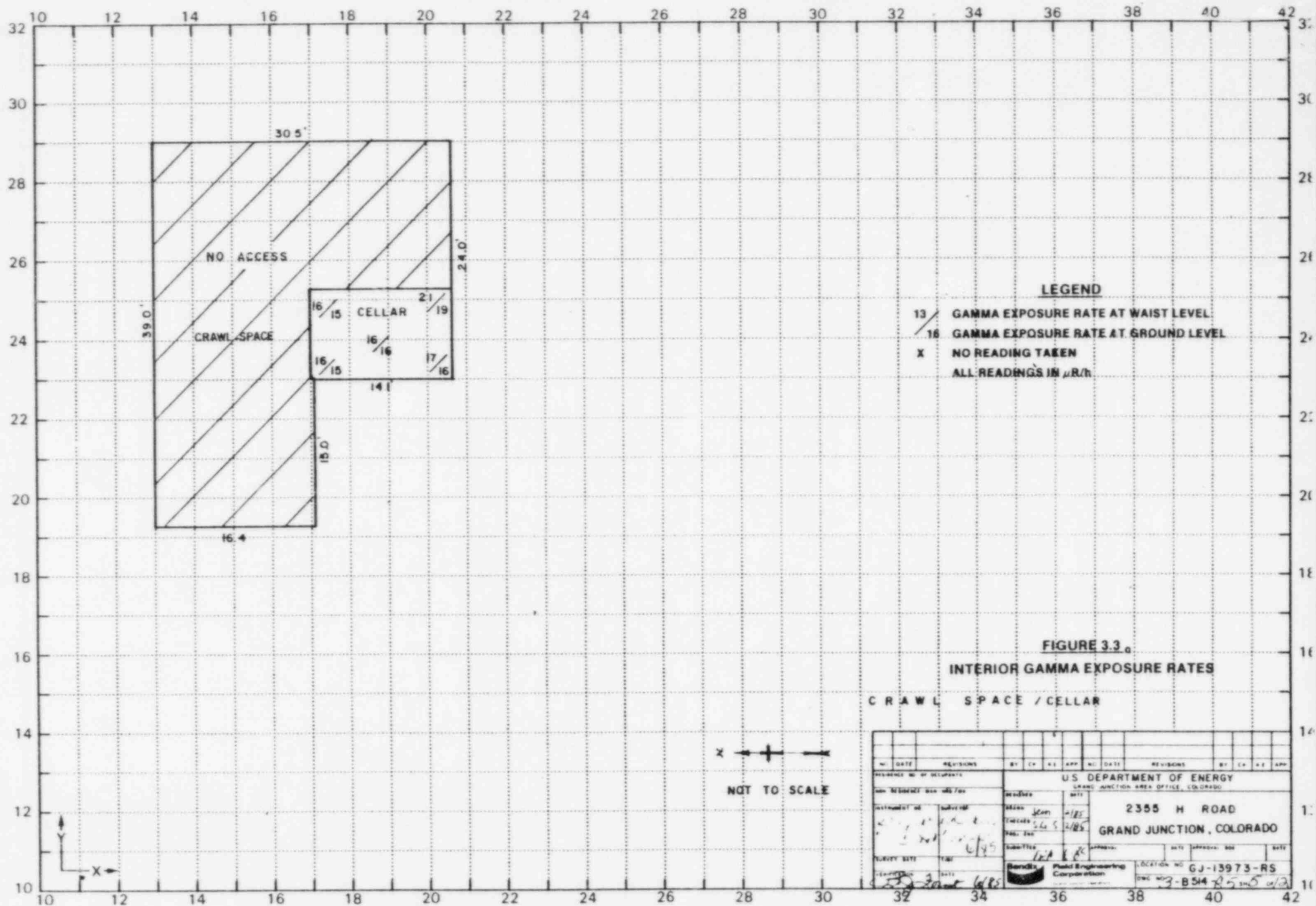
This drawing, prepared for the Uranium Mill Tailings Remedial Action Project, is for the sole use of the U.S. Department of Energy and its contractors. It is not a land survey plat or an improvement survey plat and is not to be relied upon for the establishment of fence, building, or other future improvement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

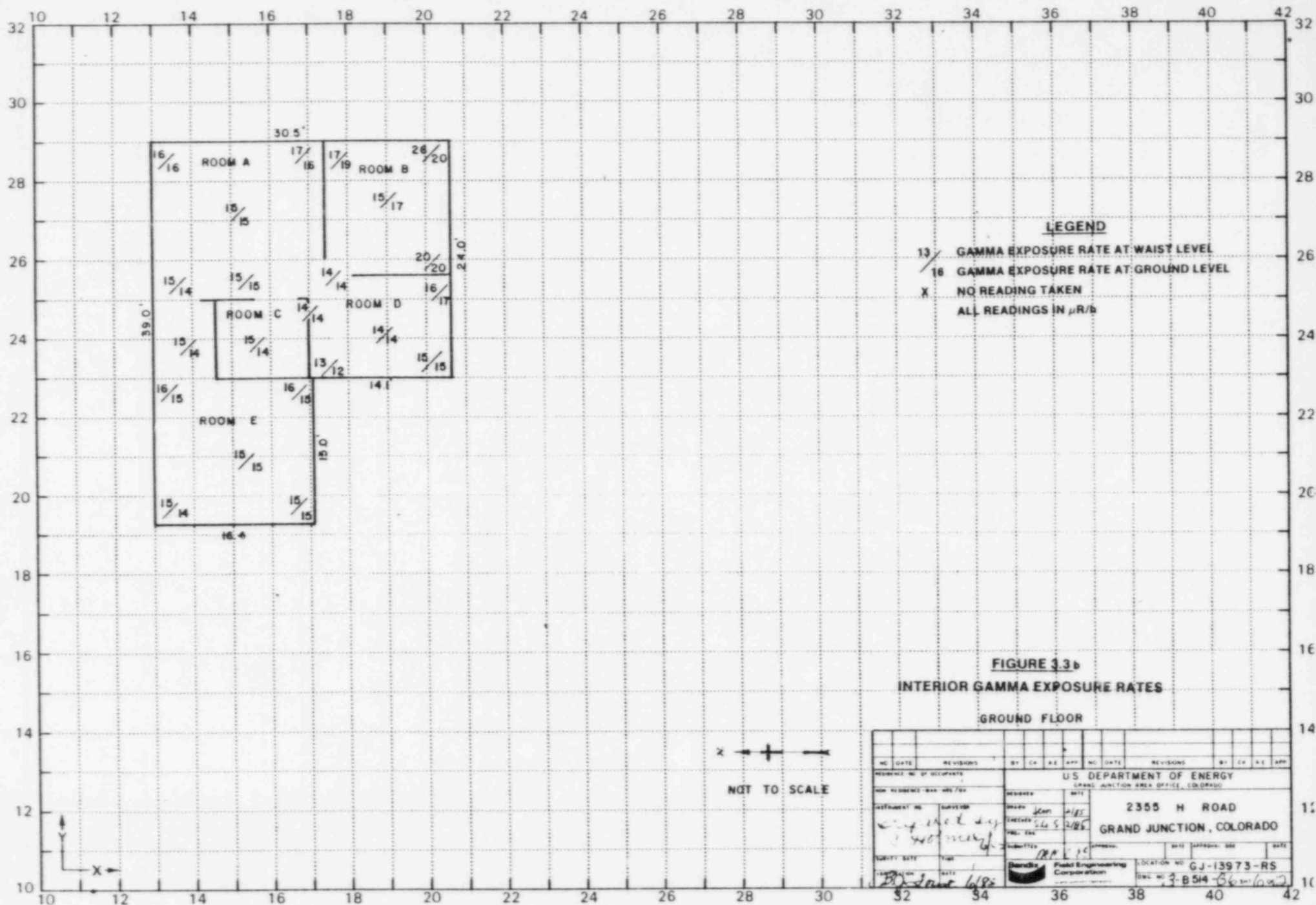












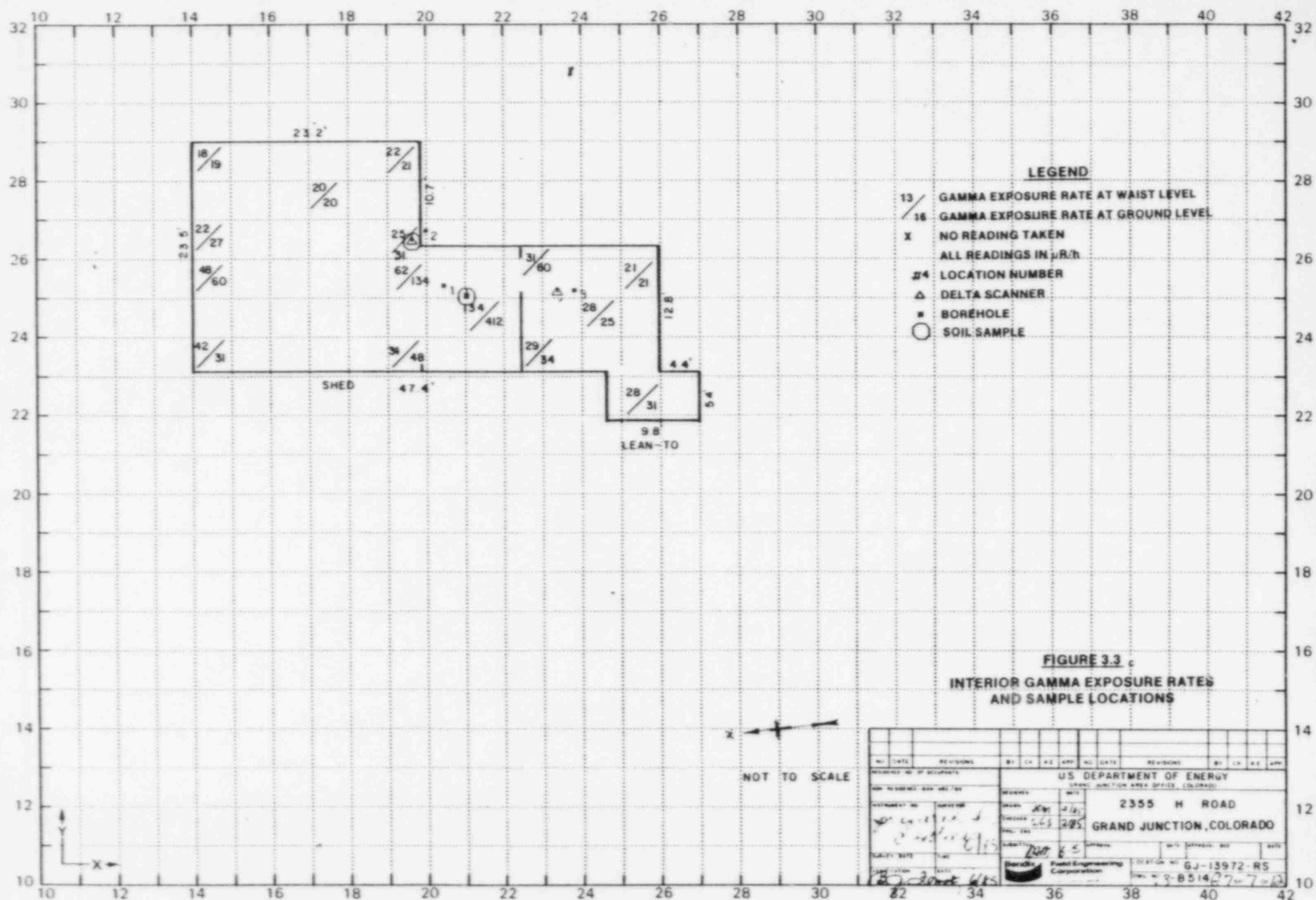
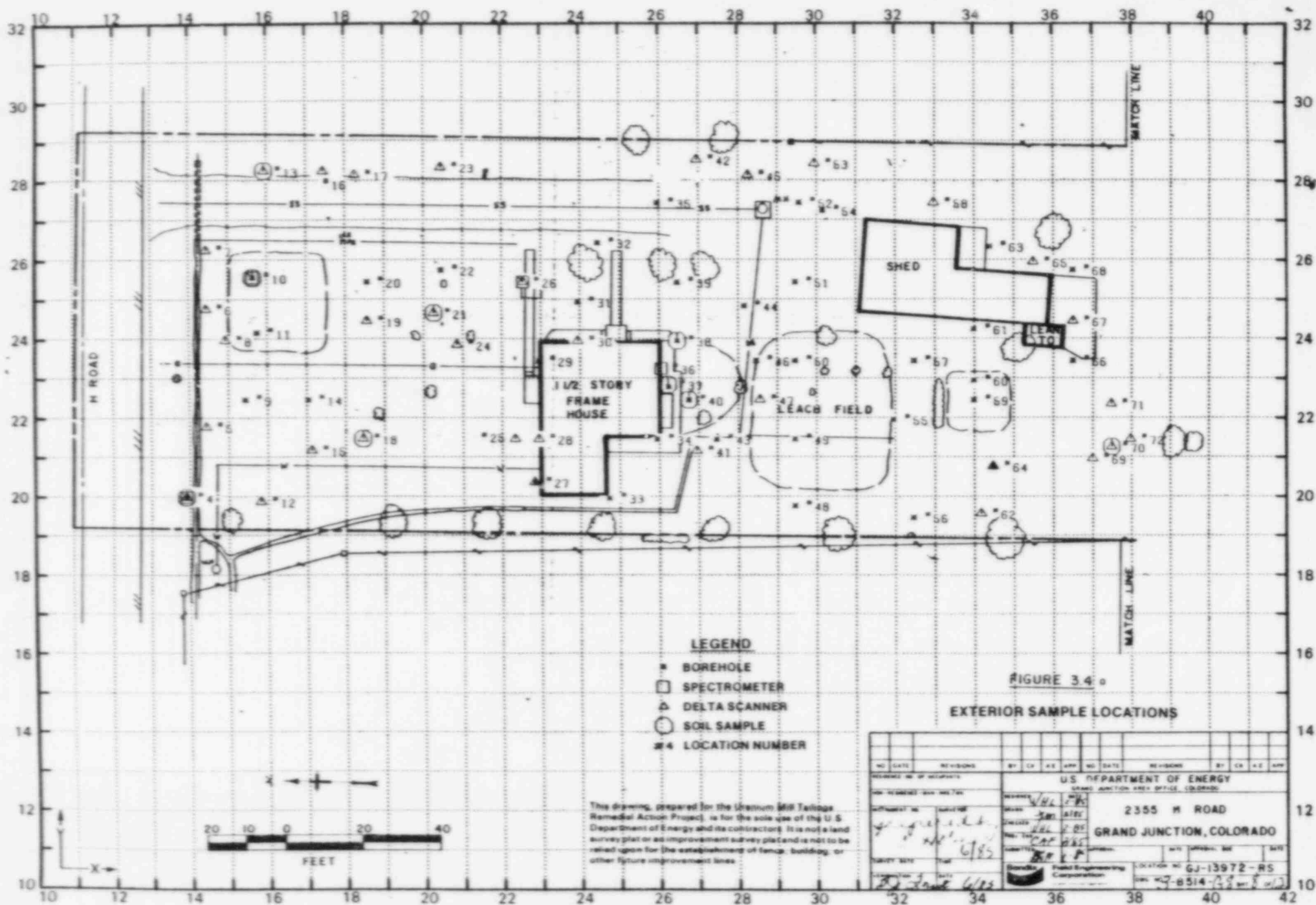


FIGURE 3.3
INTERIOR GAMMA EXPOSURE RATES
AND SAMPLE LOCATIONS

[illegible]

