

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-0552'-RS
ADDRESS: 3063 D 1/2 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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APPROVED BY

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DATE

July 31, 1985

REA05527:REA-AB006

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-05527-RS, is a single-family residence located at 3063 D 1/2 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, 462 cu. yd.; interior, 4 cu. yd.

Estimated cost to perform remedial action, including dislocation when applicable, is \$17,849. Remedial action on this property will take approximately 21 days to complete.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 3063 D 1/2 Road, Grand Junction, Colorado

Zoning: Residential (PR-6)

Lot Size: Approximately 31,600 sf (0.72 acres)

Legal Description: Beg S 89Deg54' W 643.22ft Fr NE Cor NW4SE4 Sec 16 T1S R1E, U.M. S 0Deg01'25Sec W 191.69ft, S 89Deg54' W 165ft, N 0Deg01'25Sec E 191.69ft, N 89Deg54' E to Beg and Beg N 89Deg54' E 470ft, S 0Deg01'25Sec W 30ft Fr NW Cor SE4 SD Sec 16, N89Deg54' E 41.99ft, S 0Deg01'25Sec W 161.69ft, S 89Deg54' W 41.99ft, N 161.69ft to Beg., County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 4 miles northeast of the State of Colorado Tailings Repository. Appendix Figure 2.1 shows the property location relative to its surroundings.

Utilities: Utility locations are shown in Appendix Figure 2.2.

Electrical:	Underground
Gas:	Underground
Telephone:	Underground
Sewer:	Underground
Water:	Underground
Cable TV:	Underground

Bordering Properties:

North:	D 1/2 Road
South:	Park
East:	Single-family residence
West:	Single-family residence

2.2 Existing Facilities and Structures

Primary Structure:

Type:	Multi-level residence
Size:	Approximately 1850 sf
Construction Date:	1976
Construction:	Wood-frame
Foundation:	Concrete stemwall on spread footing
Footing Depth:	Not determined
Basement:	None
Crawl Space:	Yes - under North half of residence
Condition:	Good

Other Structures:

Type:	Garage
Size:	Approximately 576 sf
Construction:	Wood-frame
Foundation:	Concrete slab-on-grade
Condition:	Good

Type:	Hog shed
Size:	Approximately 200 sf
Construction:	Wood-frame
Foundation:	None
Condition:	Fair

General Remarks:

There are numerous items stored around the property. Structures, utilities, landscaping, and other special features of this property are included in Appendix Figure 2.2.

Historical Data:

This structure is not over 50 years old. Therefore, it does not meet the eligibility criteria for consideration of inclusion on the National Register of Historic Places.

3.0 RADIOLOGIC SURVEY

3.1 Introduction

Radiologic data were collected by Bendix at DOE ID No. GJ-05527-RS on April 5, 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 yard away from the primary structure.

The Bendix radiologic survey was designed to investigate the entire property, with emphasis on previously identified areas of contamination. Conclusions based upon data analyses are discussed in Section 3.5, Extent of Contamination. Photocopies of the Official Survey Report, team leader notes, and deconvolution graphs are included in the Appendix (Section 6.0).

3.2 Gamma Exposure-Rate Surveys

3.2.1 Exterior Findings

Background Readings: 14 to 17 uR/h
Highest Outside Gamma Reading (HOG): 64 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 the ranges of elevated gamma readings and indicate areas of possible contamination.

3.2.2 Interior Findings

Background Readings: 13 to 16 uR/h
Highest Inside Gamma Reading (HIG): 16 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 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 Figures 3.3b, 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 dirt floor in the hog shed is contaminated to a depth of 6 inches (approximately 200 sf).
- (AREA B) At the east side of the garage, contamination in the gravel area extends to a depth of 12 inches (approximately 28 sf).
- (AREA C) The planter along the south side of the primary structure is contaminated to a depth of 12 inches (approximately 90 sf).
- (AREA D) The soil in the garden is contaminated to a depth of 15 inches (approximately 1,325 sf).
- (AREA E) In the southeast corner of the property, the soil is contaminated to a depth of 6 inches (approximately 792 sf).
- (AREA F) A portion of the driveway southeast of the primary structure is contaminated to a depth of 12 inches (approximately 342 sf).
- (AREA G) The soil in a portion of the work/storage area east of the primary structure is contaminated 9 inches deep (approximately 362 sf).
- (AREA H) Part of the driveway east of the primary structure, along the fence line, is contaminated to a depth of 9 inches (approximately 1,175 sf).
- (AREA I) East and northeast of the primary structure contamination in the lawn extends to a depth of 12 inches (approximately 2,091 sf).

- (AREA J) A portion of the lawn east of Area I is contaminated to a depth of 15 inches (approximately 1,240 sf).
- (AREA K) Northeast of the primary structure, east of Area J, contamination in the driveway is 12 inches deep (approximately 1,404 sf).
- (AREA L) Northwest of the primary structure, contamination in the soil extends to a depth of 6 inches (approximately 45 sf).
- (AREA M) Contamination in the lawn north of the primary structure extends to a depth of 18 inches (approximately 479 sf).
- (AREA N) Between Areas I and K, contamination in the lawn extends to a depth of 18 inches (approximately 798 sf).
- (AREA O) In the triangular planter northwest of the primary structure, contamination extends to a depth of 9 inches (approximately 113 sf).
- (AREA P) North of Area O, contamination in the soil extends to a depth of 6 inches (approximately 75 sf).
- (AREA Q) Soil under the planter along the north side of the property is contaminated to a depth of 18 inches. The soil in the planter is clean to an average depth of 7 inches. Total depth from the top of the planter is 25 inches (approximately 650 sf).
- (AREA R) North of Area Q contamination in the soil extends to a depth of 15 inches (approximately 84 sf).
- (AREA S) In the lawn northwest of the primary structure, contamination extends to a depth of 6 inches (approximately 55 sf).
- (AREAS REQUIRING FURTHER INVESTIGATION DURING REMEDIAL ACTION)
Due to obstructions (farm machinery, wood piles, etc.) close monitoring of the contaminated areas is required to ensure that the contamination is not more extensive than assessed.

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-05527-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 \$17,849.

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

Owner preference is to try to save the plantings in the planter in area Q if possible. 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 2.2	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
Figure 3.3b	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	
Team Leader Notes	
Deconvolution Graphs (Apparent Radium-226 Concentration)	

Radium Concentrations at Exterior Locations

DOE ID #GJ-05527-RS

3063 D 1/2 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.		
2	155200	00	DS	<1.0		*	Background
		00-06	SS			1.8	DC = 0 inches
		03	TC	2.8		*	
		06	TC	3.2		*	
		09	TC	3.4		*	
		12	BH	3.5	1.3	*	
		15	TC	3.5		*	
		18	TC	3.5		*	
		21	TC	3.5		*	
		24	BH	3.6	<1.0	*	
		27	TC	3.6		*	
		30	BH	3.6	<1.0	*	
		33	TC	3.6		*	
3	167273	00	DS	1.4		*	East of garage
		03	TC	3.2		*	
		06	TC	3.5		*	DC = 12 inches
		09	TC	3.7		*	Based on all data
		12	TC	3.6		*	collected in area
		15	TC	3.7		*	
		18	TC	3.7		*	
		21	TC	3.6		*	
		24	TC	3.6		*	
		27	TC	3.6		*	
		30	TC	3.6		*	
		33	TC	3.7		*	
		36	TC	3.7		*	
		39	TC	3.7		*	
		42	TC	3.6		*	
4	167274	00	DS	1.0		*	By garage wall
		06	DS	2.1		*	
		12	DS	<1.0		*	
		00-06	SS			10.0	
5	184286	03	TC	3.5		*	
		06	TC	3.8		*	DC = 0 inches
		09	TC	3.9		*	
		12	TC	3.8		*	
		15	TC	3.8		*	
		18	TC	3.7		*	
		21	TC	3.7		*	

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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.		
5	184286	24	TC	3.7		*	
		27	TC	3.7		*	
		30	TC	3.6		*	
		33	TC	3.7		*	
		36	TC	3.8		*	
		39	TC	3.7		*	
		42	TC	3.7		*	
		45	TC	3.7		*	
		48	TC	3.7		*	
		51	TC	3.8		*	
		54	TC	3.7		*	
		57	TC	3.7		*	
		60	TC	3.7		*	
6	195289	03	TC	3.2		*	
		06	TC	3.4		*	
		09	TC	3.5		*	
		12	TC	3.4		*	
		15	TC	3.5		*	
		18	TC	3.5		*	
		21	TC	3.6		*	
		24	TC	3.5		*	
		27	TC	3.5		*	
		30	TC	3.5		*	
		33	TC	3.5		*	
		36	TC	3.5		*	
		39	TC	3.4		*	
		42	TC	3.4		*	
		45	TC	3.5		*	
		48	TC	3.6		*	
		51	TC	3.5		*	
		54	TC	3.5		*	
		57	TC	3.5		*	
7	206229	03	TC	5.7		*	
		06	TC	6.4		*	
		09	TC	6.3		*	
		12	TC	5.3		*	
		15	TC	4.6		*	
		18	TC	4.2		*	
		21	TC	4.0		*	
		24	TC	3.9		*	
		27	TC	3.7		*	
		30	TC	3.6		*	

DC = 0 inches

Flower bed south
of primary
structure
DC = 12 inches
Based on the
deconvolution graph

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.		
8	209288	00	DS	1.0		*	Gas line
		18	DS	<1.0		*	
9	211239	03	TC	3.9		*	DC = 0 inches
		06	TC	4.0		*	
		09	TC	3.9		*	
		12	TC	4.0		*	
		15	TC	3.9		*	
		18	TC	3.7		*	
		21	TC	3.7		*	
		24	TC	3.6		*	
		27	TC	3.6		*	
		30	TC	3.6		*	
		33	TC	3.5		*	
		36	TC	3.5		*	
		39	TC	3.5		*	
		42	TC	3.5		*	
		45	TC	3.4		*	
		48	TC	3.4		*	
		51	TC	3.5		*	
		54	TC	3.5		*	
10	211275	03	TC	3.5		*	DC = 0 inches
		06	TC	3.7		*	
		09	TC	3.8		*	
		12	TC	3.7		*	
		15	TC	3.7		*	
		18	TC	3.7		*	
		21	TC	3.7		*	
		24	TC	3.7		*	
		27	TC	3.6		*	
		30	TC	3.7		*	
		33	TC	3.7		*	
		36	TC	3.7		*	
		39	TC	3.6		*	
		42	TC	3.5		*	
11	240230	00	DS	4.3		*	Backyard roadway