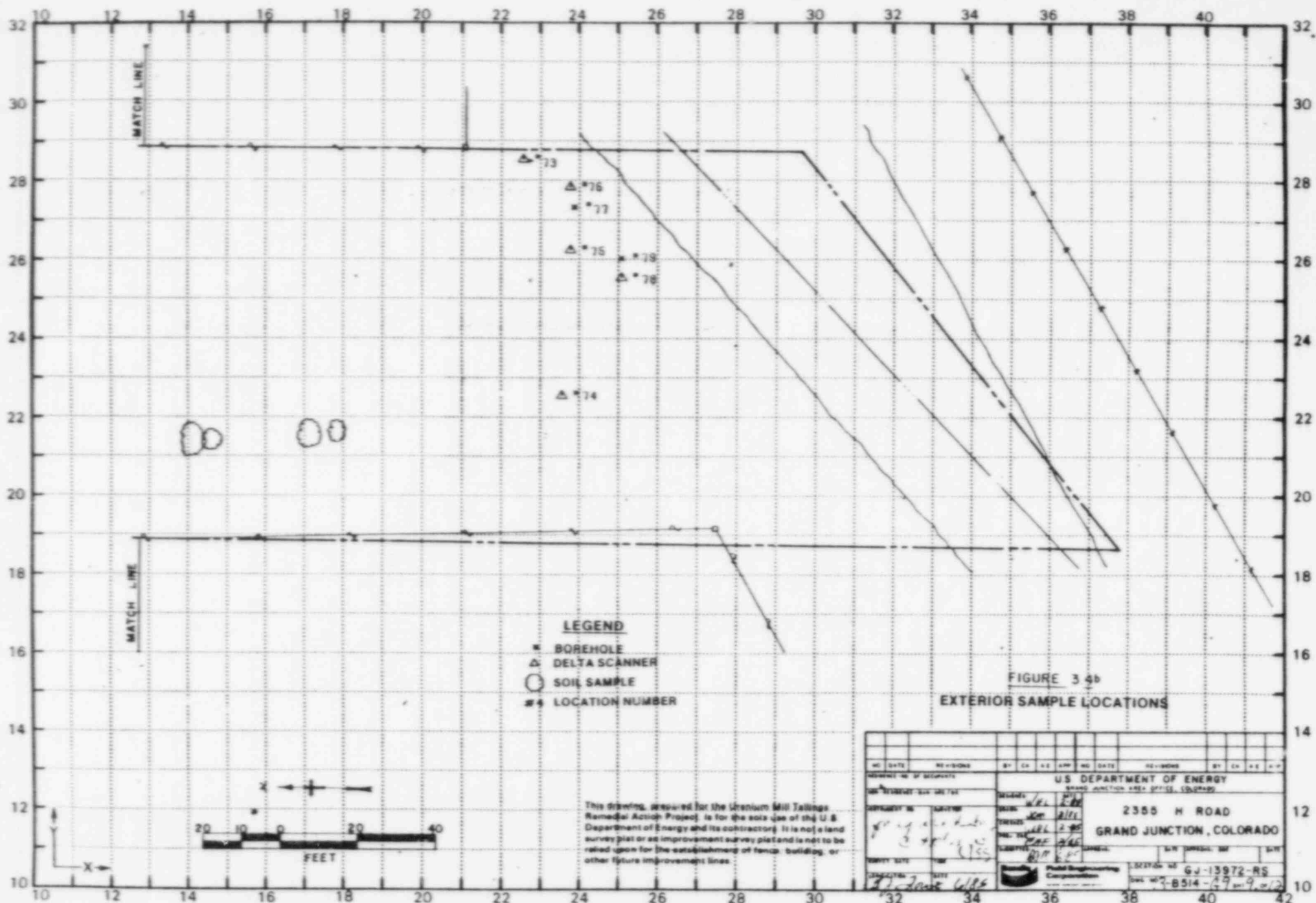


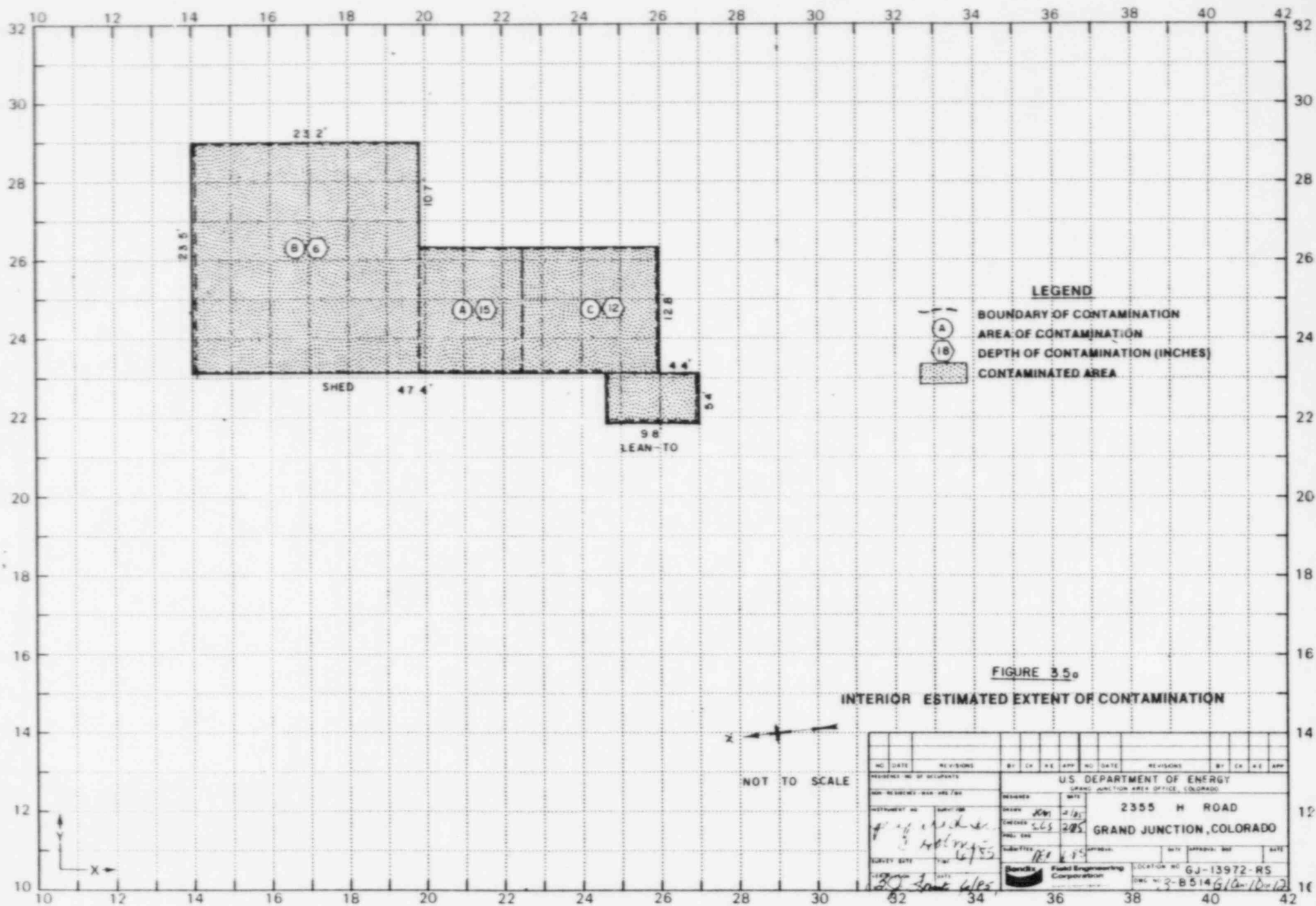
This drawing, prepared for the Uranium Mill Tailings Remedial Action Project, is for the sole use of the U. S. Department of Energy and its contractors. It is not a land survey plat or an improvement survey plat and is not to be relied upon for the establishment of fence, building, or other future improvement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

FIGURE 3.4

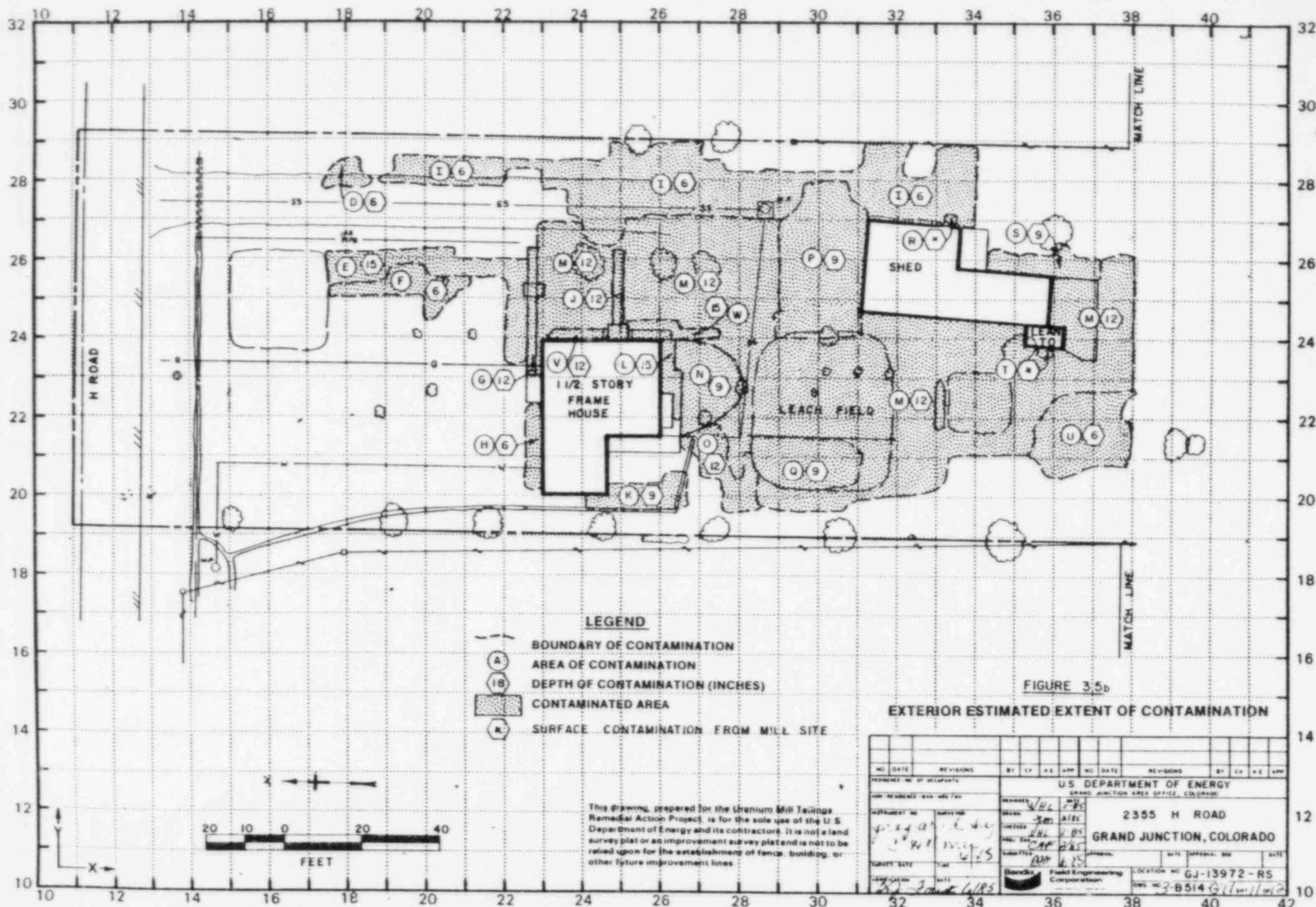
EXTERIOR SAMPLE LOCATIONS

[illegible]





NO. DATE REVISIONS BY CH H.E. APP. NO. DATE REVISIONS BY CH H.E. APP.				U.S. DEPARTMENT OF ENERGY GRAND JUNCTION AREA OFFICE, COLORADO			
PROJECT NO. 2355 H ROAD				LOCATION NO. GJ-13972-R5			
DRAWN BY J. H. H. DATE 12/85				DWS NO. 2-B 514 G/10-10-12			
CHECKED BY S. G. DATE 2/86							
APPROVED BY DATE							
SURVEY DATE 1/85							
DATE 3/86							



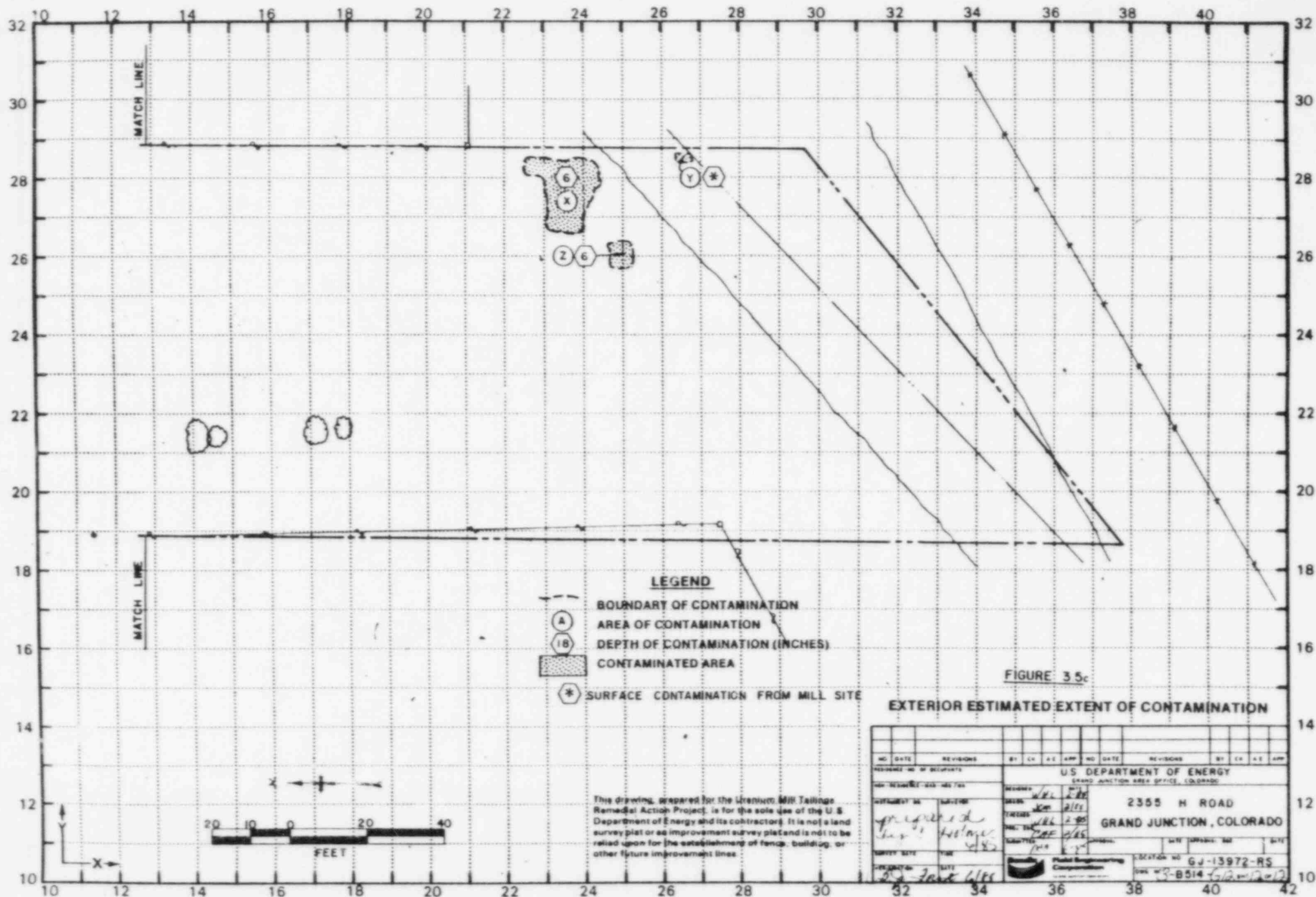


FIGURE 35c

EXTERIOR ESTIMATED EXTENT OF CONTAMINATION

NO.	DATE	REVISIONS	BY	CHK	A.E.	APP.	NO.	DATE	REVISIONS	BY	CHK	A.E.	APP.
REFERENCE NO. OF SURVEY							U.S. DEPARTMENT OF ENERGY GRAND JUNCTION AREA OFFICE, COLORADO						
PROJECT NAME: Uranium Mill Tailings Remedial Action Project							2355 H ROAD GRAND JUNCTION, COLORADO						
DRAWN BY: [Signature]							CHECKED BY: [Signature]						
SURVEY DATE: [Date]							DATE: [Date]						
LOCATION NO: GJ-13972-RS							DATE: 8-14-66						

3/85

DOE ID NO. GJ-13972-R5 Date May 17, 1985

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

Official Survey Report

Property Address 2355 H Road
Property Owner Nicholas and Doris Lake
Address of Owner (if different from above) _____
Report Prepared By Carol Holmes

I. PRESENCE/ABSENCE OF RESIDUAL RADIOACTIVE MATERIALS

☐ No evidence of residual radioactive material on surveyed property.

☒ Residual radioactive materials found at the following locations:

☒ In open areas.

☒ Under or around exterior improvements.

☒ Under or around a typically nonoccupied structure.

☒ Under or around a typically occupied structure.

II. RESULTS OF RADIOLOGIC ASSESSMENT

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

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

cc:

G. A. Franz, III, GJ/CDH

J. Themelis, Mgr. UMTRA Proj. Off.

HIG = 26 uR/h
HOG = 380 uR/h



Bendix
Aerospace

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

May 10, 1985

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

ATTN: Elaine Brummett

Dear Elaine:

The following is in response to your questions and comments during the Technical Review concerning Department of Energy (DOE) Identification (ID) number GJ-13972-RS (2355 H Road), sent on 8 May 1985.

1. I will make a note in the Radiologic and Engineering Assessment (REA) to rescan the interior of the house in the southeast section after remedial action has been completed. This should confirm that the elevated readings in the house are due to shine from the yard and sidewalk.
2. The garage is in the northern section of the shed. I will change the name of the garage to shed in Table 3.1a and on the corresponding data.
3. One of the concrete sidewalks on the east side of the house is resting on brick. The soil underneath the brick is contaminated to a depth of 15 inches. The other sidewalk does not appear to be contaminated, but will also be rescanned to determine if contamination is present after remedial action has been completed.
4. At Location 26, due to the positive gamma scan, I will call the area of contamination to a depth of 6 inches.
5. Concerning Location 28, the REA you received is incorrect. The proper grid number should be 240250. A correct Table 3.1a is enclosed.

6. An adjustment has been made to include Location 29 in Area "I", which is a 6-inch depth of contamination.
7. South of the house, at Location 34, there is a brick walk. The depth of contamination is 15 inches.
8. The sewer line was investigated at Location 31, the depth of the borehole was 69 inches. This is sufficient for determination of contamination if present. There is no plumbing in the cellar.
9. No utility lines could be seen in the small dug-out cellar.
10. The Estimated Extent of Contamination figure has been corrected to include Location 48 in the 9-inch depth area.
11. The deconvolution graph does indicate that the contamination extends to a depth of 12 inches and not 0 inches. A change will be made in Table 3.1a.
12. The area north of the shed, at Location 48, does have contamination to a depth of 6 inches instead of 12 inches. I will make an area for removal of 9 inches instead of 12 inches.
13. Scintillometer readings in this area, at grid blocks 290240 and 300240, were not elevated enough for investigation or removal.
14. Location 62 has been included in Area "N" and called to a depth of 9 inches based on data collected from Location 64.
15. It is our policy to take delta readings at 6-inch increments as the instrument is capable of reading a level of 6 inches of soil.

Elaine Brummett
Colorado Department of Health
GJ-13972-RS
May 10, 1985
Page 3

16. As mentioned earlier, Area 'F' has been extended in the driveway to include those delta readings that may be contaminated.