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.		
11	240230	06	DS	5.6		*	
		12	DS	1.4		*	
		00-06	SS			8.9	
12	240285	00	DS	10.2		*	Front yard
		06	DS	2.1		*	
		12	DS	1.9		*	
13	250210	03	TC	7.8		*	Garden area
		06	BH	8.8	5.3	*	
		09	TC	8.1		*	
		12	BH	6.8	2.4	*	
		15	TC	5.4		*	DC = 15 inches
		18	BH	4.4	1.7	*	Based on the
		21	TC	4.0		*	deconvolution graph
		24	BH	3.9	1.0	*	
		27	TC	3.8		*	
		30	BH	3.7	1.4	*	
		33	TC	3.6		*	
14	275245	00	DS	<1.0		*	14 inches into compost pile
15	293253	03	TC	6.9		*	
		06	TC	5.7		*	
		09	TC	4.6		*	DC = 9 inches
		12	TC	4.1		*	Based on the
		15	TC	3.8		*	deconvolution graph
		18	TC	3.7		*	
		21	TC	3.8		*	
		24	TC	3.7		*	
		27	TC	3.7		*	
		30	TC	3.7		*	
		33	TC	3.6		*	
16	295238	03	TC	4.7		*	North of hog shed
		06	TC	5.2		*	
		09	TC	5.1		*	DC = 9 inches
		12	TC	4.7		*	Based on the
		15	TC	4.4		*	deconvolution graph

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.		
16	295238	18	TC	4.3		*	
		21	TC	4.0		*	
		24	TC	3.9		*	
		27	TC	3.8		*	
		30	TC	3.8		*	
		33	TC	3.7		*	
		36	TC	3.6		*	
		39	TC	3.7		*	
		42	TC	3.7		*	
		45	TC	3.6		*	
		48	TC	3.5		*	
		51	TC	3.6		*	
		54	TC	3.6		*	
		57	TC	3.6		*	
		60	TC	3.5		*	
		63	TC	3.6		*	
		66	TC	3.5		*	
		69	TC	3.5		*	
		72	TC	3.5		*	
		75	TC	3.4		*	
		78	TC	3.5		*	
		81	TC	3.5		*	
		84	TC	3.4		*	
		87	TC	3.5		*	
		90	TC	3.4		*	
		93	TC	3.3		*	
		96	TC	3.3		*	
		99	TC	3.3		*	
		102	TC	3.3		*	
17	300200	00	DS	1.9		*	Hog shed
		06	DS	1.7		*	
		00-06	SS			4.7	
18	315220	03	TC	3.8		*	North of hog shed DC = 0 inches
		06	TC	3.8		*	
		09	TC	3.8		*	
		12	TC	3.7		*	
		15	TC	3.7		*	
		18	TC	3.6		*	

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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.		
18	315220	21	TC	3.7		*	
		24	TC	3.7		*	
		27	TC	3.8		*	
		30	TC	3.8		*	

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

Notes: DC = Depth of Contamination
* = No Soil Sample Taken
[n] = Reading Taken n-Inches
Above Floor or Ground
Date of Survey = 04-05-85
Team Leader = DGD

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.		
19	130236	00	DS	9.8		*	Northwest corner of yard DC = 6 inches Based on all available data South of manhole
		06	DS	2.4		*	
		09	DS	2.6		*	
		12	DS	2.4		*	
		18	DS	1.8		*	
		03	TC	4.5		*	
		06	TC	4.2		*	
		09	TC	3.9		*	
		12	TC	3.9		*	
		15	TC	3.8		*	
		18	TC	3.8		*	
		21	TC	3.8		*	
		24	TC	3.9		*	
		27	TC	3.8		*	
		30	TC	3.7		*	
		33	TC	3.8		*	
		36	TC	3.7		*	
		39	TC	3.8		*	
		42	TC	3.7		*	
		45	TC	3.7		*	
		48	TC	3.7		*	
		51	TC	3.7		*	
		54	TC	3.6		*	
		57	TC	3.6		*	
		60	TC	3.6		*	
		63	TC	3.6		*	
20	159245	00	DS	1.7		*	
21	163253	00	DS	2.0		*	Northwest corner by road
		06	DS	1.5		*	
		00-06	SS			4.1	
22	164207	00	DS	3.8		*	By front yard planter
		06	DS	2.2		*	
		12	DS	1.2		*	
		06-12	SS			2.5	
23	167247	03	TC	8.4		*	DC = 9 inches Based on the deconvolution graph
		06	TC	6.8		*	
		09	TC	5.5		*	
		12	TC	4.7		*	
		15	TC	4.5		*	
		18	TC	4.3		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-05527-RS

3063 D 1/2 Road

Page 2 of 4

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
23	167247	21	TC	4.2		*	
		24	TC	4.2		*	
		27	TC	4.2		*	
		30	TC	4.2		*	
		33	TC	4.2		*	
		36	TC	4.0		*	
		39	TC	3.9		*	
		42	TC	3.9		*	
		45	TC	3.8		*	
		48	TC	3.9		*	
		51	TC	3.9		*	
		54	TC	3.9		*	
		57	TC	3.9		*	
		60	TC	3.9		*	
24	170244	00	DS	4.3		*	
		06	DS	2.6		*	
25	175249	00	DS	2.2		*	
26	179230	00	DS	1.8		*	Front yard by TV and electrical line
		06	DS	1.6		*	
		12	DS	1.5		*	
27	200243	03	TC	4.6		*	North of primary structure
		06	TC	5.3		*	
		09	TC	5.8		*	
		12	TC	5.8		*	
		15	TC	5.4		*	
		18	TC	4.9		*	DC = 18 inches Based on the deconvolution graph
		21	TC	4.5		*	
		24	TC	4.1		*	
		27	TC	4.0		*	
		30	TC	3.8		*	
		33	TC	3.7		*	
28	220247	00	DS	3.3		*	Front planter
		06	DS	4.6		*	
		12	DS	3.1		*	
		18	DS	1.7		*	
29	282226	03	TC	19.8		*	Northeast of primary structure
		06	BH	22.4	20.3	*	
		09	TC	18.6		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-05527-RS

3063 D 1/2 Road

Page 3 of 4

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
29	282226	12	BH	13.1	12.1	*	
		15	TC	8.8		*	
		18	BH	6.3	3.9	*	DC = 18 inches
		21	TC	5.0		*	Based on the
		24	BH	4.2	1.9	*	deconvolution graph
		27	TC	3.8		*	
		30	BH	3.7	1.7	*	
		33	TC	3.6		*	
		36	BH	3.6	1.3	*	
30	295245	00	DS	3.1		*	
		06	DS	3.8		*	
		12	DS	2.7		*	
31	300201	03	TC	19.0		*	
		06	TC	16.7		*	
		09	TC	11.9		*	
		12	TC	8.2		*	DC = 15 inches
		15	TC	5.9		*	Based on the
		18	TC	4.8		*	deconvolution graph
		21	TC	4.2		*	
		24	TC	4.0		*	
		27	TC	3.8		*	
		30	TC	3.7		*	
		33	TC	3.6		*	
		36	TC	3.5		*	
32	300245	00	DS	1.4		*	
		06	DS	2.7		*	
33	303249	03	TC	8.9		*	Water meter
		06	TC	8.6		*	
		09	TC	7.2		*	
		12	TC	5.5		*	DC = 15 inches
		15	TC	3.7		*	Based on the
		18	TC	4.2		*	deconvolution graph
		21	TC	4.0		*	
		24	TC	3.9		*	
		27	TC	3.8		*	
		30	TC	3.9		*	
		33	TC	3.8		*	
		36	TC	3.8		*	
		39	TC	3.8		*	
		42	TC	3.9		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-05527-RS

3063 D 1/2 Road

Page 4 of 4

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
33	303249	45	TC	3.8		*	
		48	TC	3.8		*	
		51	TC	3.7		*	
		54	TC	3.7		*	
		57	TC	3.7		*	
		60	TC	3.7		*	
		63	TC	3.7		*	
		66	TC	3.8		*	
		69	TC	3.8		*	
		72	TC	3.7		*	
34	320210	03	TC	13.2		*	Driveway
		06	BH	12.9	4.7	*	
		09	TC	9.2		*	
		12	BH	6.5	1.9	*	DC = 12 inches
		15	TC	5.0		*	Based on the
		18	BH	4.3	1.2	*	deconvolution graph
		21	TC	4.0		*	
		24	BH	3.8	2.0	*	
		27	TC	3.9		*	
		30	BH	3.8	1.9	*	
		33	TC	3.8		*	
		36	TC	3.7		*	
35	320240	03	TC	7.8		*	Driveway by D 1/2
		06	TC	7.2		*	Road
		09	TC	6.5		*	
		12	TC	5.4		*	DC = 12 inches
		15	TC	4.6		*	Based on the
		18	TC	4.5		*	deconvolution graph
		21	TC	4.5		*	
		24	TC	4.3		*	
		27	TC	4.1		*	
		30	TC	4.1		*	
		33	TC	3.9		*	
		36	TC	4.0		*	

Measurement GB = GAD-6 Borehole
Types: SS = Soil Sample
DS = Delta Scintillometer
TC = Total Count Borehole
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 = 04-05-85
Team Leader = DGD

Radium Concentrations at Interior Locations

DOE ID #GJ-05527-RS

3063 D 1/2 Road

Page 1 of 1

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
1		00	DS	5.6		*	
		06	DS	<1.0		*	
		00-06	SS			12.2	Hog shed

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 = 04-05-85
 Team Leader = DGD

Table 3.3
Summary of Interior Gamma Exposure Rates

DOE ID No. GJ-05527-RS 3063 D 1/2 Road 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)
CRAWL SPACE	*	*	*	*	14-16	*
LOWER LEVEL	*	*	*	*	13-16	*
MIDDLE LEVEL	*	*	*	*	13-16	*
GARAGE	*	*	*	*	13-14	*
HOG SHED	10	17- 21	19	10	18-26	22

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

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-05527-RS

Page 1 of 2

<u>AREA</u>	<u>CALCULATIONS(ft)</u>	<u>SF</u>	<u>DEPTH(ft)</u>	<u>CF</u>	<u>CUBIC YARDS</u>
INTERIOR					
A	8 x 25 =	200	x 0.5 =	100	
TOTAL VOLUME - INTERIOR				= 100	= 100/27 = 4
EXTERIOR					
B	4 x 7 =	28	x 1.0 =	28	
C	3 x 30 =	90	x 1.0 =	90	
D	25 x 53 =	1,325	x 1.3 =	1,723	
E	36 x 22 =	792	x 0.5 =	396	
F	18 x 15 =	270			
	12 x 6 =	72			
		<u>342</u>	x 1.0 =	342	
G	15 x 4 =	60			
	20 x 4 =	80			
	12 x 8 =	96			
	18 x 7 =	126			
		<u>362</u>	x 0.8 =	290	
H	15 x 5 =	75			
	15 x 20 =	300			
	20 x 40 =	800			
		<u>1,175</u>	x 0.8 =	940	
I	15 x 12 =	180			
	3 x 17 =	51			
	2 x 4 =	8			
	20 x 20 =	400			
	25 x 10 =	250			
	25 x 22 =	550			
	5 x 8 =	40			
	12 x 10 =	120			
	20 x 16 =	320			
	2 x 4 =	8			
	3 x 4 =	12			
	3 x 5 =	15			
	5 x 5 =	25			