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

Yours truly,

Carol Holmes

Carol Holmes
RSD Survey Team Leader

CH:pr

CDH.LETTER:13972.HOLMES

MEMORANDUM

ALLIED Bendix
Aerospace

Bendix Field Engineering Corporation
Grand Junction Operations
Grand Junction, Colorado

Date: May 13, 1985
To: Files
From: Carol Holmes
Subject: Team Leader Notes - GJ-13972-RS

Address: 2355 "H" Road

Owner: Nicholas C. Lake

Team Members

C. Holmes (Team Leader)
J. Johnson

Instruments

Surface Spectrometer - C-2474
Delta Scintillometer - C-3938

The sidewalks running east of the house needed further investigation. The surface spectrometer reading, of which I had planned on using at the sidewalk as the background reading, was elevated so we found an area in the front yard to use for background. We also checked out the sidewalk with a delta and dug underneath for a horizontal reading. It (the sidewalk) appears to have contamination beneath it as well as the surrounding yard.

We also checked the north foundation with a delta to confirm the positive gamma scan. Contamination is on the top surface.

The garage was also looked at more carefully. Two more areas will be included in the Radiologic and Engineering Assessment (REA) for this area.

MEMORANDUM

ALLIED Bendix
Aerospace

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

DATE: April 26, 1985
TO: Files
FROM: Carol Holmes
SUBJECT: Team Leader Notes - GJ-13972-RS

Address: 2355 H Road

Owner: Nicholas C. Lake

Weather: Hot and dry.

Team Members

C. Holmes (Team Leader)	S. Larsen
L. Kula	N. Wallace
M. Heronema	M. Gilfillan
M. Duran	C. Kelleher
C. Adams	

Instruments

Crutch Scintillometers - C-1185, C-1196, C-1127, C-3510, C-1163
Delta Scintillometer - C-3937, C-3942
Total Count - C-3959, C-3573
Surface Spectrometer - C-1372
Downhole Spectrometer - C-3361

Date: April 15, 1985

Gridding the property was started on 10 April 1985. The front yard was completed and the side of the driveway.

Two crews of scanning were started. There appears to be contamination in most of the yard area in the back and front.

Team Leader Notes
Carol Holmes
GJ-13972-RS
April 26, 1985
Page 2

Mr. Lake did say that he hauled in several truck loads of tailings several years ago. Also he has used brick underneath the sidewalk and in the garage that came from the old millsite.

In the garage and under the rock garden he has used a tarp to maintain the dust and weeds that was also used at the mill. Also, there is a spot in the garage that has a brick floor which also came from the mill. A brick will be used as a sample.

The water line on our maps is located in the wrong place. It does not come in to the north side of the house, instead the west foundation.

Mr. Lake informed me of a railroad bed that once ran through the northern section of his yard. At Locations 160283, 157256, and 158242 we saw cinder at levels 6 to 12 inches. Soil samples were taken to determine if we were picking up elevated readings from the natural surroundings of the railroad bed or tailings.

Also in the cellar, higher readings were noted around a concrete wall. I asked Mr. Lake about this and he informed me that it once housed the cistern and that it had been there long before the tailings were brought in.

I also asked him about the brick sidewalk that runs along close to the cellar. He said that he laid tailings underneath the brick. Possibly that could explain the elevated readings in the house along that side and the cellar.

Team Leader Notes
Carol Holmes
GJ-13972-RS
April 26, 1985
Page 3

Revisit

Team Members

C. Holmes (Team Leader)	J. Dickerson
N. Wallace	A. Quintana
I. Caley	M. Gilfillan

Instruments

Crutch Scintillometer - C-1127
Delta Scintillometer - C-3937
Total Count - C-4005
Surface Spectrometer - C-1372

Date: April 16, 1985

A few more sample locations of deltas and total counts were done.
Several soil samples were collected.

No other complications were encountered.

Team Leader Notes
Carol Holmes
GJ-13972-RS
April 26, 1985
Page 4

Revisit

Team Members

C. Holmes (Team Leader) S. Milton
M. Heronema

Instruments

Delta Scintillometer - C-3941
Crutch Scintillometer - C-3502

Date: April 26, 1985

There were a few areas that needed further investigation. An area along the southeast property line, there were some (Xs) on the scan map. We located them, one area close to the ditch was a place where several bricks had been dumped. It appeared to be the brick that was giving the high reading (3,500 cps). The other area was also located and a delta reading was taken.

Also there were a few areas close to the garage (shed on map) and lean-to that needed to be checked. The "X" next to the lean-to was a tarpaulin formerly used as acid precipitation filters in the acid-leaching process at the mill. This tarpaulin was also found under the rock garden, as noted earlier.

On the east side of the garage (shed) there was another area and it appeared to be a pile of bricks giving an elevated reading of 850 cps.

Environmental Testing Corporation
P.O. Box 1069
Grand Junction, CO 81502-1069
Telephone 242-8621
Telex 434 330

July 23, 1985

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

ATTN: Elaine Brummett

Dear Elaine:

I have just spoken to Mr. Jim Taply from Bendix Engineering Department about a property I assessed for mill tailing removal at 2355 'E' Road (GJ-13972-RS).

The memo of understanding, dated 10 May 1985, sent to you has a need for two corrections. Comment 12, Location 48 is in a 12-inch area instead of a 9-inch area. Comment 14, Location 62 should be excluded from Area 'N'. Both changes have supporting data.

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

Sincerely,



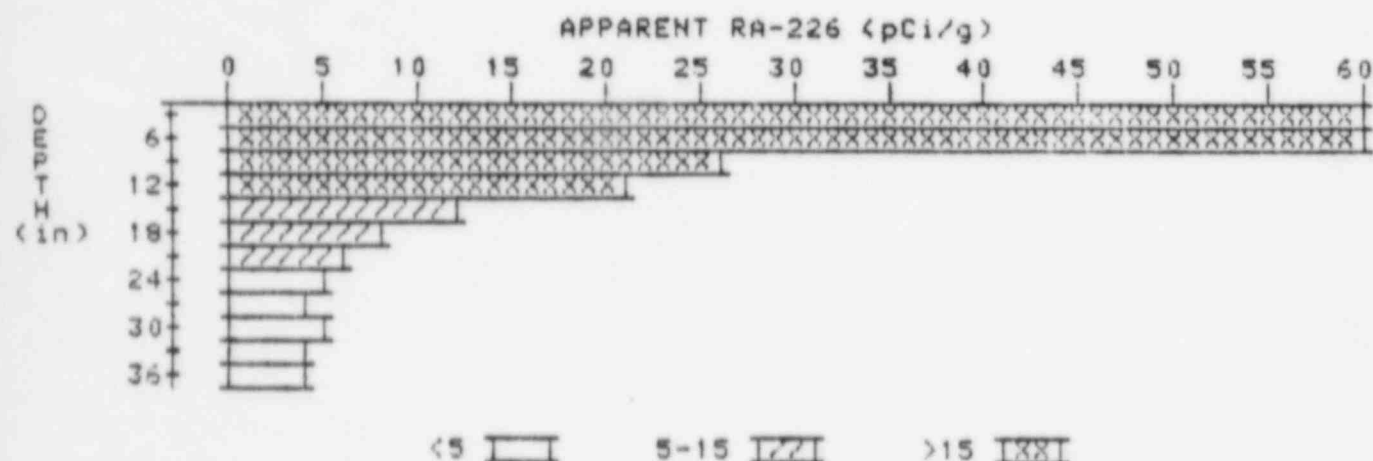
Carol Holmes
RSD Survey Team Leader

CH:pr

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

1

PROPERTY NUMBER: GJ-13972-RS
HOLE NUMBER: 1
LOCATION:



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	60.3	60.3
6	51.2	62.9
9	35.6	26.4
12	25.2	21.1
15	17.1	12.3
18	11.7	9.1
21	8.3	5.6
24	6.4	5.0
27	5.3	4.4
30	4.7	4.5
33	4.2	3.7
36	4.0	4.0

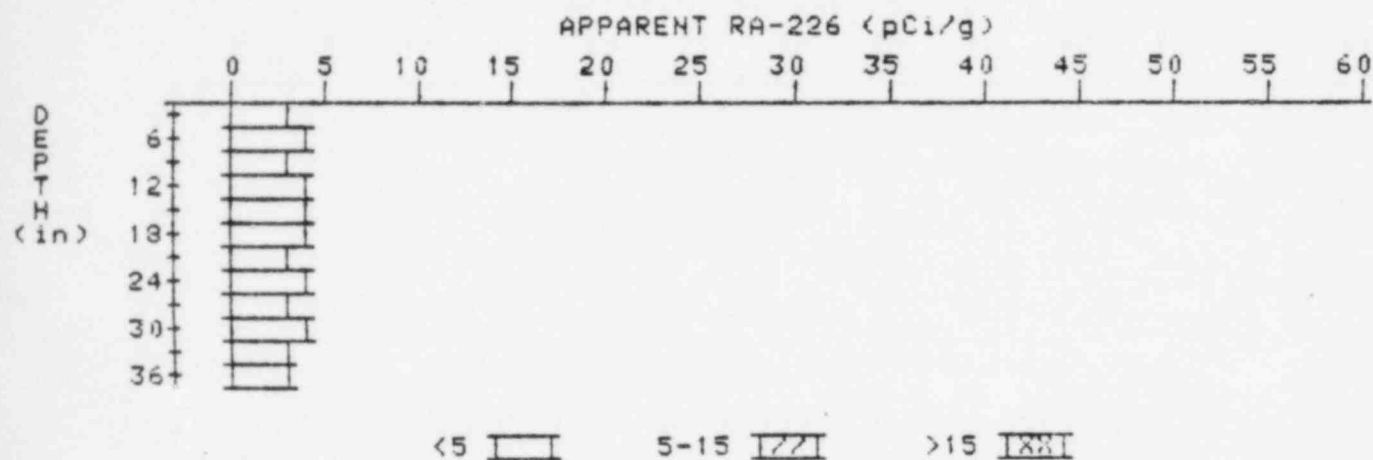
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

4

PROPERTY NUMBER: GJ-13972-RS

HOLE NUMBER: 4

LOCATION: 140200



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.0	3.0
6	3.3	3.7
9	3.4	3.4
12	3.5	3.7
15	3.5	3.5
18	3.5	3.7
21	3.4	3.2
24	3.4	3.6
27	3.3	2.8
30	3.5	4.2
33	3.3	2.9
36	3.3	3.3

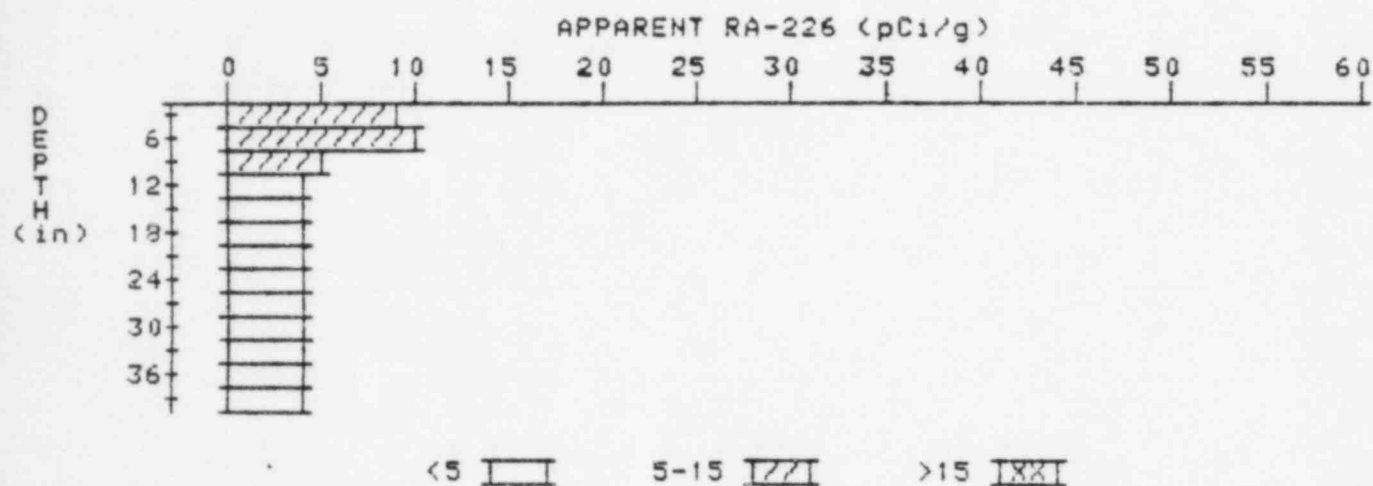
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

9

PROPERTY NUMBER: GJ-13972-RS

HOLE NUMBER: 9

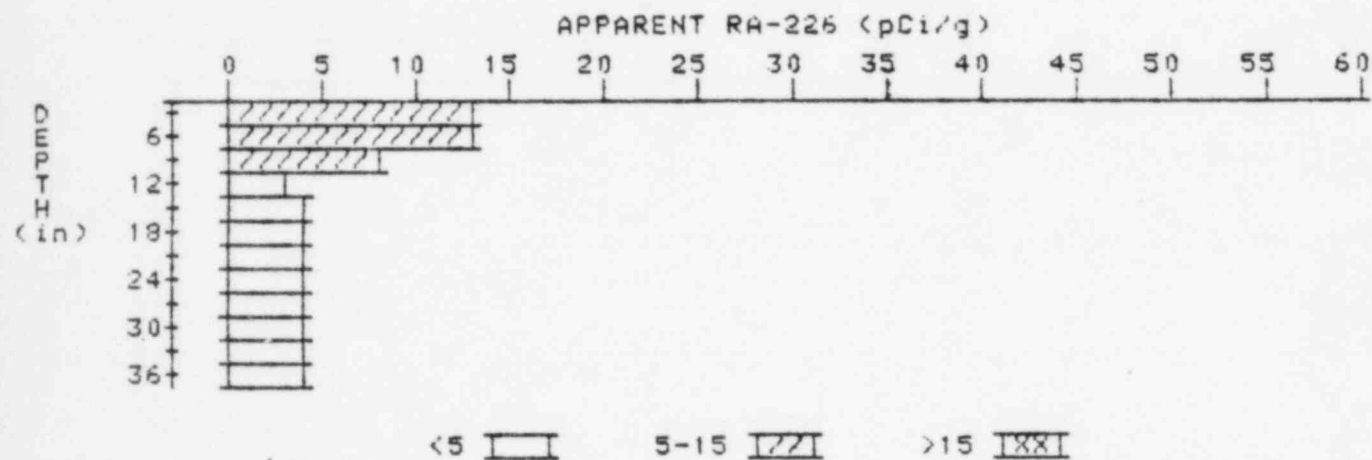
LOCATION: 155225



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	8.9	8.9
6	8.1	9.9
9	6.3	5.1
12	5.2	4.1
15	4.7	4.2
18	4.5	4.3
21	4.4	4.4
24	4.3	4.1
27	4.3	4.5
30	4.2	4.4
33	4.0	3.6
36	4.0	4.2
39	3.9	3.9

APPARENT RADIUM-226 CONCENTRATION 10 DECONVOLUTION GRAPH

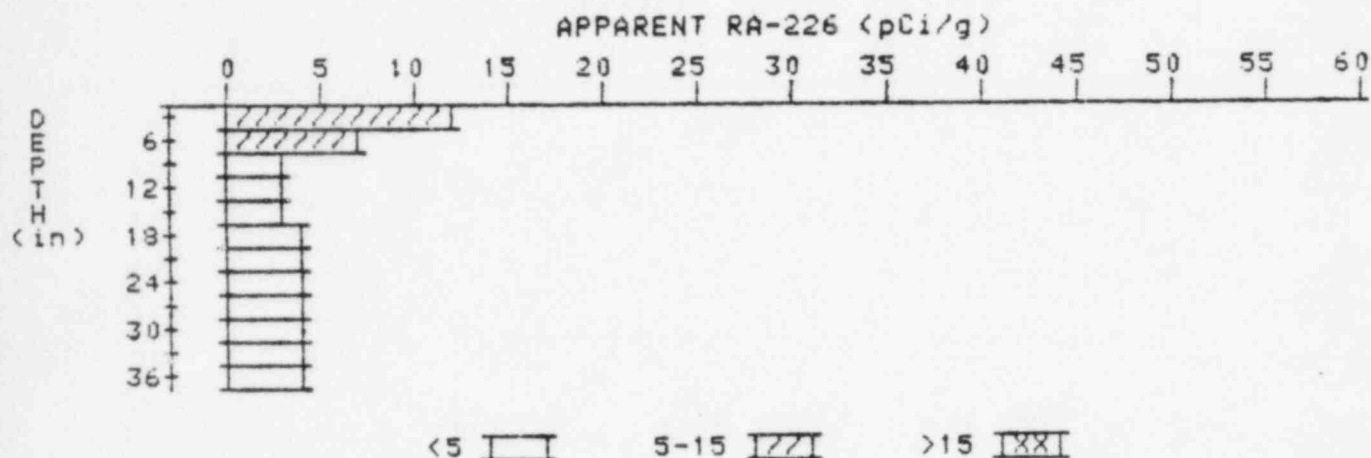
PROPERTY NUMBER: GJ-13972-RS
HOLE NUMBER: 10
LOCATION: 157256



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	13.3	13.3
6	11.4	13.4
9	8.4	7.5
12	5.9	3.1
15	5.0	4.5
18	4.4	3.7
21	4.2	4.2
24	4.0	3.6
27	4.0	4.2
30	3.9	3.9
33	3.8	3.6
36	3.8	3.8

APPARENT RADIUM-226 CONCENTRATION 11 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS
HOLE NUMBER: 11
LOCATION: 158242