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-05527-RS

Page 2 of 2

<u>AREA</u>	<u>CALCULATIONS(ft)</u>	<u>SF</u>	<u>DEPTH(ft)</u>	<u>CF</u>	<u>CUBIC YARDS</u>
I cont.					
	8 x 8	= 64			
	6 x 8	= 48			
		<u>2,091</u>	x 1.0	= 2,091	
J	35 x 28	= 980			
	10 x 26	= 260			
		<u>1,240</u>	x 1.3	= 1,612	
K	18 x 78	= 1,404	x 1.0	= 1,404	
L	9 x 5	= 45	x 0.5	= 23	
M	15 x 15	= 225			
	13 x 13	= 169			
	5 x 15	= 75			
	2 x 5	= 10			
		<u>479</u>	x 1.5	= 719	
N	22 x 29	= 638			
	40 x 4	= 160			
		<u>798</u>	x 1.5	= 1,197	
O	15 x 15/2	= 113	x 0.8	= 90	
P	15 x 5	= 75	x 0.5	= 38	
Q	5 x 130	= 650	x 2.1	= 1,365	
R	12 x 7	= 84	x 1.3	= 109	
S	10 x 4	= 40			
	3 x 5	= 15			
		<u>55</u>	x 0.5	= 28	
TOTAL VOLUME - EXTERIOR				<u>12,485</u>	= 12,485/27 = 462

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

INTERIOR

Remove identified residual radioactive material 4 cy @ \$44/cy	\$ 176
Replace area with road base 4 cy @ \$11.50/cy	46
	<hr/>
TOTAL INTERIOR	\$ 222

EXTERIOR

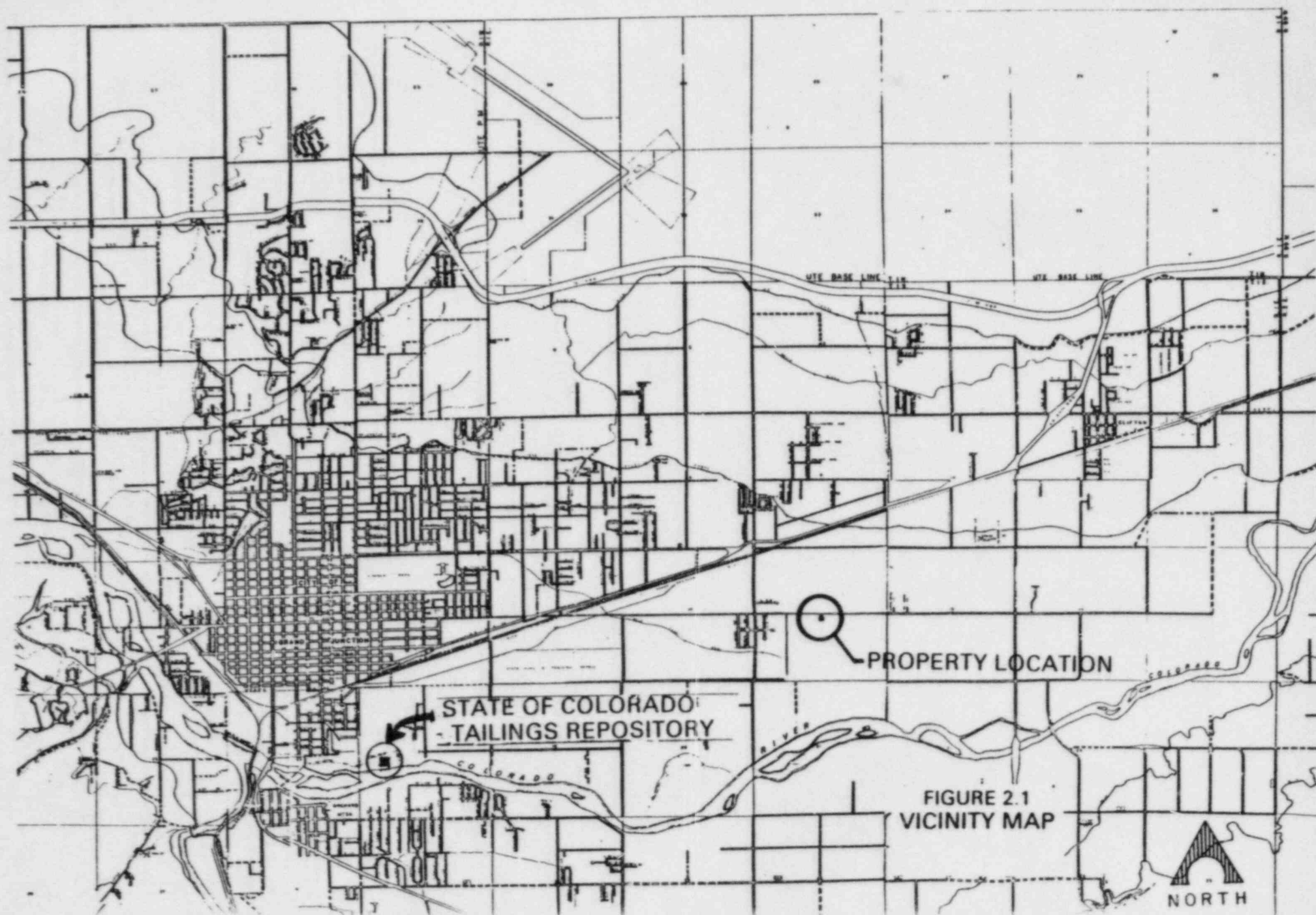
Remove identified residual radioactive material 452 cy @ \$10/cy (machine - open) *	\$ 4,520
10 cy @ \$44/cy (manual - open)	440
Remove/replace railroad tie planters Lump sum	500
Replace areas with compacted road base 110 cy @ \$11.50/cy	1,265
Replace areas with topsoil 352 cy @ \$9.50/cy	3,344
Replace areas with sod 4,400 sf @ \$0.35/sf	1,540
Replace misc. plantings Lump sum	1,000
	<hr/>
TOTAL EXTERIOR	\$ 12,609

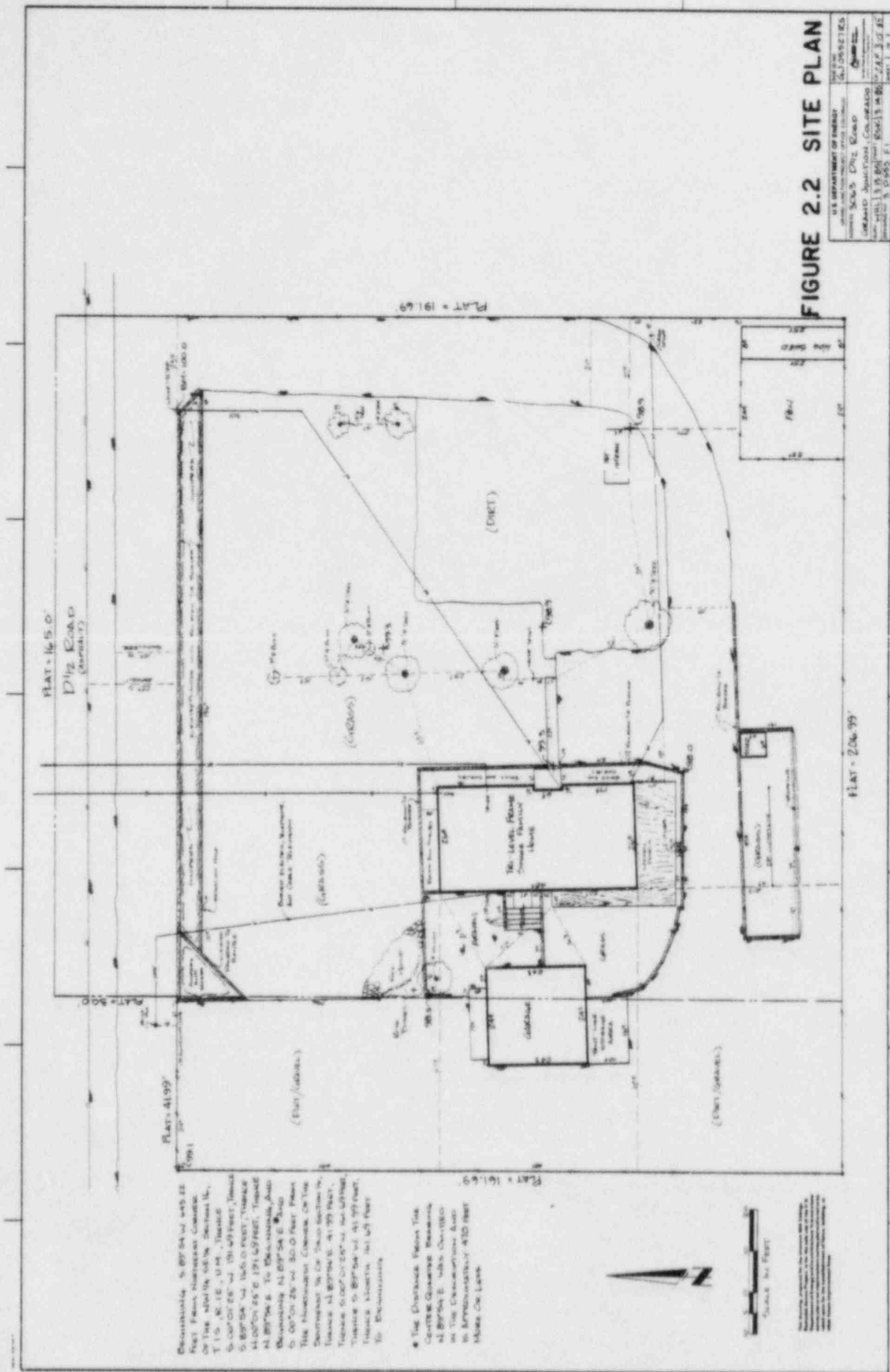
Table 4.2
Estimated Cost of Decontamination and Restoration
DOE ID No. GJ-05527-RS Page 2 of 2

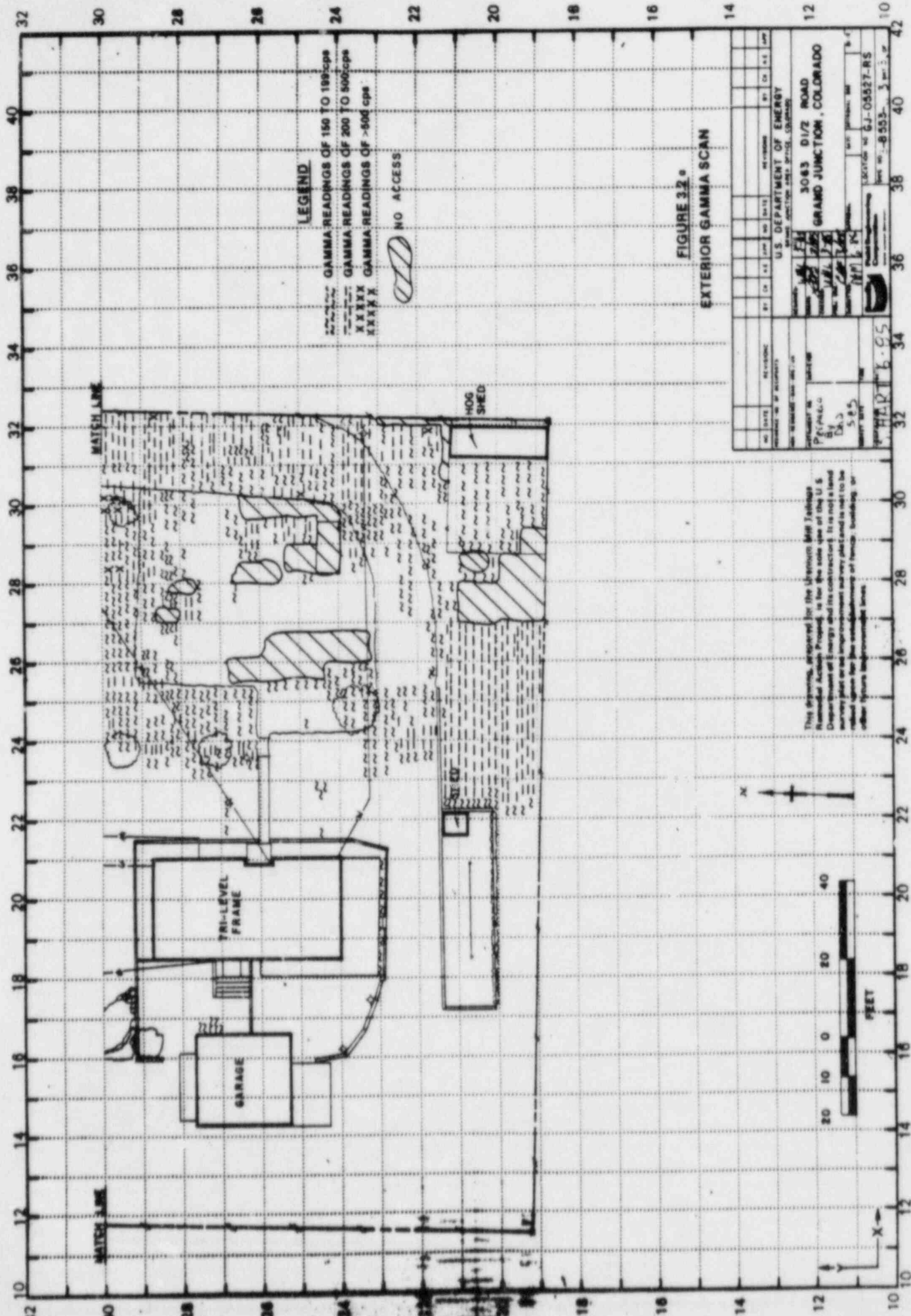
TOTAL EXTERIOR	\$ 12,609
TOTAL INTERIOR	222
ACCESS CONTROL	150
	<hr/>
SUBTOTAL	\$ 12,981
CONTINGENCY @ 10%	1,298
	<hr/>
SUBTOTAL	\$ 14,279
CONTRACTOR OVERHEAD & PROFIT @ 25%	3,570
	<hr/>
GRAND TOTAL	\$ 17,849

* Note: Because of the large volume of tailings to be removed, the cubic yard price for machine operation shall be lowered from \$14.50/cy to \$10/cy.