Depth (in)	Apparent Radium-226 (pCi/g)	Apparent Radium-226 (pCi/g)
	Undeconvolved	Deconvolved
3	12.3	12.3
6	8.6	6.8
9	5.9	3.2
12	4.7	3.5
15	4.2	3.5
18	4.1	3.9
21	4.1	4.3
24	4.0	4.0
27	3.9	3.9
30	3.8	3.6
33	3.8	4.0
36	3.7	3.7

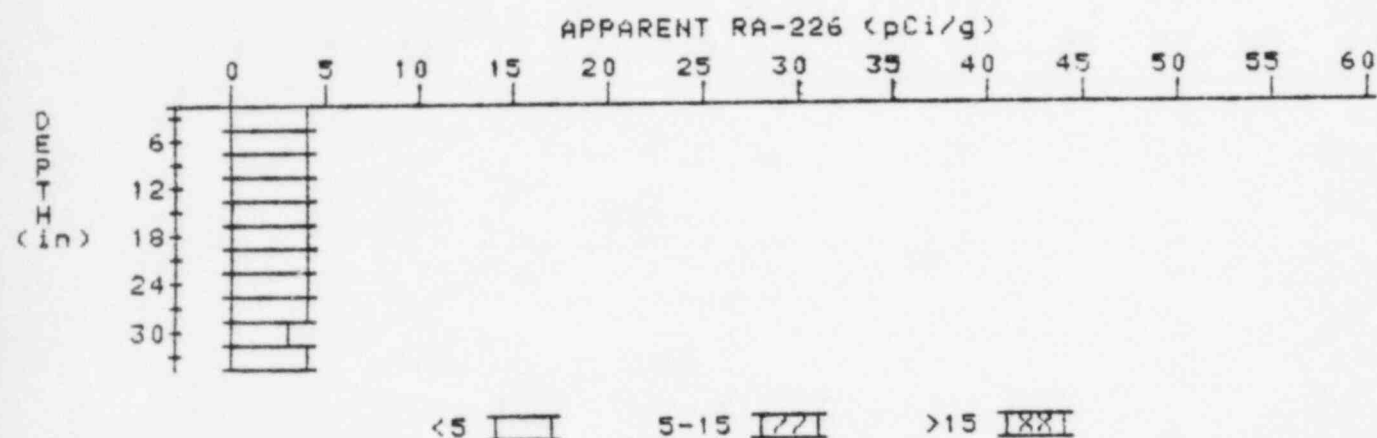
APPARENT RADIUM-226 CONCENTRATION 14

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS

HOLE NUMBER: 14

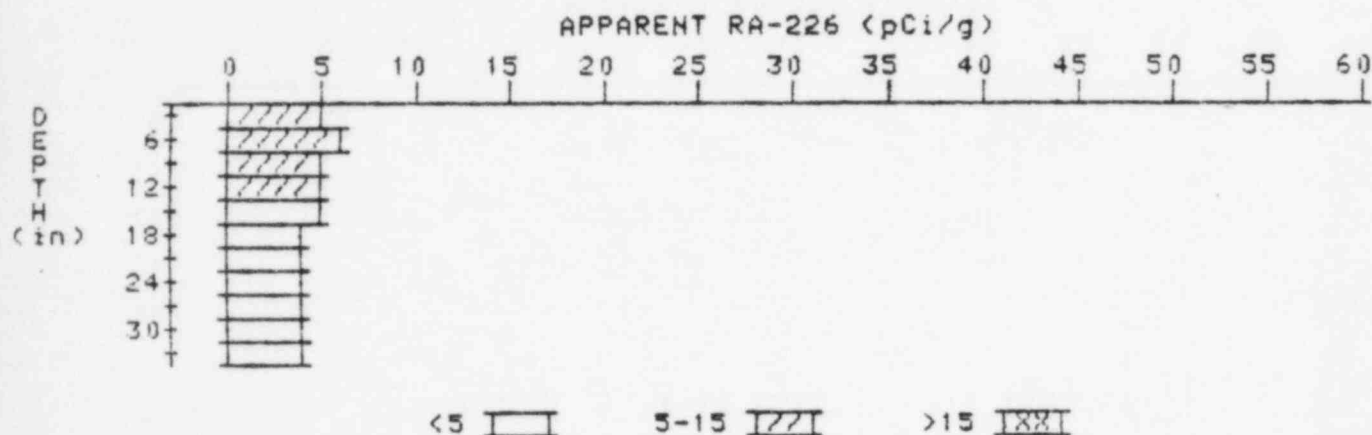
LOCATION: 171225



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.4	4.4
6	4.3	4.5
9	4.1	3.9
12	4.0	4.0
15	3.9	3.5
18	4.0	4.2
21	4.0	3.8
24	4.1	4.5
27	4.0	4.2
30	3.8	3.4
33	3.8	3.8

APPARENT RADIUM-226 CONCENTRATION 20 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS
HOLE NUMBER: 20
LOCATION: 186255



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.0	5.0
6	5.4	6.3
9	5.3	5.5
12	5.1	5.5
15	4.7	4.7
18	4.3	3.9
21	4.1	4.1
24	3.9	3.7
27	3.8	3.8
30	3.7	3.5
33	3.7	3.7

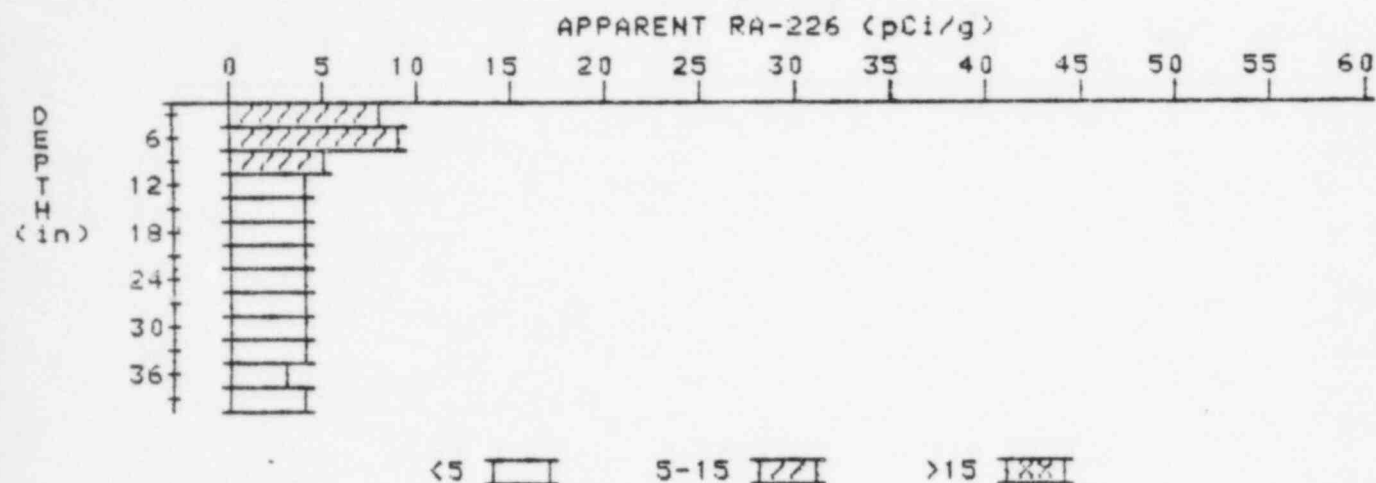
APPARENT RADIUM-226 CONCENTRATION 22

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS

HOLE NUMBER: 22

LOCATION: 205258



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	7.6	7.6
6	7.2	8.8
9	5.9	5.4
12	4.9	3.8
15	4.5	4.3
18	4.2	4.0
21	4.0	3.6
24	4.0	4.4
27	3.8	3.6
30	3.7	3.5
33	3.7	3.9
36	3.6	3.4
39	3.6	3.6

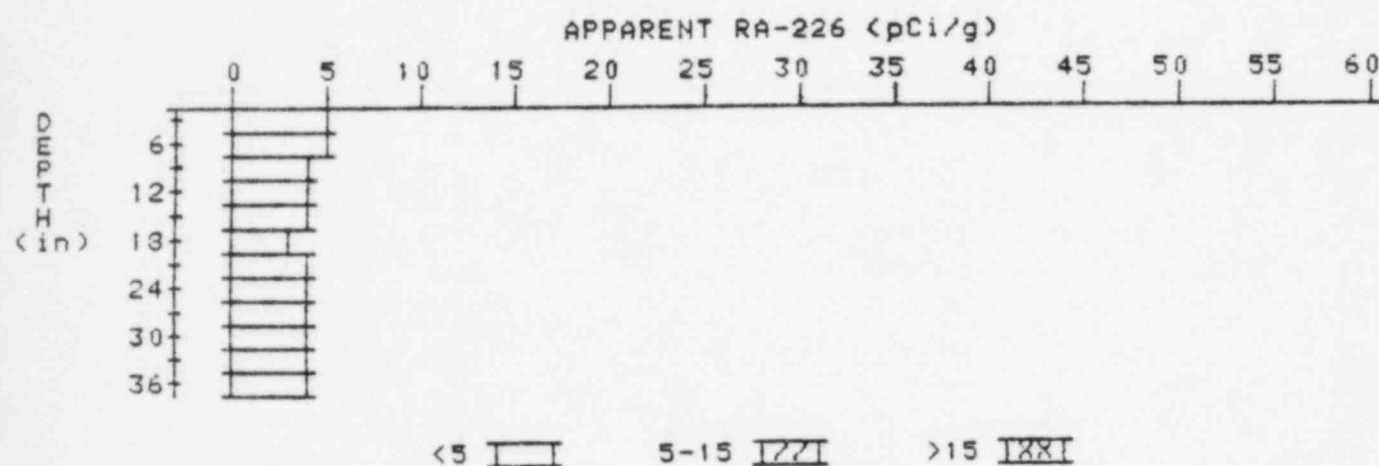
APPARENT RADIUM-226 CONCENTRATION 27

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS

HOLE NUMBER: 27

LOCATION: 229204



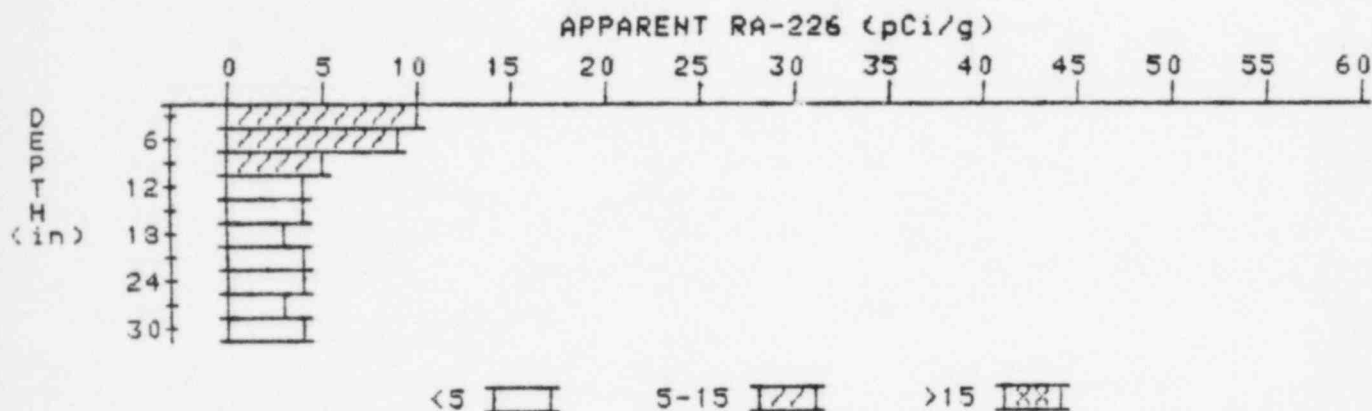
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.5	4.5
6	4.4	4.6
9	4.2	4.0
12	4.1	4.1
15	4.0	4.2
18	3.8	3.4
21	3.8	3.6
24	3.9	4.3
27	3.8	3.6
30	3.8	3.8
33	3.8	4.0
36	3.7	3.7

APPARENT RADIUM-226 CONCENTRATION 29 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS

HOLE NUMBER: 29

LOCATION: 230235



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	10.3	10.3
6	8.6	9.3
9	6.5	5.1
12	5.2	4.0
15	4.6	4.4
18	4.1	3.4
21	4.0	4.0
24	3.9	4.1
27	3.7	3.2
30	3.8	3.8

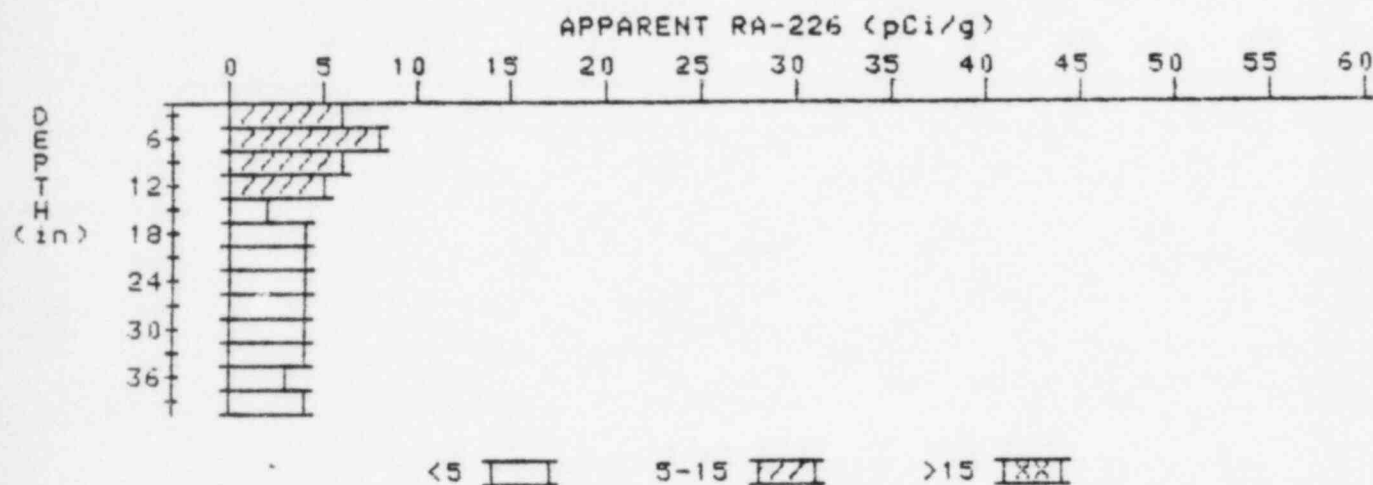
APPARENT RADIUM-226 CONCENTRATION 31

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS

HOLE NUMBER: 31

LOCATION: 240250



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	6.1	6.1
6	6.4	8.2
9	5.7	5.9
12	4.9	5.1
15	4.0	2.4
18	4.0	4.0
21	4.0	4.0
24	4.0	4.2
27	3.9	3.9
30	3.8	3.8
33	3.7	3.7
36	3.6	3.4
39	3.6	3.6