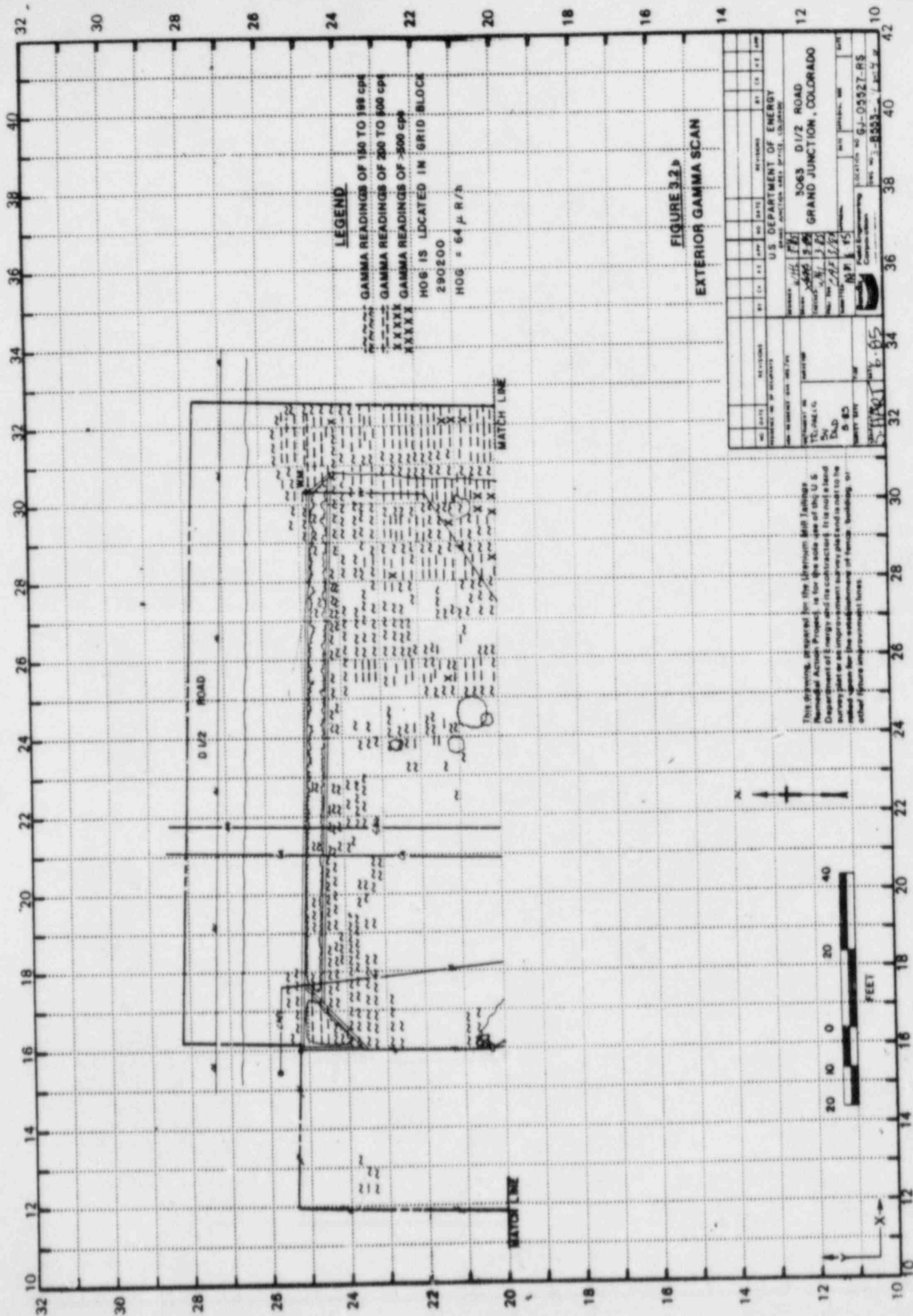
SC072685
REA05527/REA-AB006/LMR

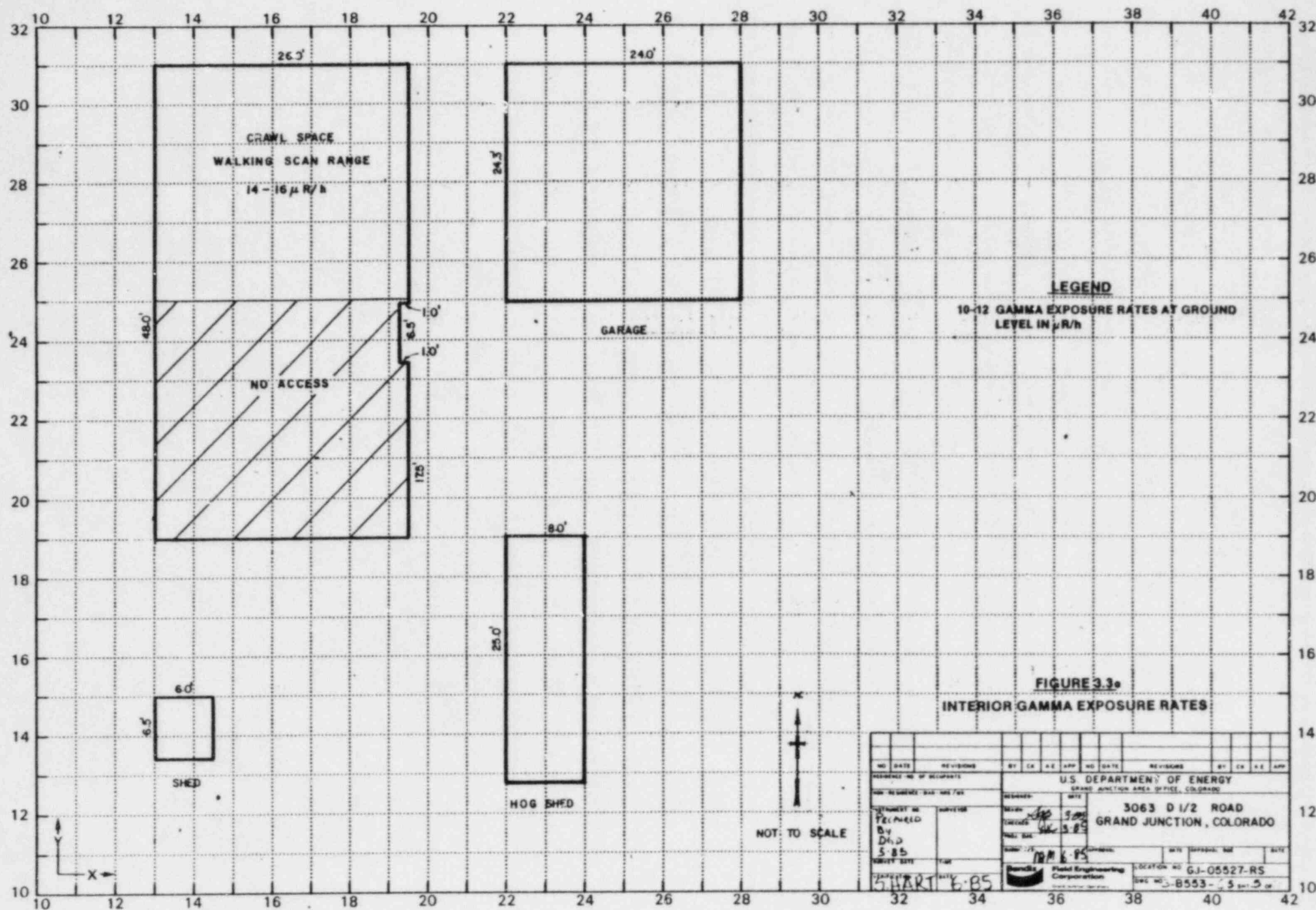


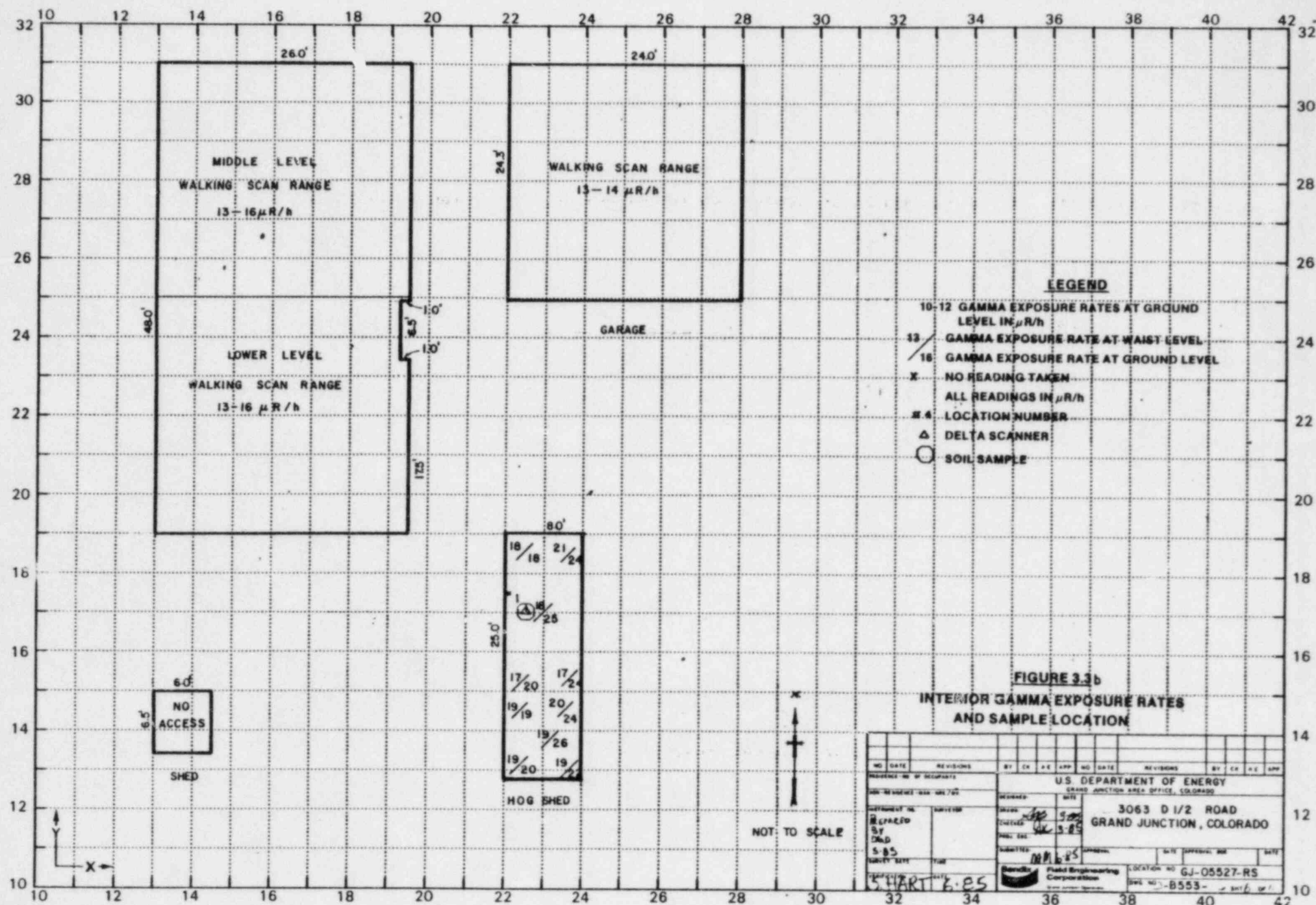


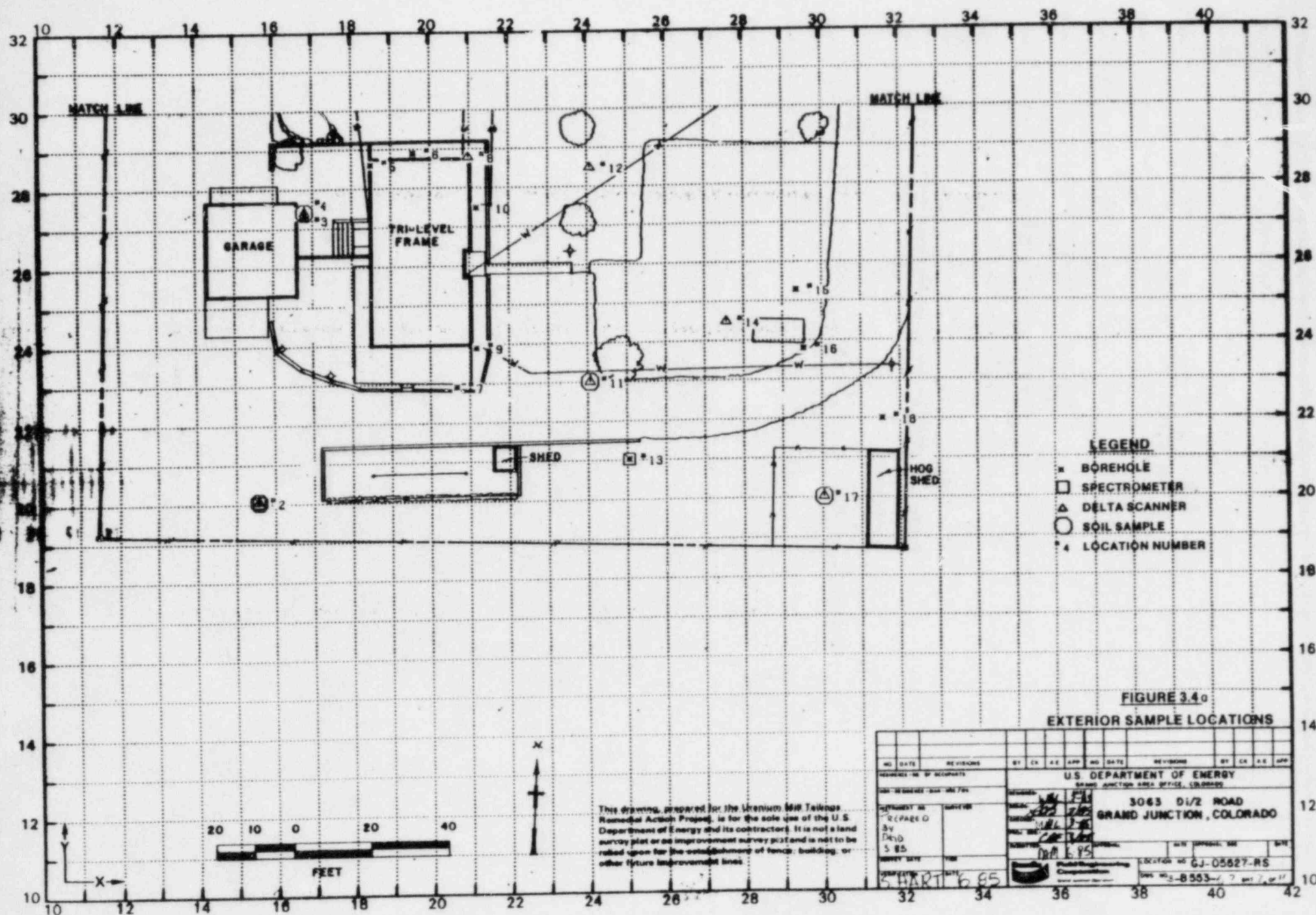


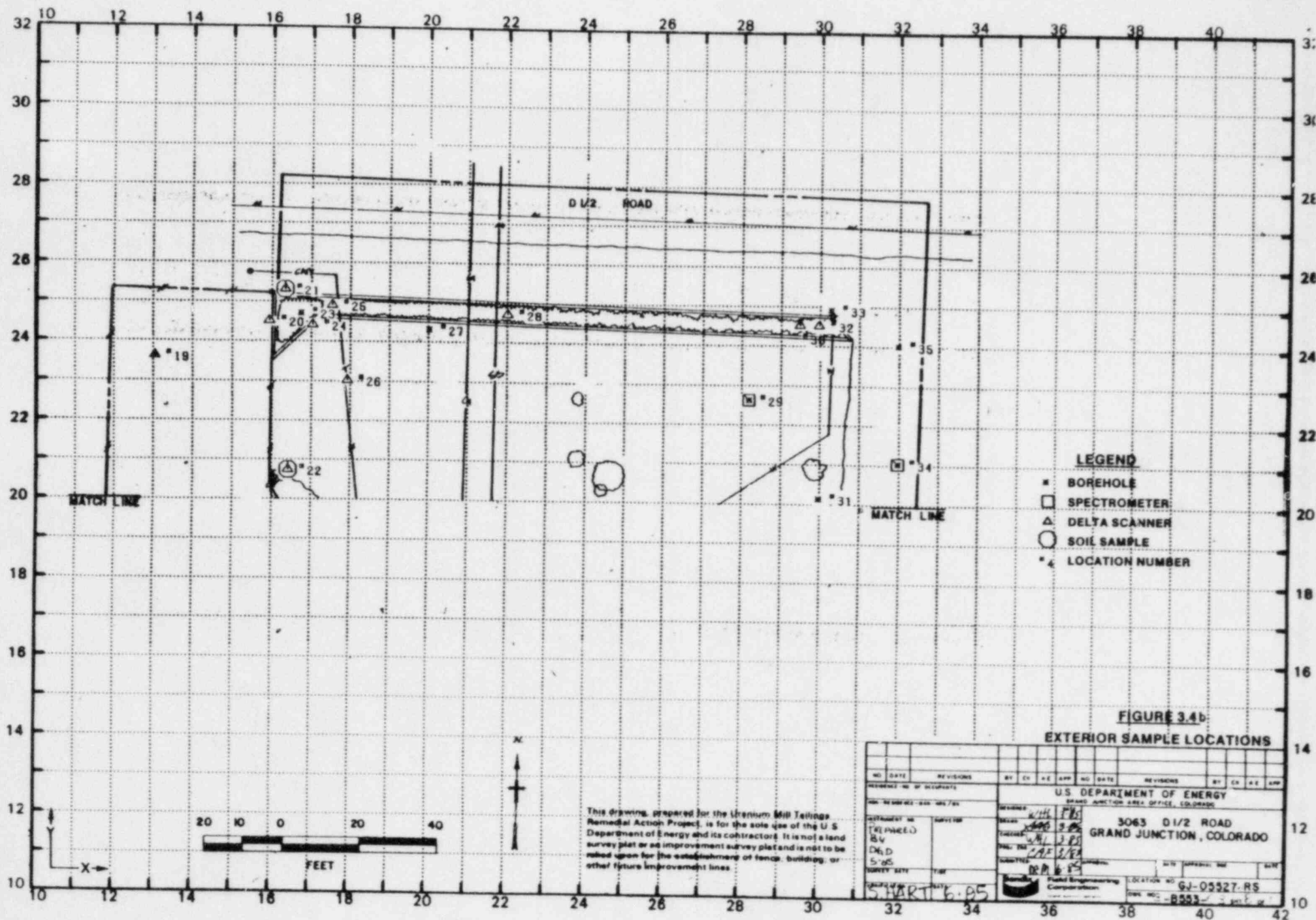
This drawing, prepared for the Western Area Technical
Remedial Action Project, is for the sole use of the U.S.