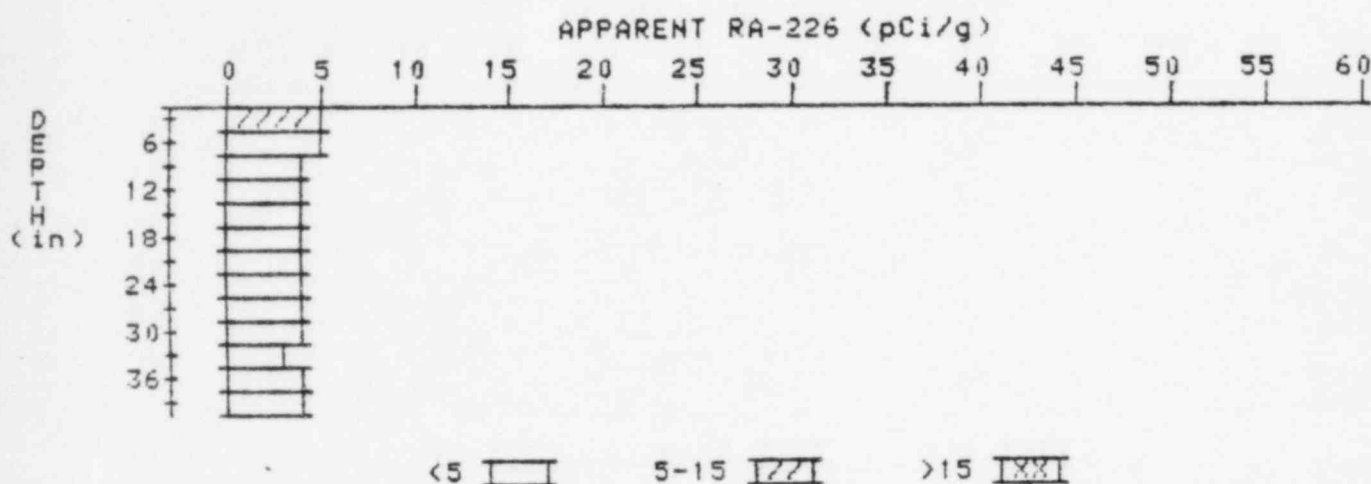
APPARENT RADIUM-226 CONCENTRATION 32

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS

HOLE NUMBER: 32

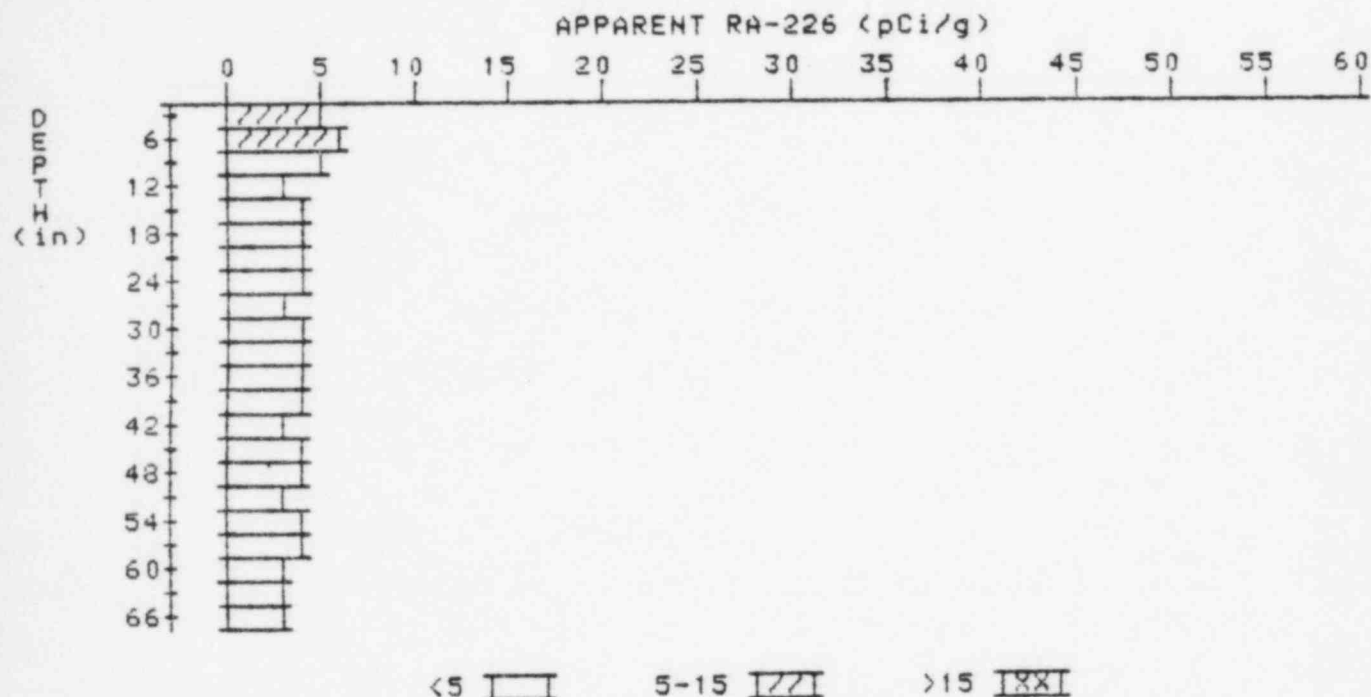
LOCATION: 245265



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.0	5.0
6	4.7	4.9
9	4.3	3.9
12	4.1	4.1
15	3.9	3.5
18	3.9	3.9
21	3.9	4.1
24	3.8	3.8
27	3.7	3.5
30	3.7	3.9
33	3.6	3.4
36	3.6	3.8
39	3.5	3.5

APPARENT RADIUM-226 CONCENTRATION 33 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS
HOLE NUMBER: 33
LOCATION: 248200



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.2	5.2
6	5.2	6.1
9	4.7	4.7
12	4.2	3.3
15	4.2	4.4
18	4.1	4.1
21	4.0	4.0
24	3.9	3.9
27	3.8	3.4
30	3.9	4.3
33	3.8	3.6
36	3.8	4.0
39	3.7	3.7
42	3.6	3.4
45	3.6	3.8
48	3.5	3.7

51	3.3	2.8
54	3.4	3.6
57	3.4	3.6
60	3.3	3.3
63	3.2	3.0
66	3.2	3.2

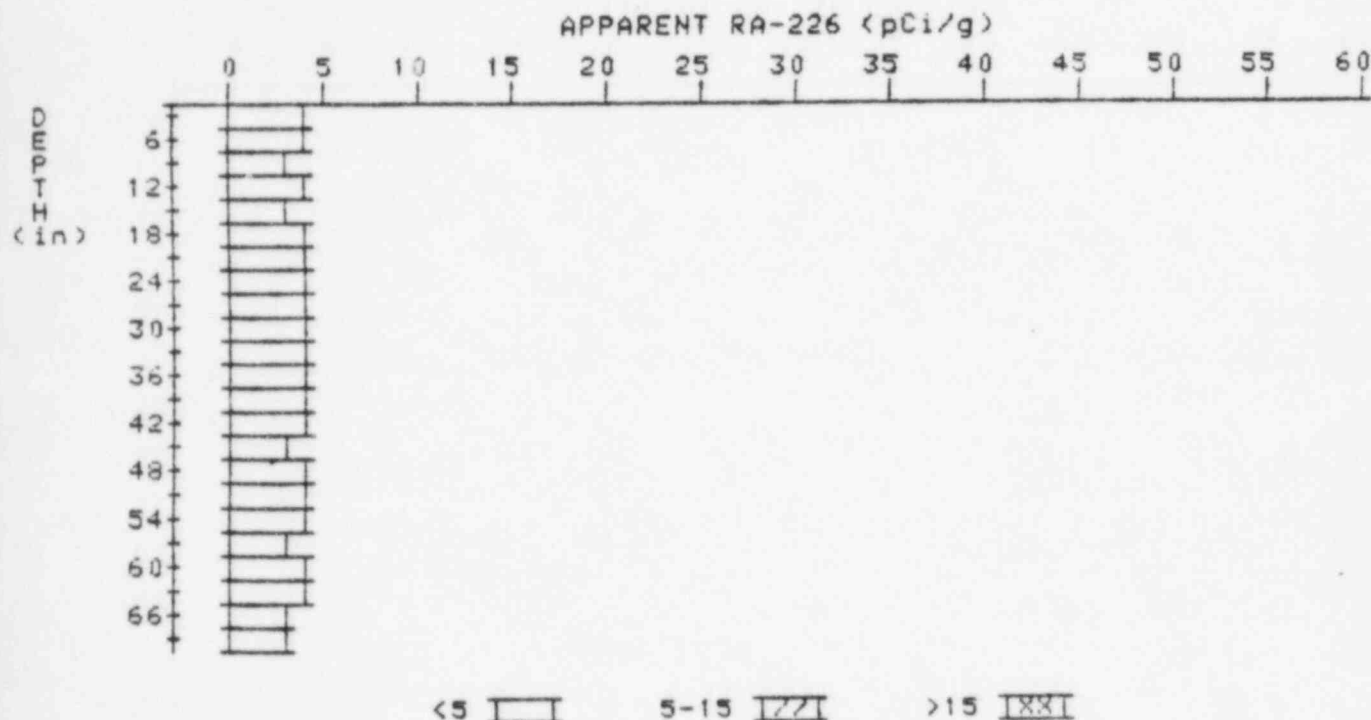
APPARENT RADIUM-226 CONCENTRATION 34

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS

HOLE NUMBER: 34

LOCATION: 260215

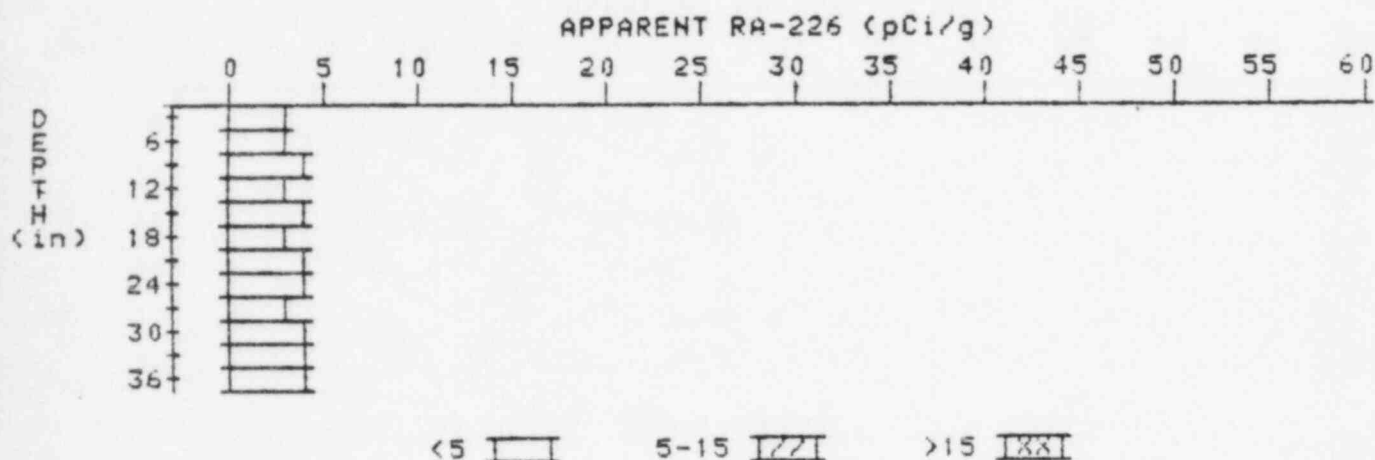


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.6	3.6
6	3.7	4.1
9	3.6	3.4
12	3.6	3.6
15	3.6	3.2
18	3.8	4.2
21	3.8	3.8
24	3.8	3.6
27	3.9	4.3
30	3.8	3.6
33	3.8	3.8
36	3.8	4.0
39	3.7	3.5
42	3.7	3.9
45	3.6	3.4

48	3.6	3.6
51	3.6	3.6
55	3.6	3.6
57	3.5	3.3
60	3.5	3.5
63	3.5	3.7
66	3.4	3.4
69	3.3	3.3

APPARENT RADIUM-226 CONCENTRATION 35 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-R3
HOLE NUMBER: 35
LOCATION: 260275



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.3	3.3
6	3.4	3.2
9	3.6	4.1
12	3.5	3.3
15	3.5	3.7
18	3.4	3.0
21	3.5	3.5
24	3.6	3.8
27	3.6	3.4
30	3.7	3.9
33	3.7	3.9
36	3.6	3.6

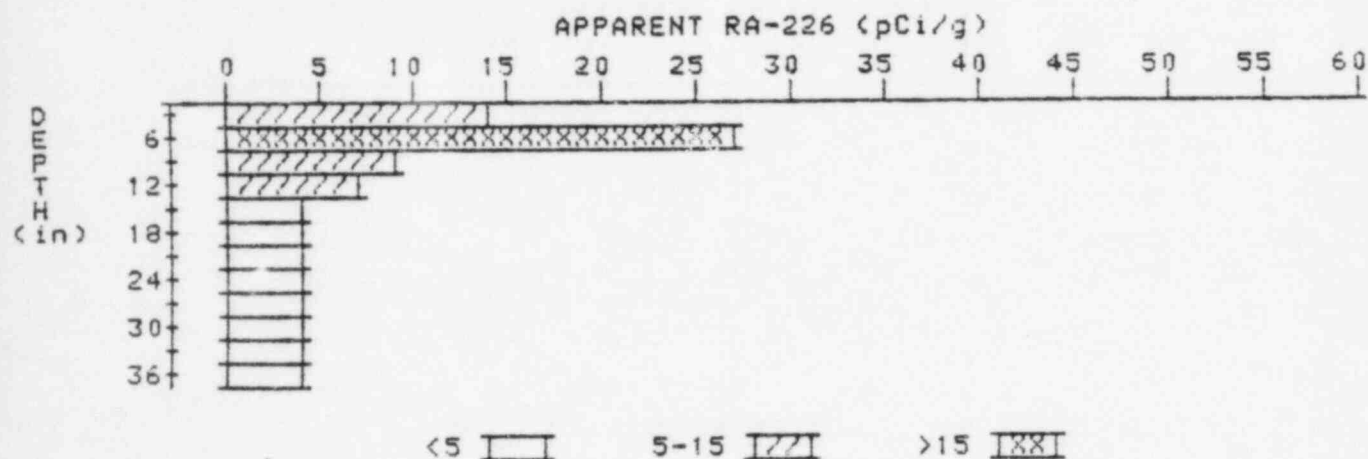
APPARENT RADIUM-226 CONCENTRATION 37

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS

HOLE NUMBER: 37

LOCATION: 262228



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	13.5	13.5
6	15.5	26.7
9	11.2	8.9
12	8.2	6.8
15	6.0	4.0
18	4.9	3.7
21	4.5	4.5
24	4.1	3.6
27	4.0	4.0
30	3.9	3.7
33	3.9	4.1
36	3.8	3.8

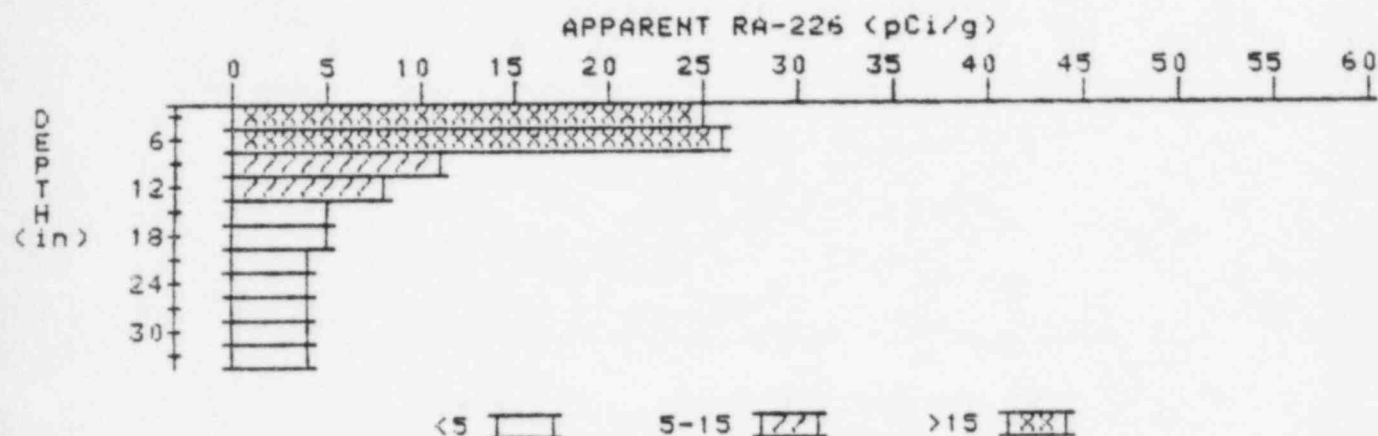
APPARENT RADIUM-226 CONCENTRATION 38

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS

HOLE NUMBER: 38

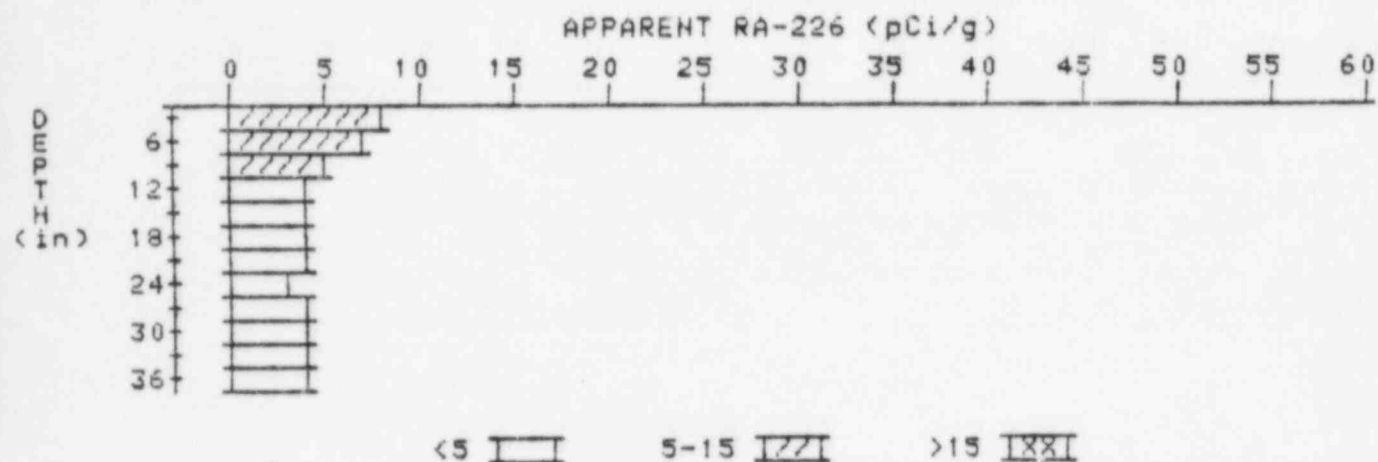
LOCATION: 265240



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	24.6	24.6
6	20.9	25.5
9	14.6	11.2
12	10.2	7.5
15	7.3	4.8
18	5.8	4.7
21	4.9	4.0
24	4.5	4.3
27	4.2	3.8
30	4.1	4.1
33	4.0	4.0

APPARENT RADIUM-226 CONCENTRATION 39 DECONVOLUTION GRAPH

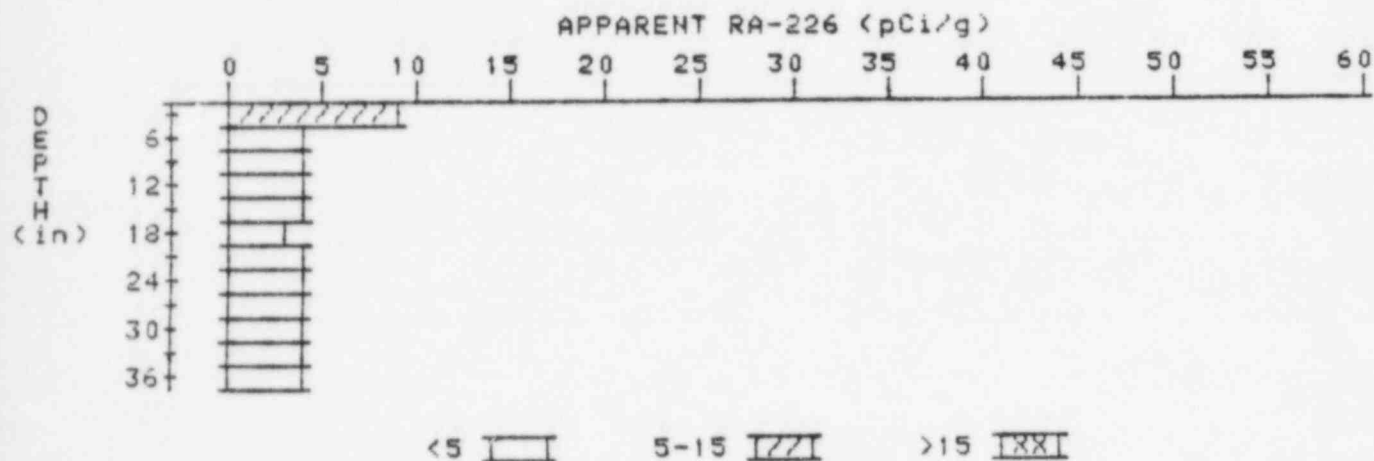
PROPERTY NUMBER: GJ-13972-RS
HOLE NUMBER: 39
LOCATION: 265255