Department of Energy and its contractors. It is not a land
survey plot or an improvement and may not be used to be
relied upon for the establishment of fence, building or
other future improvements.

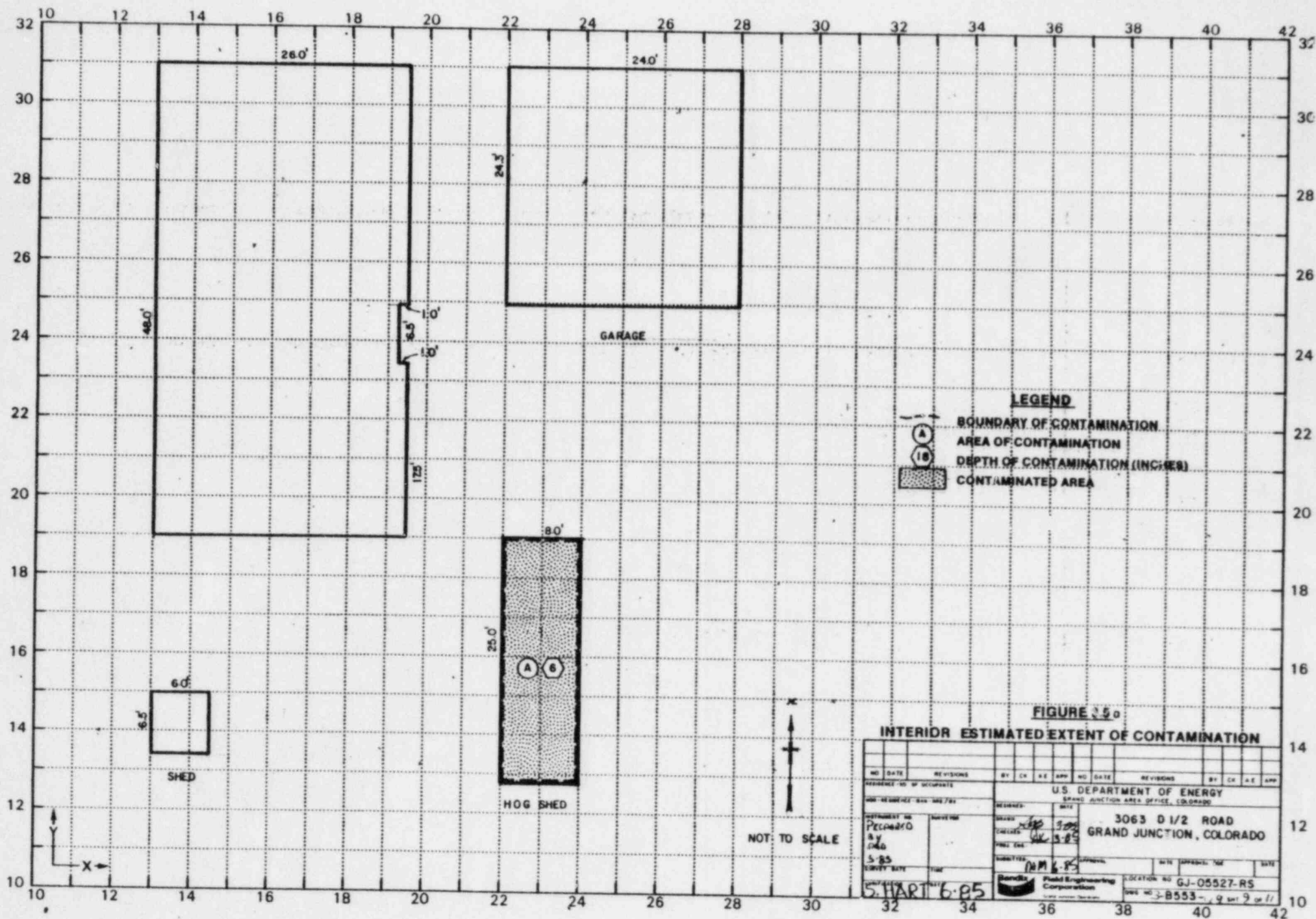












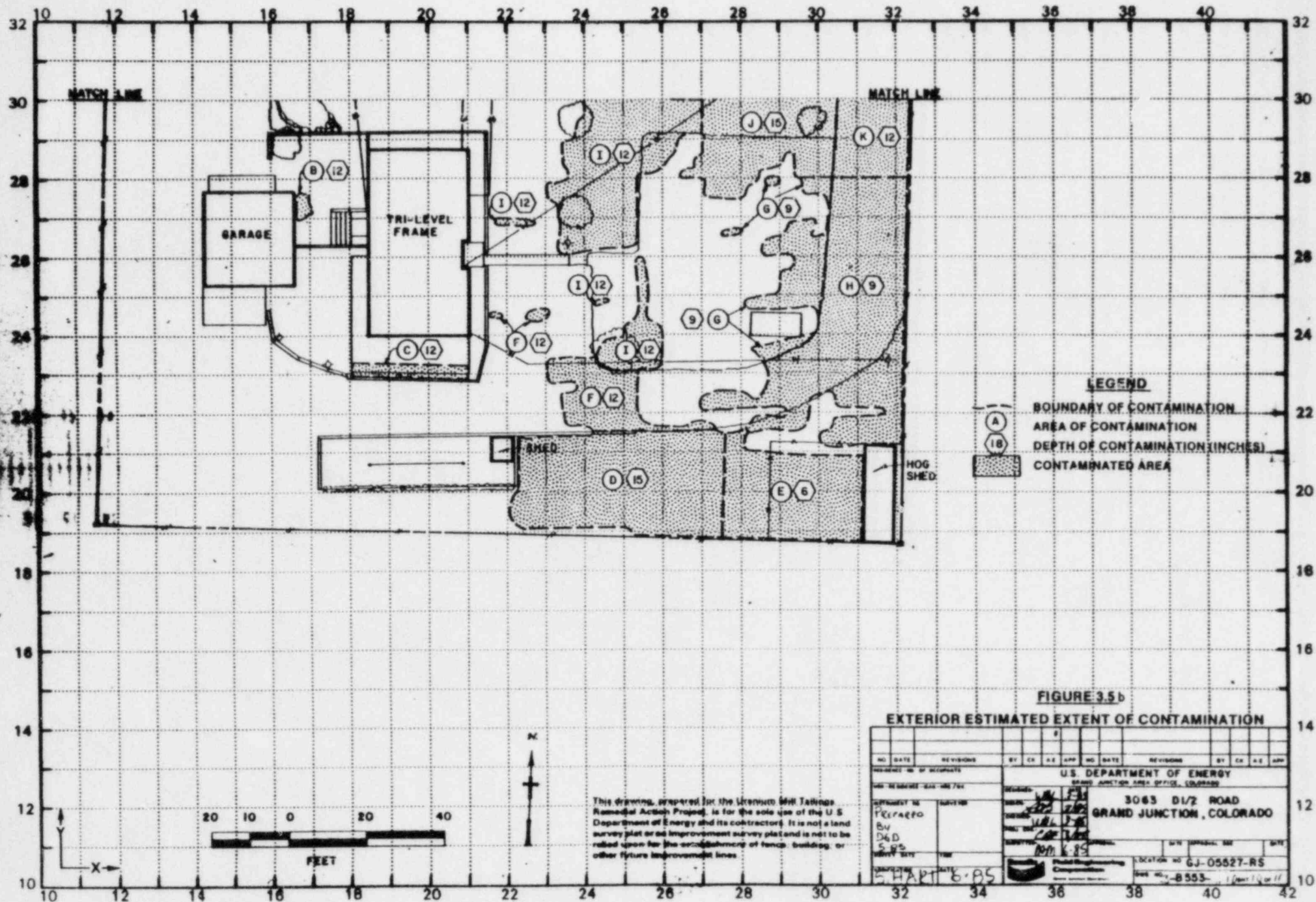
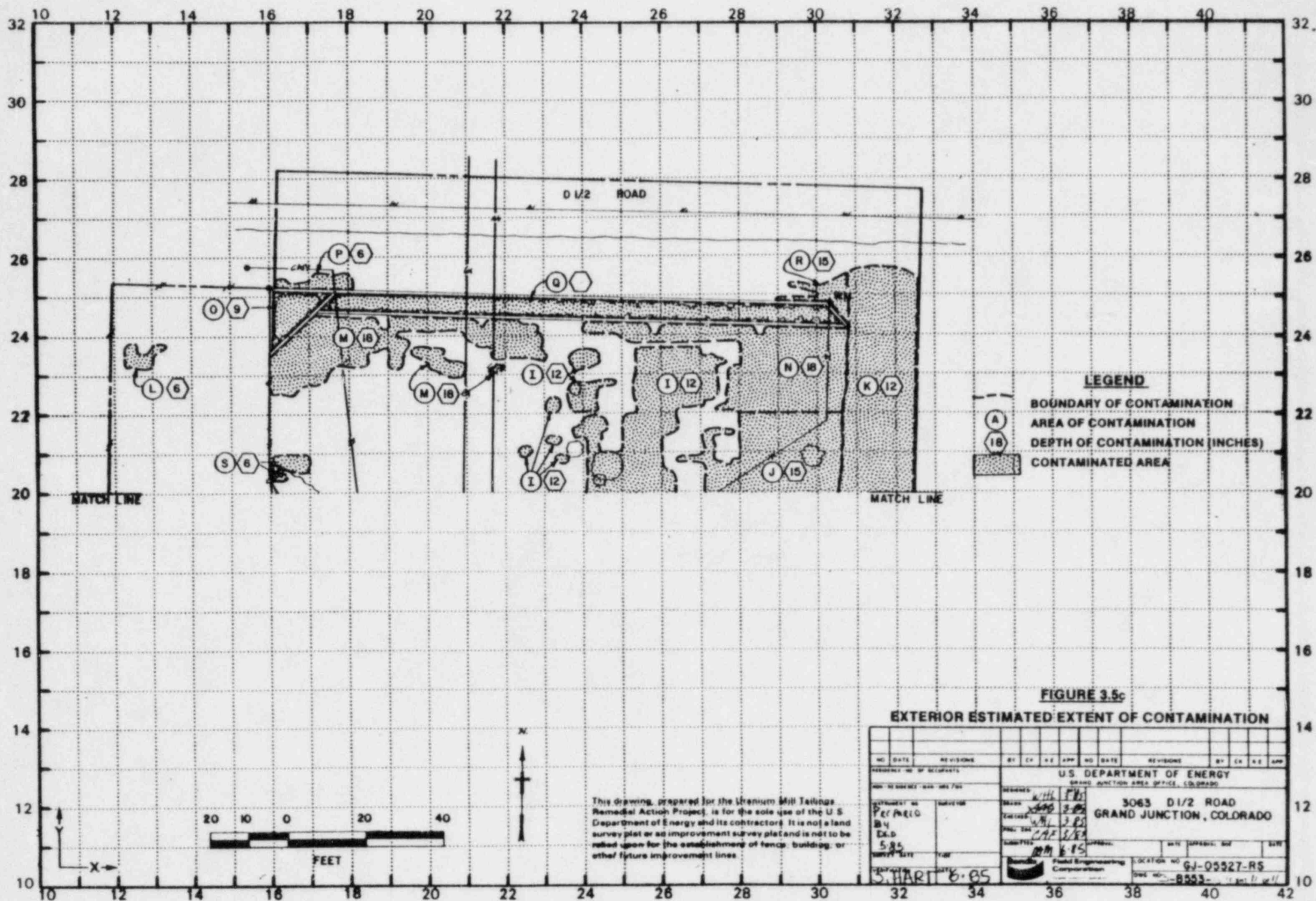


FIGURE 3.5b

EXTERIOR ESTIMATED EXTENT OF CONTAMINATION

NO. DATE				REVISIONS				BY CH. A.E. APP. NO. DATE				REVISIONS				BY CH. A.E. APP.			
<p>U.S. DEPARTMENT OF ENERGY GRAND JUNCTION AREA OFFICE, COLORADO</p> <p>3063 1/2 ROAD GRAND JUNCTION, COLORADO</p> <p>DATE: 8-85 DRAWN BY: [Signature] CHECKED BY: [Signature] APPROVED BY: [Signature]</p> <p>LOCATION NO. GJ-05527-RS DATE: 8-85</p>																			

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



3/85

DOE ID NO. GJ-05527-RS

Date 5-20-85

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

Official Survey Report

Property Address 3063 D^W Road

Property Owner Gene Dunham

Address of Owner (if different from above) _____

Report Prepared By David Dille

I. PRESENCE/ABSENCE OF RESIDUAL RADIOACTIVE MATERIALS

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

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

1 XX 1 In open areas.

1 XX 1 Under or around exterior improvements.

1 XX 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 = 16 uR/h
HOG = 04 uR/h

MEMORANDUM

ALLIED Bendix
Aerospace

Bendix Field Engineering Corporation
Grand Junction Operations
Grand Junction, Colorado

Date: April 10, 1985

To: Files

From: David G. Dille

Subject: Team Leader Notes - GJ-05527-RS

Address:

Owner: Gene and Donna Dunham

Occupancy: Five

Team Members

D. Dille (Team Leader)	J. Hebel
R. Wilkins	L. Kula
S. Larsen	V. Rothman
P. Hardy	S. Southern
B. Moody	N. Wallace

Instruments

See Equipment Summary sheet.

Date: April 5, 1985

Colorado Department of Health (CDH) and Oak Ridge National Laboratory (ORNL) data indicates contamination in the yard, away from the primary structure. A walking scan will be performed to verify the lack of interior contamination.

When talking with Mrs. Dunham, she stated that she had no knowledge of the mill tailings involvement. Mrs. Dunham also indicated that the house was always on a sewer system and never on a septic tank.

Team Leader Notes
David G. Dille
GJ-05527-RS
April 10, 1985
Page 2

Mr. Dunham mentioned that the water line drawn on our map does not exist (the one entering the house, from the northeast, at the front stoop). The water line runs south from the water meter to the east-west line depicted on the Bendix map.

A gamma scan of the entire property was performed (except in obstructed areas).

A walking scan of the interior was performed.

All utility investigations were completed.

All personnel were frisked before leaving the property.

Date: April 10, 1985

Team Members

D. Dille (Team Leader)	M. Dexter
S. Southern	R. Herman
C. Adams	J. Hebel
B. Moody	

Instruments

See Equipment Summary sheet.

Team members returned to complete the radiological survey.

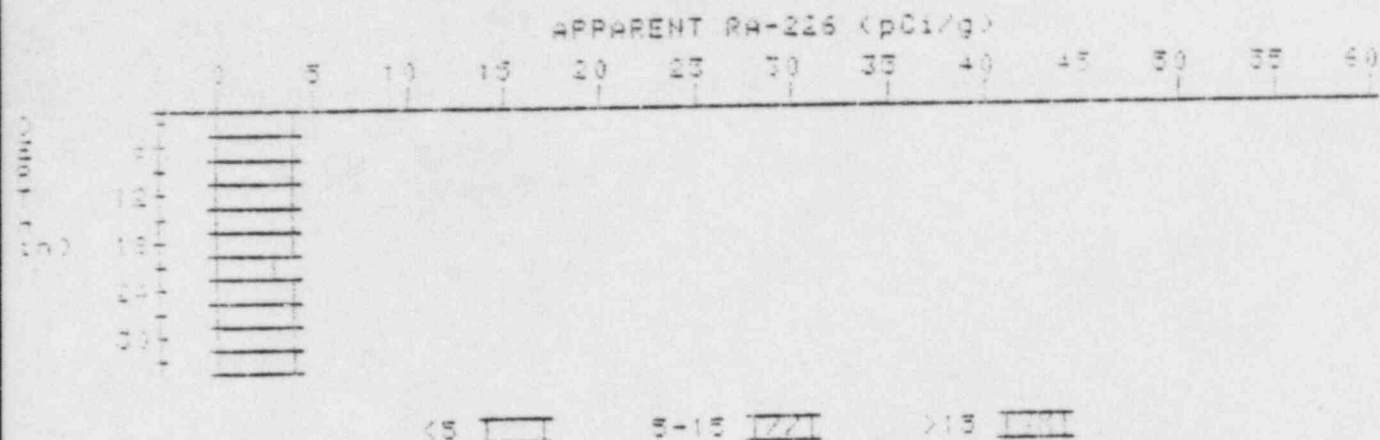
Boreholes and delta readings were taken in contaminated areas.

All personnel were frisked before leaving the property.

DECON V85.1 (970215.1335)

APPARENT RADIUM-226 CONCENTRATION 2 DECONVOLUTION GRAPH

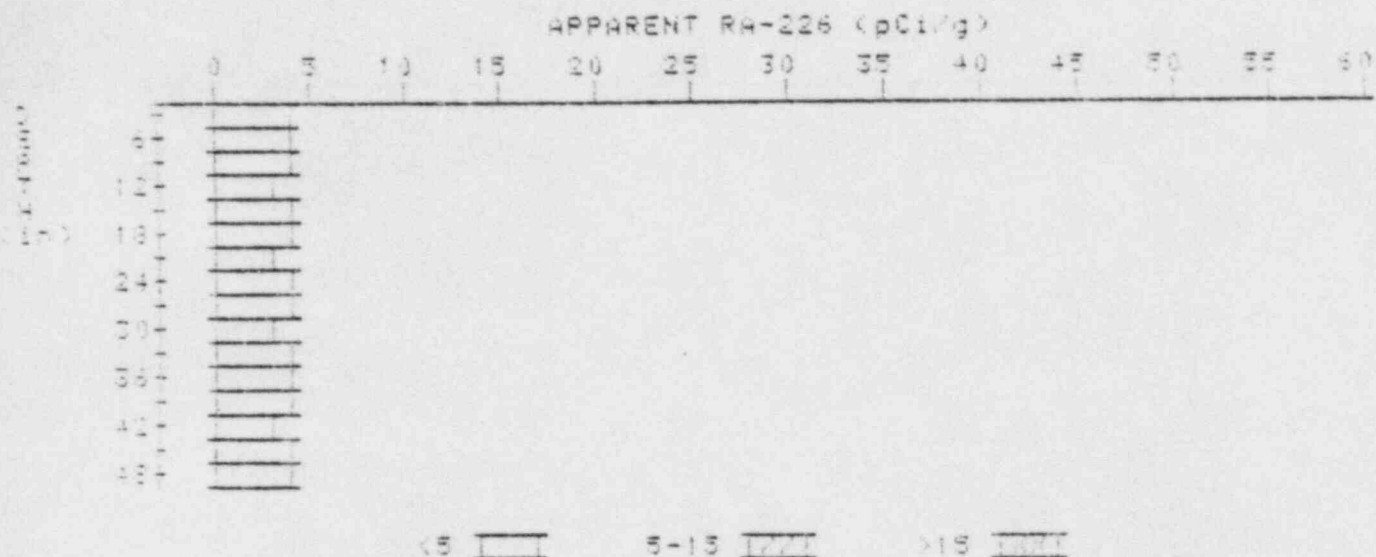
PROPERTY NUMBER: QJ-05527-RS
HOLE NUMBER: 2
LOCATION: 155200