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	7.9	7.9
6	6.9	7.1
9	5.8	5.4
12	4.9	4.0
15	4.5	4.3
18	4.2	4.0
21	4.0	4.0
24	3.8	3.4
27	3.8	4.0
30	3.7	3.5
33	3.7	3.7
36	3.7	3.7

APPARENT RADIUM-226 CONCENTRATION 40 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS
HOLE NUMBER: 40
LOCATION: 268225



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.7	3.7
6	6.3	4.2
9	5.1	4.2
12	4.4	3.7
15	4.1	4.1
18	3.8	3.3
21	3.8	3.6
24	3.9	4.3
27	3.8	3.6
30	3.8	3.8
33	3.8	4.0
36	3.7	3.7

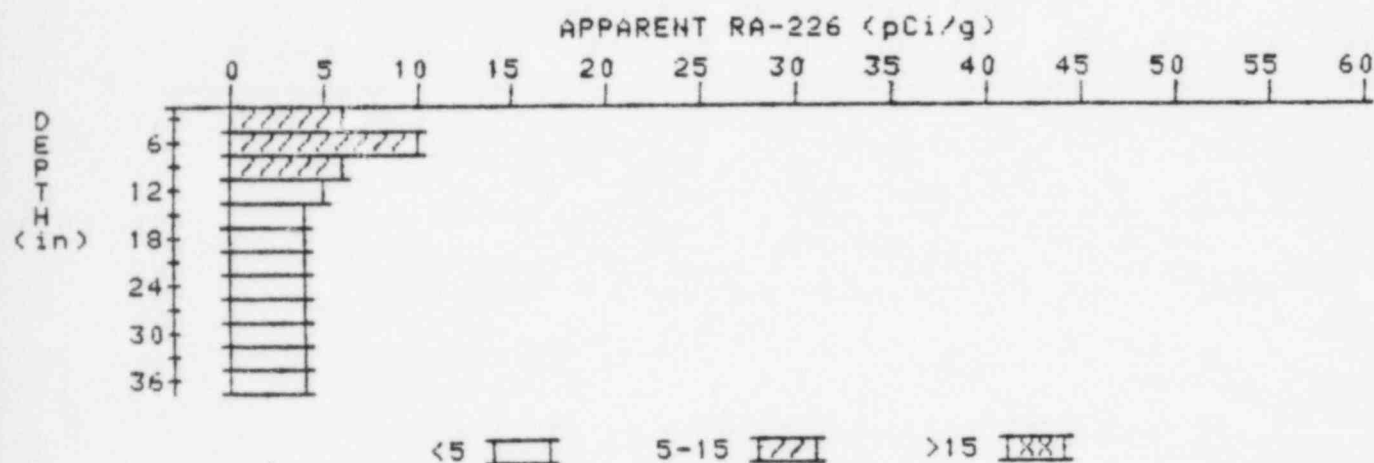
APPARENT RADIUM-226 CONCENTRATION 43

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS

HOLE NUMBER: 43

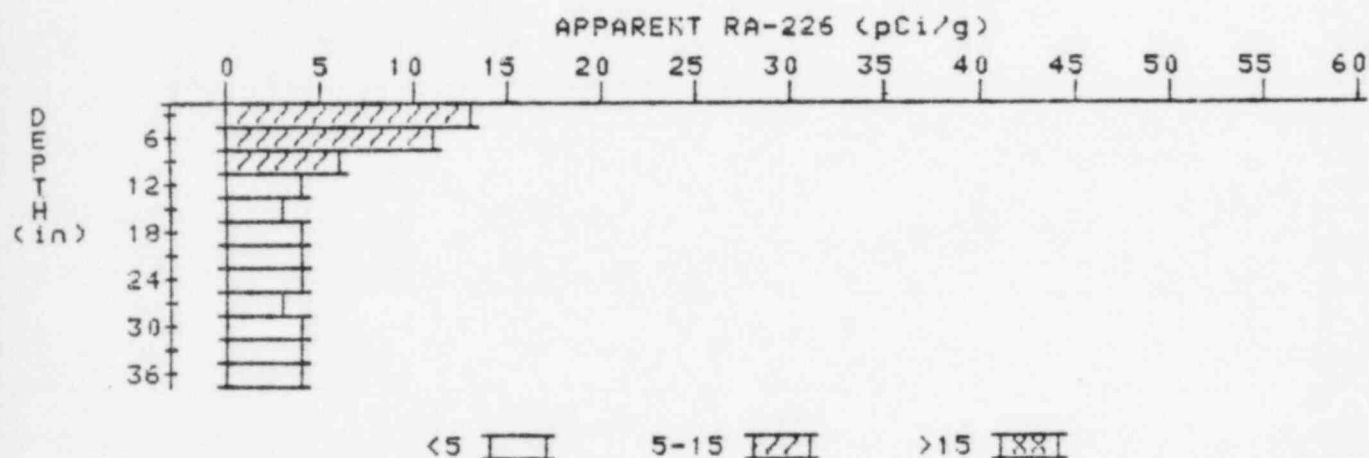
LOCATION: 275215



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	6.2	6.2
6	7.0	9.8
9	6.2	6.4
12	5.3	4.8
15	4.7	4.3
18	4.3	3.8
21	4.2	4.0
24	4.2	4.4
27	4.1	3.9
30	4.1	4.5
33	3.9	3.5
36	3.9	3.9

APPARENT RADIUM-226 CONCENTRATION 44 DECONVOLUTION GRAPH

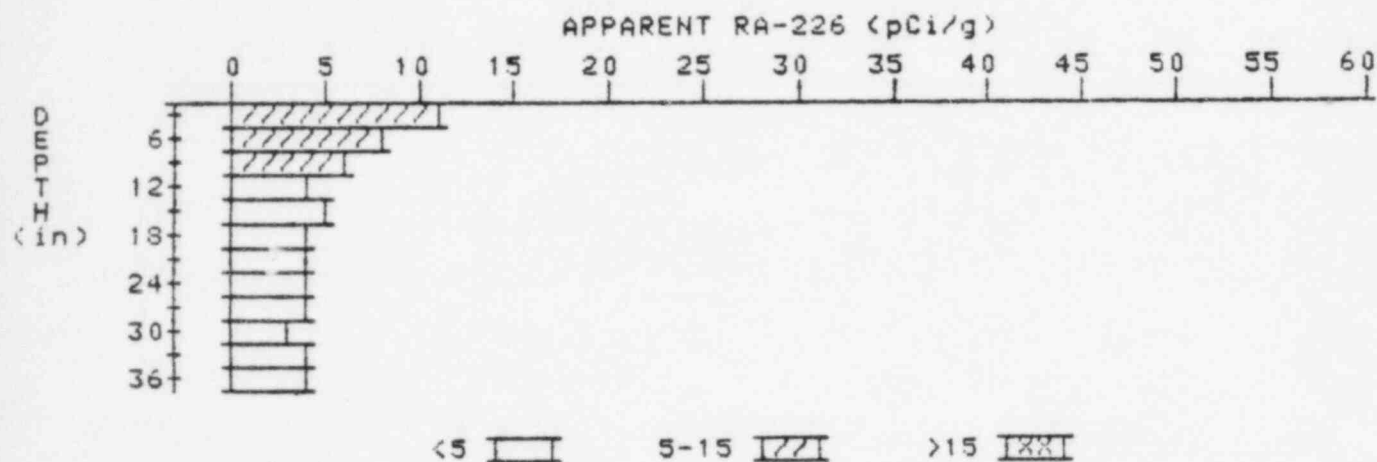
PROPERTY NUMBER: GJ-13972-RS
HOLE NUMBER: 44
LOCATION: 282249



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	12.8	12.8
6	10.2	10.6
9	7.4	5.6
12	5.6	4.2
15	4.6	3.4
18	4.3	4.3
21	4.0	3.6
24	3.9	3.9
27	3.8	3.4
30	3.9	4.1
33	3.9	3.5
36	4.1	4.1

APPARENT RADIUM-226 CONCENTRATION 46 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS
HOLE NUMBER: 46
LOCATION: 285235



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	11.3	11.3
6	8.7	7.6
9	6.7	5.6
12	5.3	3.7
15	4.8	4.6
18	4.4	4.0
21	4.2	4.2
24	4.0	3.8
27	3.9	4.1
30	3.7	3.3
33	3.7	3.7
36	3.7	3.7

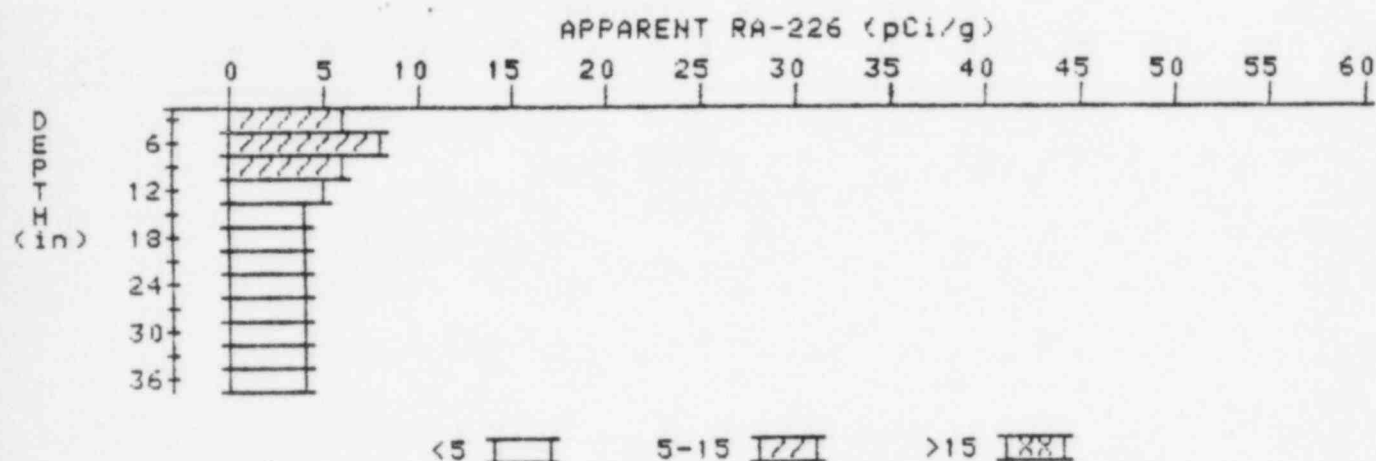
APPARENT RADIUM-226 CONCENTRATION 48

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS

HOLE NUMBER: 48

LOCATION: 295198



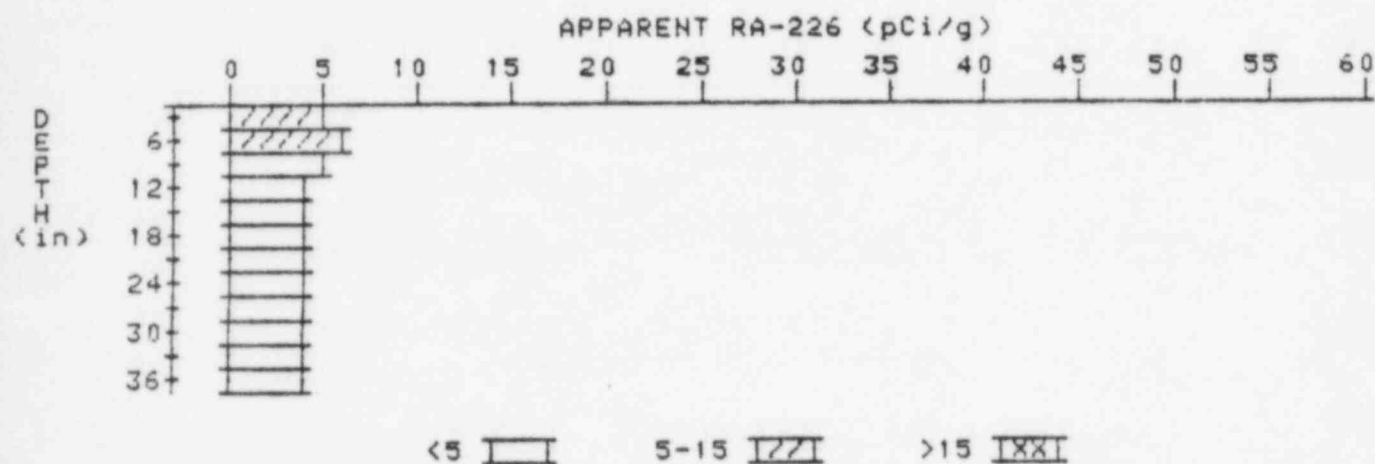
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.8	5.8
6	6.2	8.0
9	5.6	5.6
12	5.0	4.8
15	4.5	4.1
18	4.2	4.0
21	4.0	3.8
24	3.9	3.7
27	3.9	4.1
30	3.8	3.6
33	3.8	4.0
36	3.7	3.7

APPARENT RADIUM-226 CONCENTRATION 49 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS

HOLE NUMBER: 49

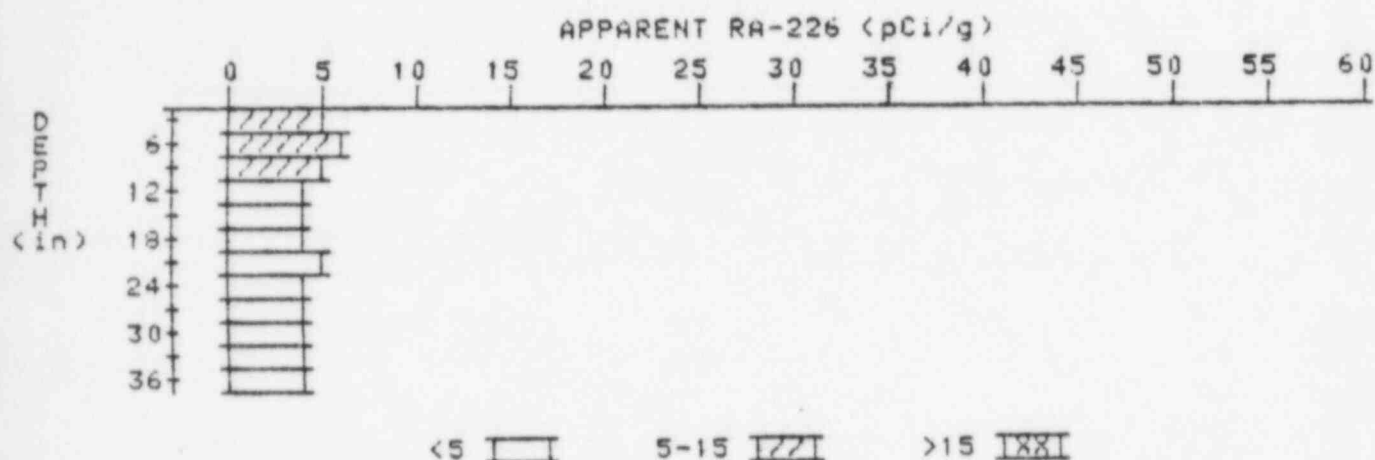
LOCATION: 295215



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.3	5.3
6	5.3	6.0
9	4.9	4.9
12	4.5	4.1
15	4.3	4.1
18	4.2	4.2
21	4.1	3.9
24	4.1	4.3
27	4.0	4.0
30	3.9	3.7
33	3.9	4.1
36	3.8	3.8

APPARENT RADIUM-226 CONCENTRATION 50 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS
HOLE NUMBER: 50
LOCATION: 295235



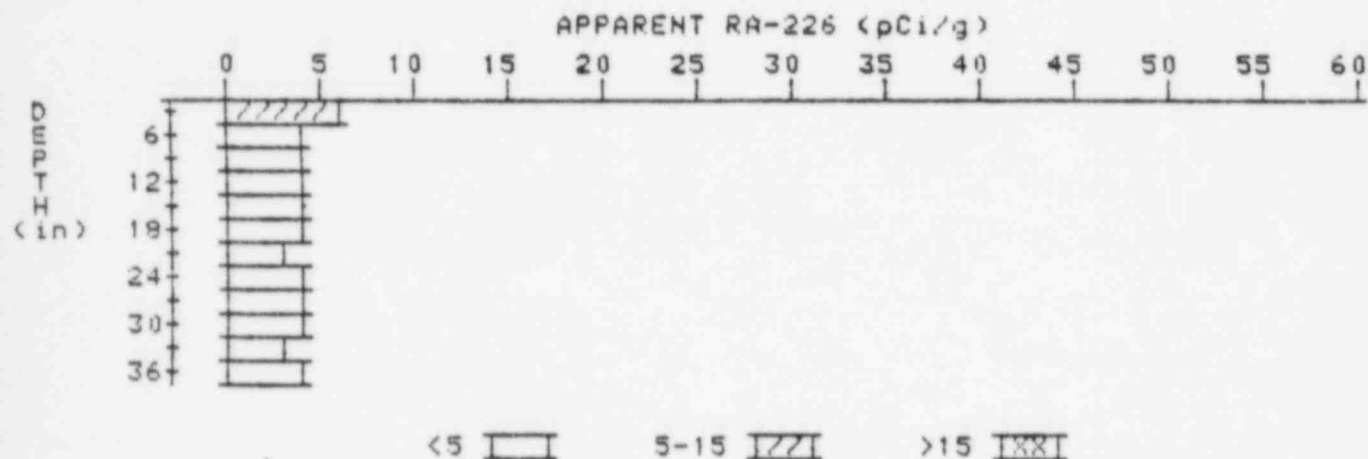
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.0	5.0
6	5.2	6.1
9	4.9	5.1
12	4.5	4.1
15	4.3	4.1
18	4.2	3.8
21	4.3	4.7
24	4.2	4.2
27	4.1	3.9
30	4.1	4.5
33	3.9	3.5
36	3.9	3.9

APPARENT RADIUM-226 CONCENTRATION 51 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-R3

HOLE NUMBER: 51

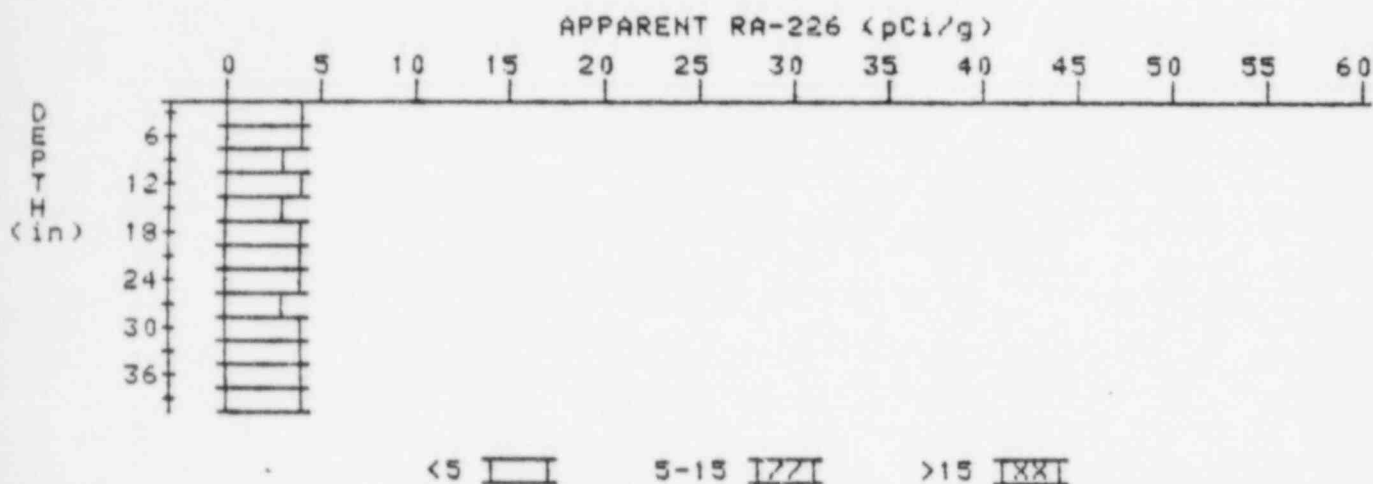
LOCATION: 295255



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.6	5.6
6	4.8	4.1
9	4.4	4.2
12	4.1	3.7
15	4.0	3.8
18	4.0	4.4
21	3.8	3.4
24	3.8	4.0
27	3.7	3.5
30	3.7	3.9
33	3.6	3.4
36	3.6	3.6

APPARENT RADIUM-226 CONCENTRATION 52 DECONVOLUTION GRAPH

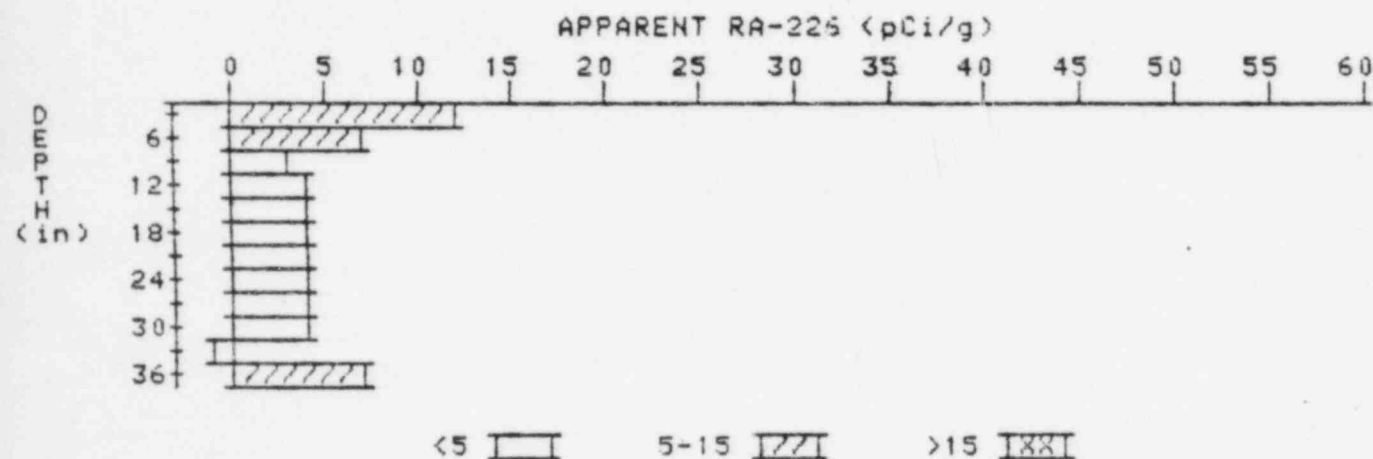
PROPERTY NUMBER: GJ-13972-RS
HOLE NUMBER: 52
LOCATION: 296275



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
=====	=====	=====
3	4.3	4.3
6	4.0	4.0
9	3.7	3.2
12	3.7	3.9
15	3.6	3.4
18	3.6	3.6
21	3.6	3.6
24	3.6	3.8
27	3.5	3.3
30	3.5	3.5
33	3.5	3.5
36	3.5	3.5
39	3.5	3.5

APPARENT RADIUM-226 CONCENTRATION 54 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS
HOLE NUMBER: 54
LOCATION: 302273

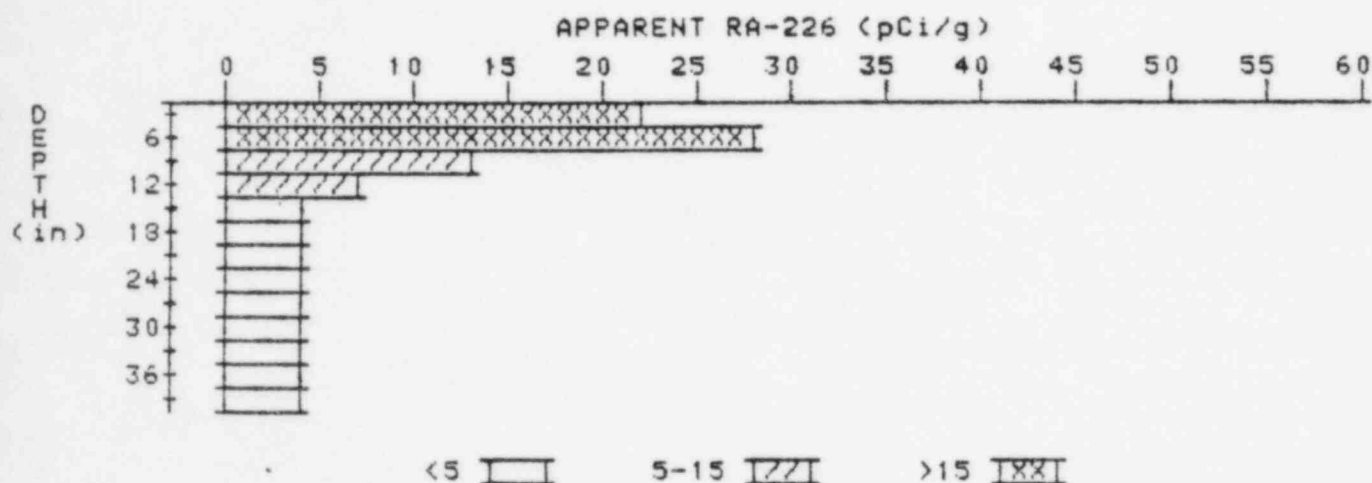


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	11.5	11.5
6	8.4	7.3
9	5.9	3.4
12	4.8	3.7
15	4.3	3.8
18	4.1	3.7
21	4.1	4.1
24	4.1	4.1
27	4.1	4.1
30	4.1	4.1
33	4.1	- .5
36	6.7	6.7

APPARENT RADIUM-226 CONCENTRATION 55

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS
HOLE NUMBER: 55
LOCATION: 320220



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	21.8	21.8
6	20.3	27.8
9	14.6	13.0
12	9.8	6.6
15	6.8	4.0
18	5.4	4.2
21	4.7	4.2
24	4.3	3.9
27	4.1	3.9
30	4.0	4.0
33	3.9	3.9
36	3.8	3.8
39	3.7	3.7

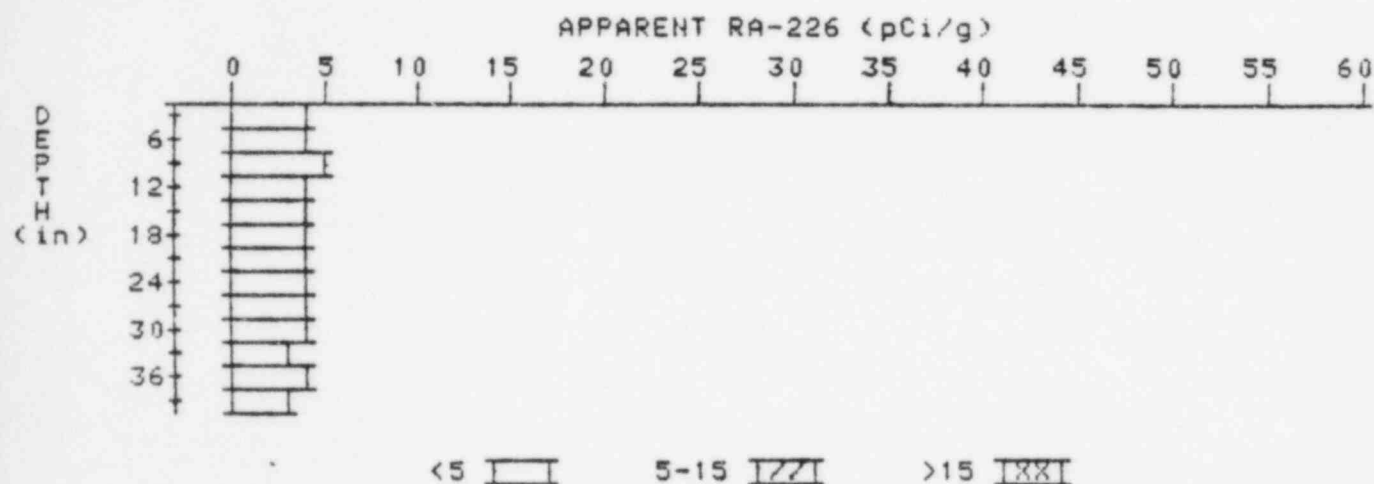
APPARENT RADIUM-226 CONCENTRATION 56

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS

HOLE NUMBER: 56

LOCATION: 325195



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
=====	=====	=====
3	3.7	3.7
6	4.0	4.4
9	4.1	4.6
12	3.9	3.5
15	3.9	4.1
18	3.8	3.8
21	3.7	3.5
24	3.7	3.7
27	3.7	3.9
30	3.6	3.6
33	3.5	3.3
36	3.5	3.9
39	3.3	3.3

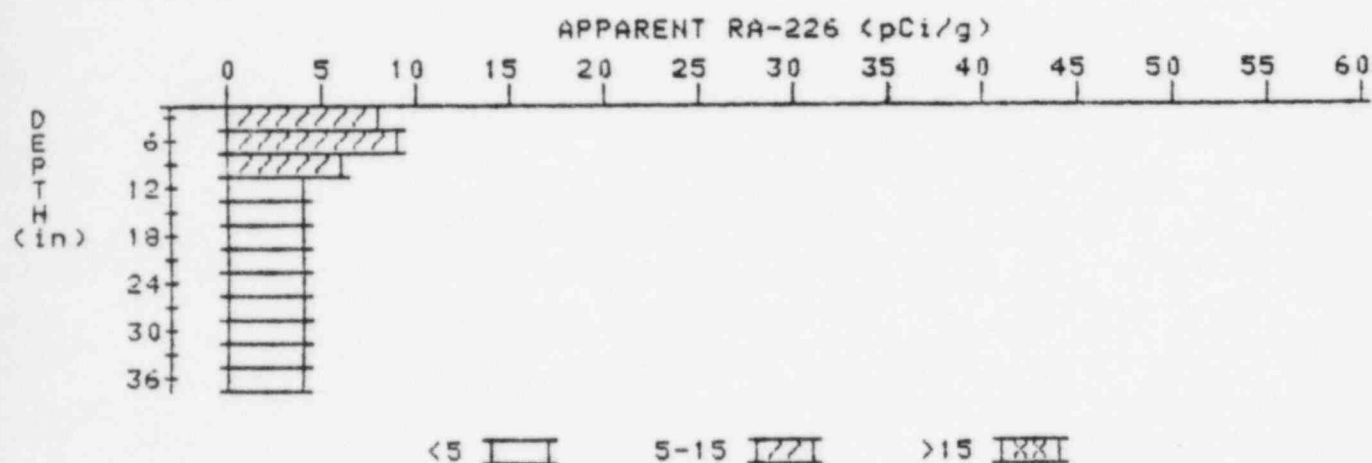
APPARENT RADIUM-226 CONCENTRATION 57

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS

HOLE NUMBER: 57

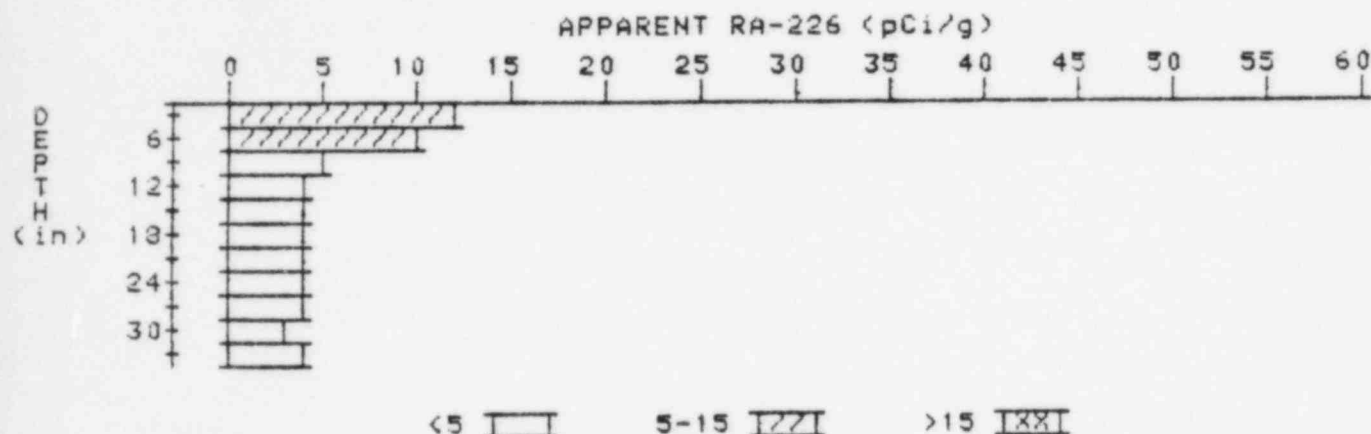
LOCATION: 325235



Depth (in)	Apparent Radium-226 (pCi/g)	Apparent Radium-226 (pCi/g)
	Undeconvolved	Deconvolved
3	7.7	7.7
6	7.4	9.2
9	6.1	5.7
12	5.0	4.1
15	4.4	3.9
18	4.1	3.7
21	4.0	3.8
24	4.0	4.2
27	3.9	3.7
30	3.9	4.3
33	3.7	3.5
36	3.6	3.6

APPARENT RADIUM-226 CONCENTRATION 59 DECONVOLUTION GRAPH

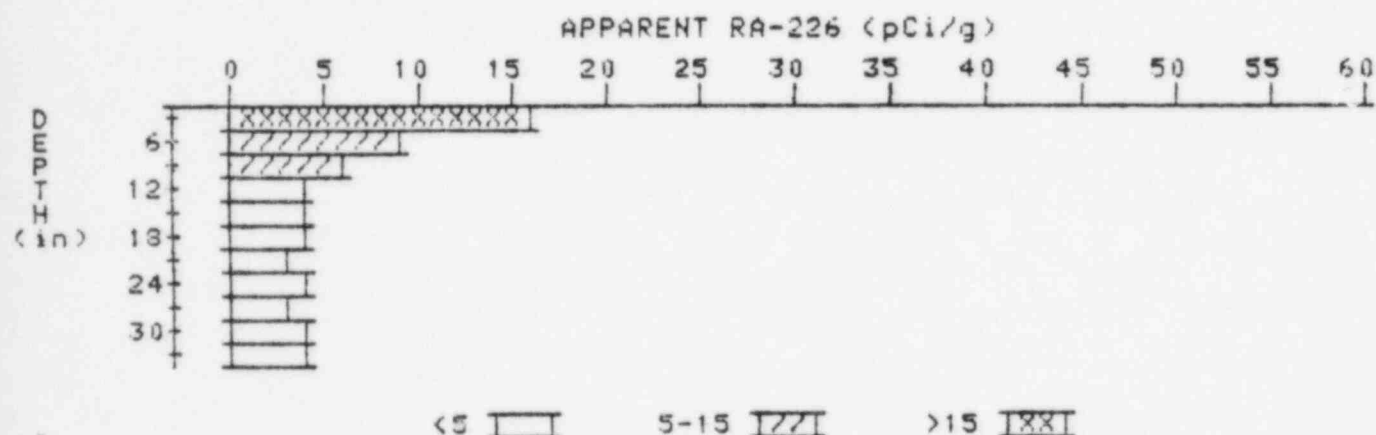
PROPERTY NUMBER: GJ-13972-RS
HOLE NUMBER: 59
LOCATION: 340225



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	12.4	12.4
6	9.7	9.9
9	6.9	4.6
12	5.4	4.2
15	4.6	4.1
18	4.1	3.6
21	3.9	3.7
24	3.8	3.8
27	3.7	3.7
30	3.6	3.4
33	3.6	3.6

APPARENT RADIUM-226 CONCENTRATION 60 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS
HOLE NUMBER: 60
LOCATION: 340230



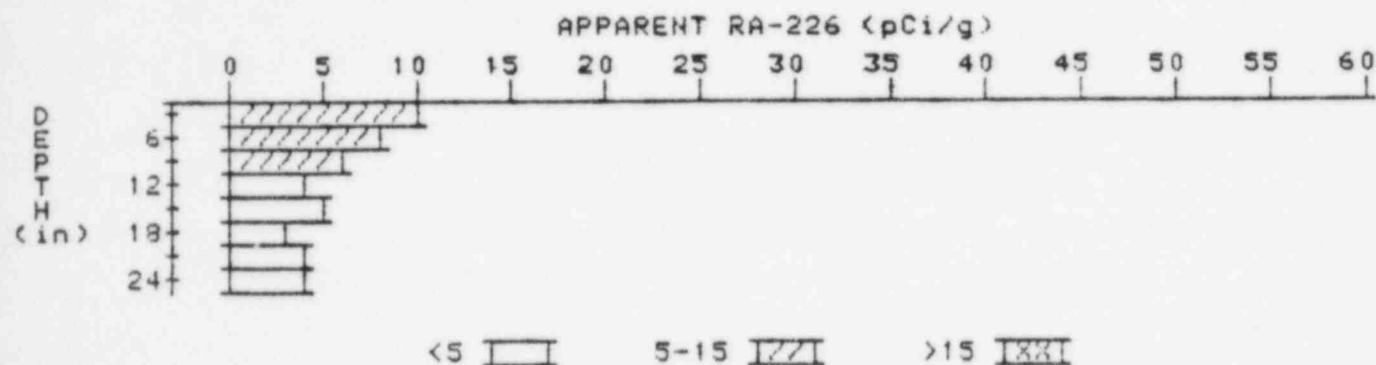
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	16.2	16.2
6	11.5	9.2
9	8.1	6.0
12	5.9	3.6
15	5.0	4.5
18	4.4	4.2
21	3.9	3.0
24	3.9	4.4
27	3.6	2.9
30	3.7	4.2
33	3.5	3.5

APPARENT RADIUM-226 CONCENTRATION 61 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS

HOLE NUMBER: 61

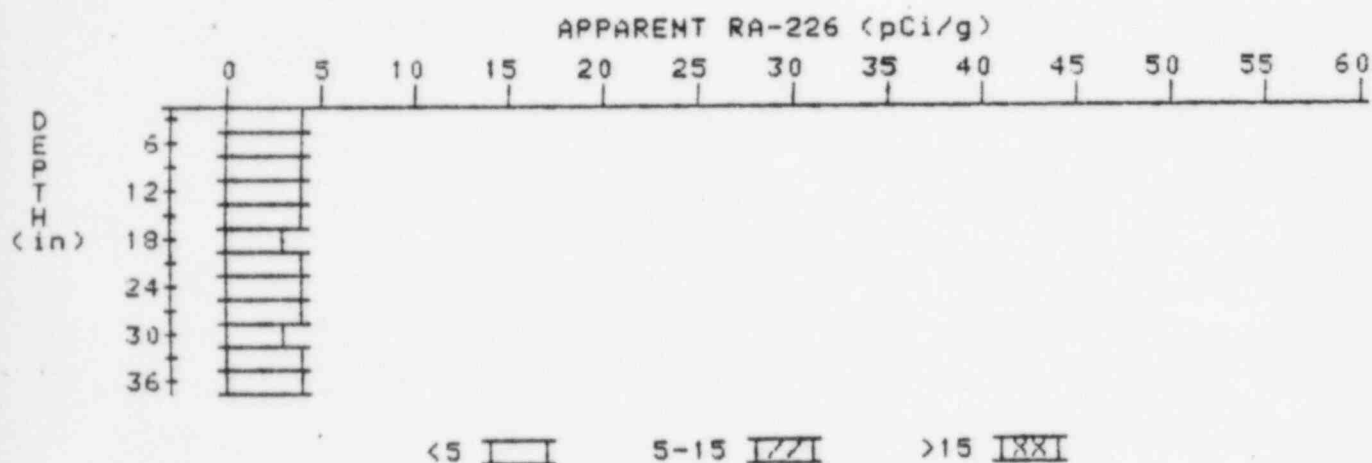
LOCATION: 340243



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	9.5	9.5
6	7.9	7.5
9	6.5	6.1
12	5.3	4.2
15	4.7	4.5
18	4.2	3.5
21	4.1	4.3
24	3.9	3.9

APPARENT RADIUM-226 CONCENTRATION 63 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS
HOLE NUMBER: 63
LOCATION: 344264



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.8	3.8
6	3.8	3.8
9	3.8	3.8
12	3.8	3.8
15	3.8	4.0
18	3.7	3.3
21	3.8	4.2
24	3.7	3.5
27	3.7	3.9
30	3.6	3.4
33	3.6	3.8
36	3.5	3.5

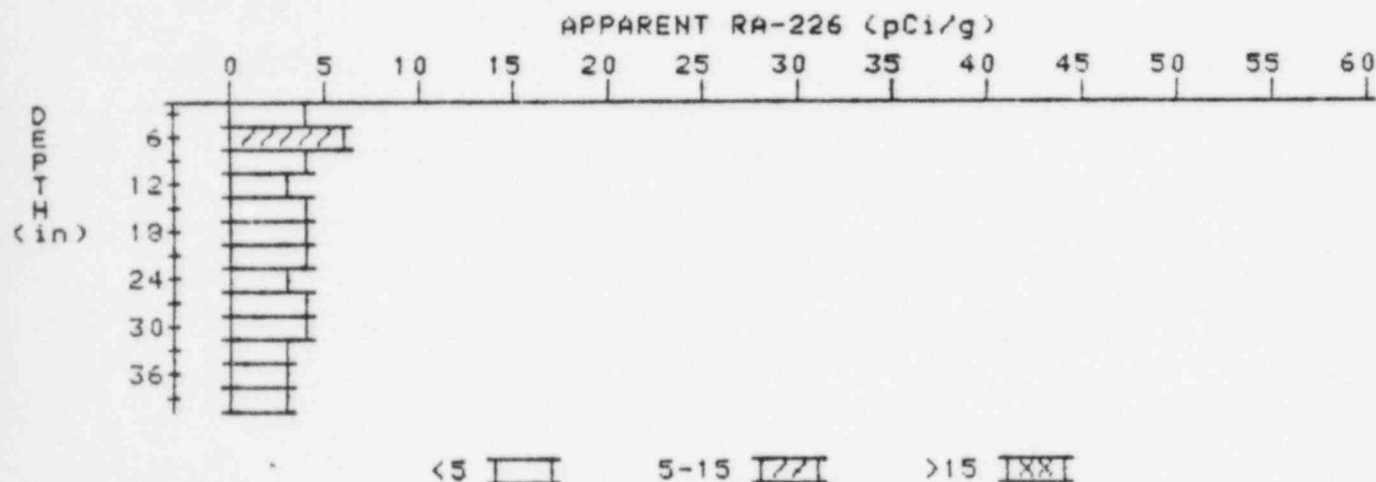
APPARENT RADIUM-226 CONCENTRATION 64

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS

HOLE NUMBER: 64

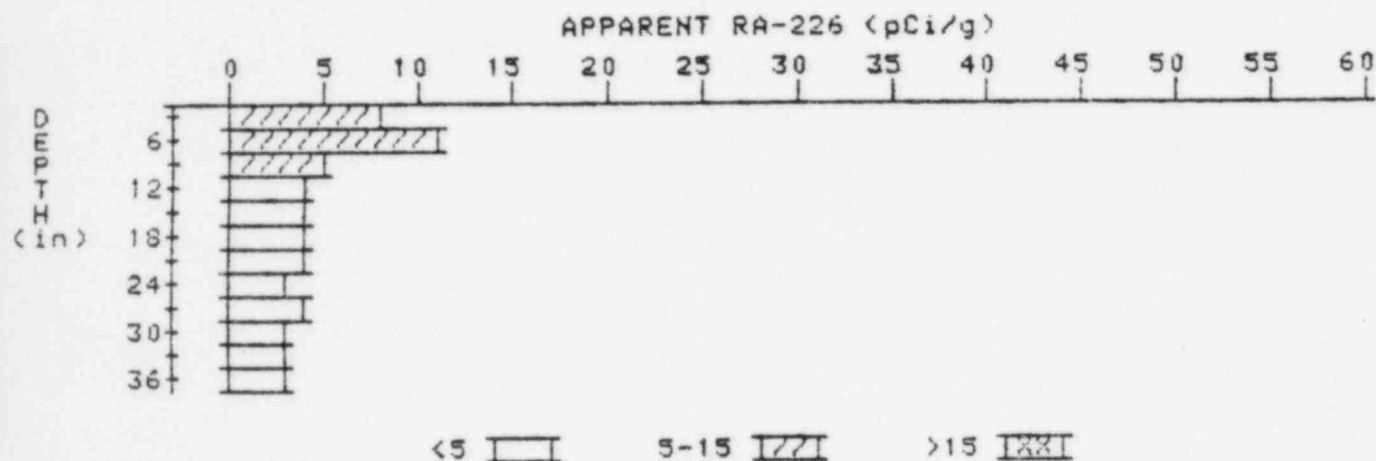
LOCATION: 345208



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.2	4.2
6	4.6	5.8
9	4.3	4.5
12	3.9	3.2
15	3.9	4.1
18	3.8	3.8
21	3.7	3.7
24	3.6	3.4
27	3.6	3.8
30	3.5	3.7
33	3.3	3.1
36	3.2	3.4
39	3.0	3.0

APPARENT RADIUM-226 CONCENTRATION 66 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS
HOLE NUMBER: 66
LOCATION: 365235



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	7.5	7.5
6	7.7	11.1
9	6.0	5.1
12	4.8	3.6
15	4.3	3.8
18	4.1	4.3
21	3.8	3.6
24	3.6	3.2
27	3.6	4.0
30	3.4	3.2
33	3.3	3.3
36	3.2	3.2

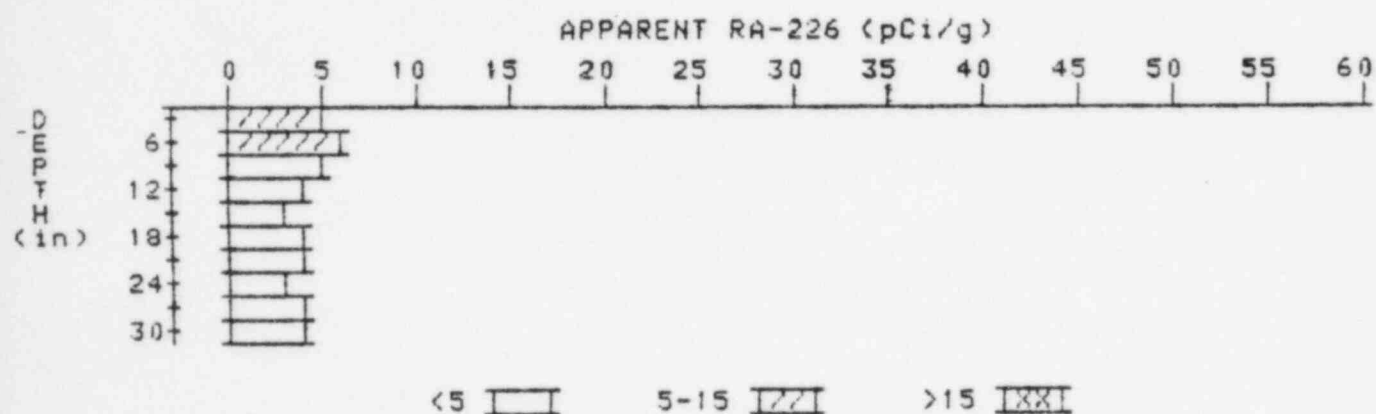
APPARENT RADIUM-226 CONCENTRATION 68

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS

HOLE NUMBER: 68

LOCATION: 365258



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.3	5.3
6	5.3	6.2
9	4.8	4.8
12	4.3	4.1
15	3.9	3.4
18	3.8	3.6
21	3.8	4.2
24	3.6	3.2
27	3.6	3.8
30	3.5	3.5

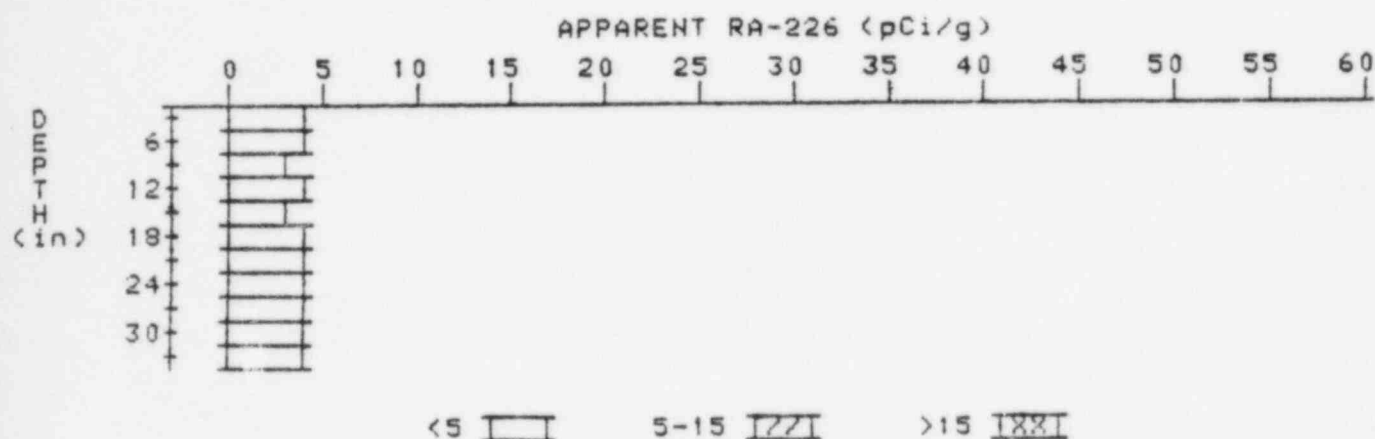
APPARENT RADIUM-226 CONCENTRATION 77

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS

HOLE NUMBER: 77

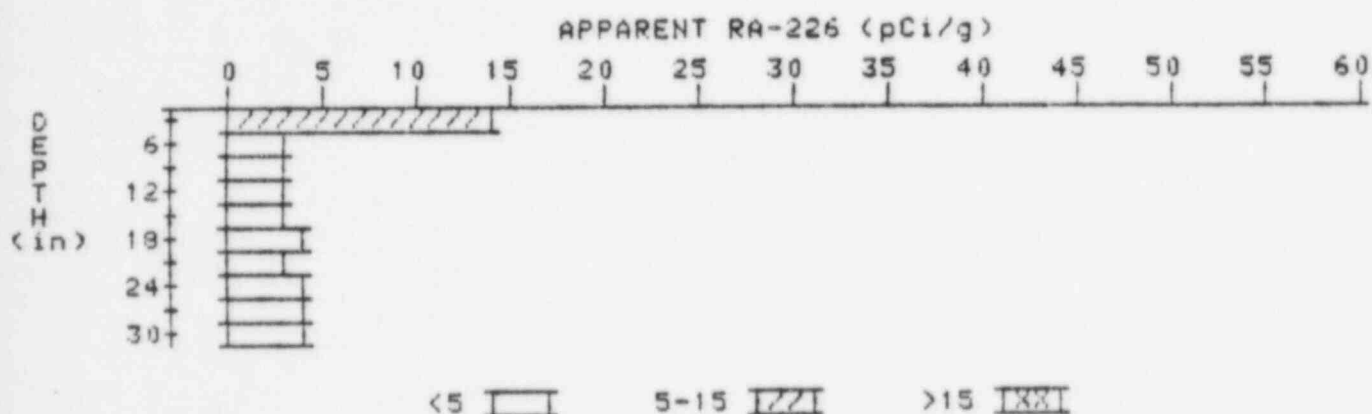
LOCATION: 238273



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.6	3.6
6	3.6	3.8
9	3.5	3.1
12	3.6	3.8
15	3.6	3.4
18	3.7	3.7
21	3.8	4.0
24	3.8	3.6
27	3.9	3.9
30	4.0	4.4
33	3.9	3.9

APPARENT RADIUM-226 CONCENTRATION 79 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-13972-RS
HOLE NUMBER: 79
LOCATION: 250260



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	14.3	14.3
6	8.4	2.7
9	5.7	3.0
12	4.5	3.3
15	4.0	3.3
18	3.9	3.9
21	3.8	3.4
24	3.9	3.9
27	4.0	4.0
30	4.1	4.1