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.3	2.3
6	3.2	3.5
9	3.4	3.6
12	3.6	3.7
15	3.8	3.8
18	3.9	3.9
21	4.0	4.0
24	4.1	4.1
27	4.2	4.2
30	4.3	4.3
33	4.4	4.4

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-05527-R3
HOLE NUMBER: 3
LOCATION: 167273

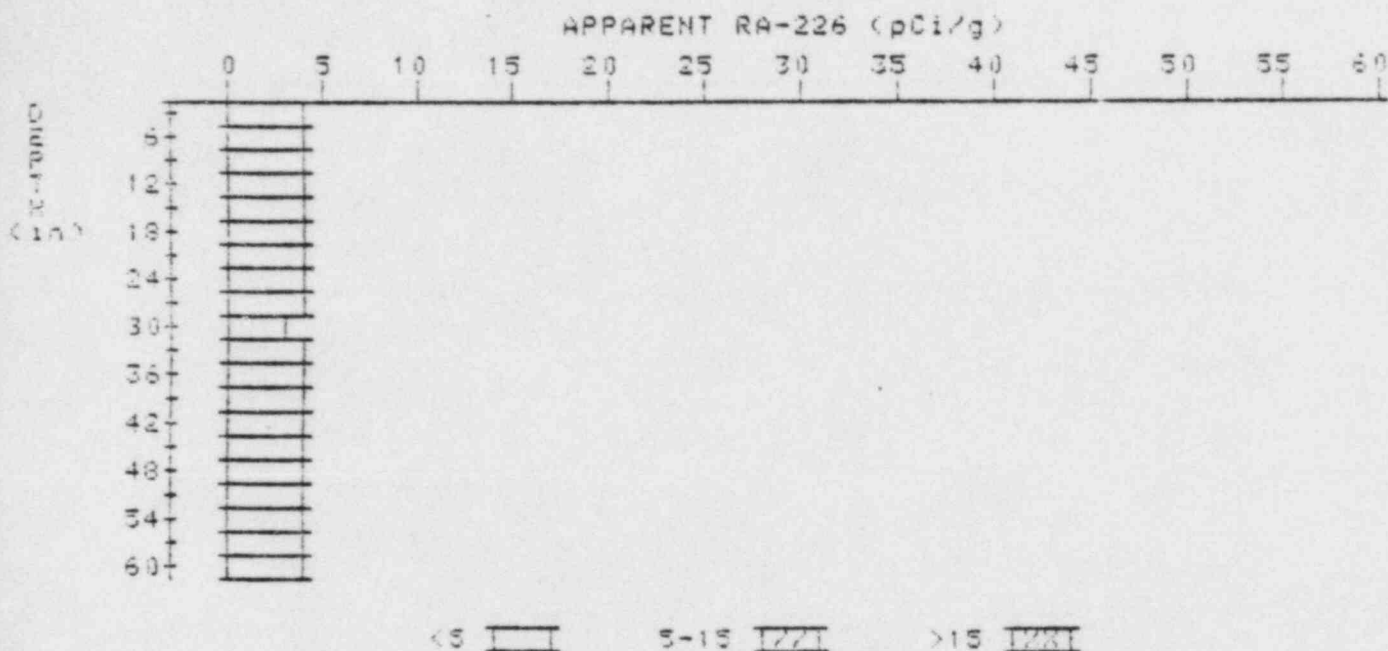


Depth (ft)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
0	3.2	3.2
3	3.9	3.9
6	3.7	4.0
9	3.6	3.9
12	3.7	3.9
15	3.7	3.9
18	3.6	3.9
21	3.9	3.6
24	3.3	3.6
27	3.6	3.4
30	3.4	3.6
33	3.7	3.6
36	3.7	3.7
39	3.7	3.7
42	3.6	3.6
45	3.6	3.6
48	3.6	3.6

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

5

PROPERTY NUMBER: GJ-05527-RS
HOLE NUMBER: 5
LOCATION: 184286



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.5	3.5
6	3.8	4.2
9	3.9	4.3
12	3.9	4.6
15	3.9	4.0
18	3.7	3.8
21	3.7	3.7
24	3.7	3.7
27	3.7	3.9
30	3.6	3.9
33	3.7	3.7
36	3.6	4.0
39	3.7	3.8
42	3.7	3.7
45	3.7	3.7
48	3.7	3.8
51	3.6	4.0
54	3.7	3.8

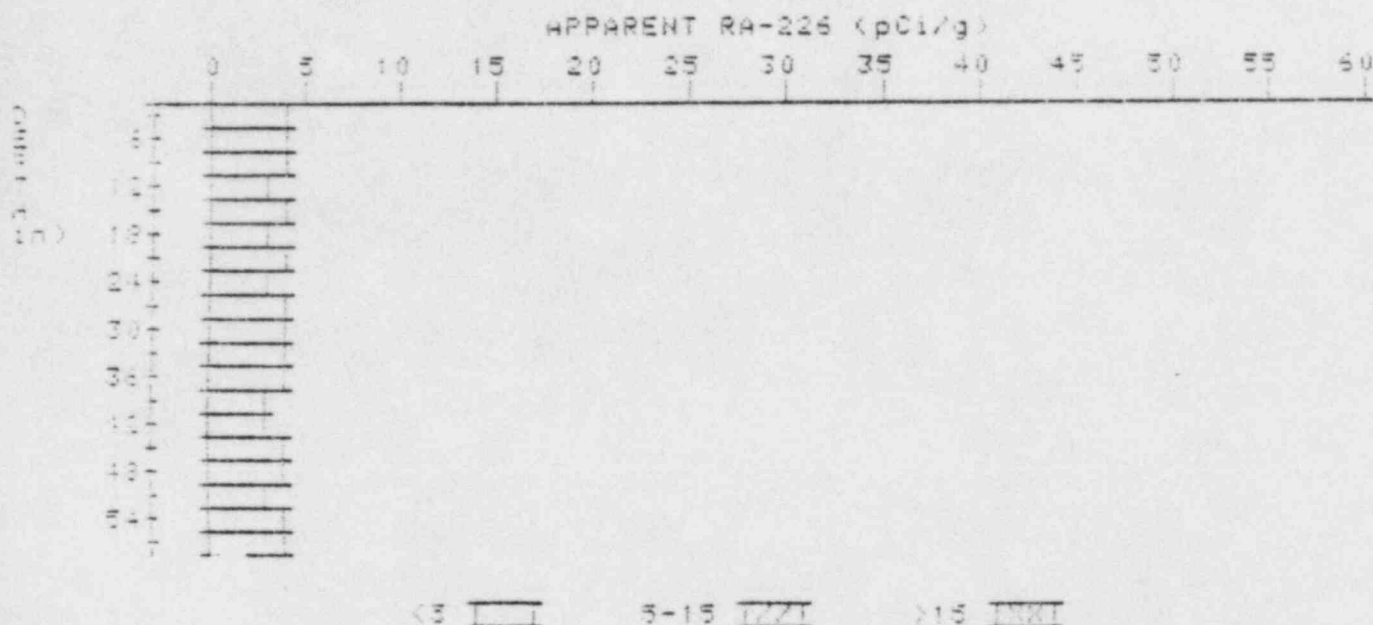
57
60

3.7
3.7

3.7
3.7

APPARENT RADIUM-226 CONCENTRATION 6 DECONVOLUTION GRAPH

PROPERTY NUMBER: QJ-05527-R6
HOLE NUMBER: 6
LOCATION: 195289



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

57

3.5

3.5

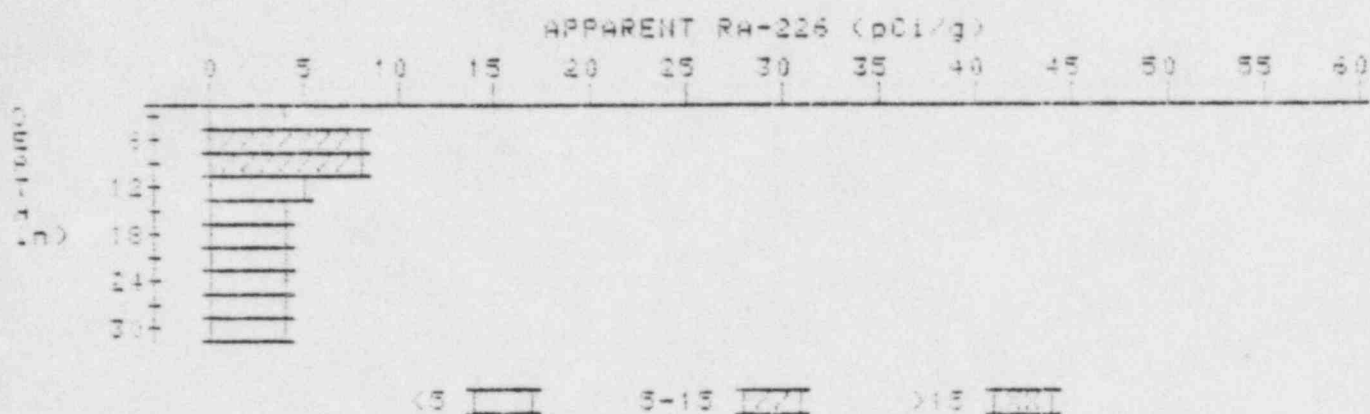
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

7

PROPERTY NUMBER: GJ-05527-R8

HOLE NUMBER: 7

LOCATION: 206229



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.7	5.7
6	5.4	7.3
9	5.3	7.9
12	5.3	4.8
15	4.6	4.1
18	4.2	3.8
21	4.0	3.8
24	3.9	4.1
27	3.7	3.5
30	3.6	3.5

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

9

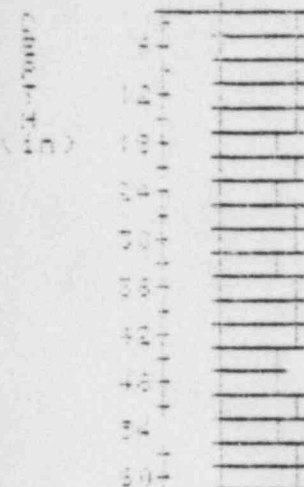
PROPERTY NUMBER: GJ-05527-RS

HOLE NUMBER: 9

LOCATION: 211239

APPARENT RA-226 (pCi/g)

0 5 10 15 20 25 30 35 40 45 50 55 60



<5

5-15

>15

Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.9	3.9
5	4.0	4.4
9	3.9	3.8
12	4.0	4.4
15	3.9	4.1
18	3.7	3.5
21	3.7	3.9
24	3.6	3.4
27	3.6	3.6
30	3.6	3.6
33	3.5	3.6
36	3.5	3.6
39	3.5	3.6
42	3.4	3.6
45	3.4	3.6
48	3.4	3.6
51	3.4	3.6
54	3.4	3.6

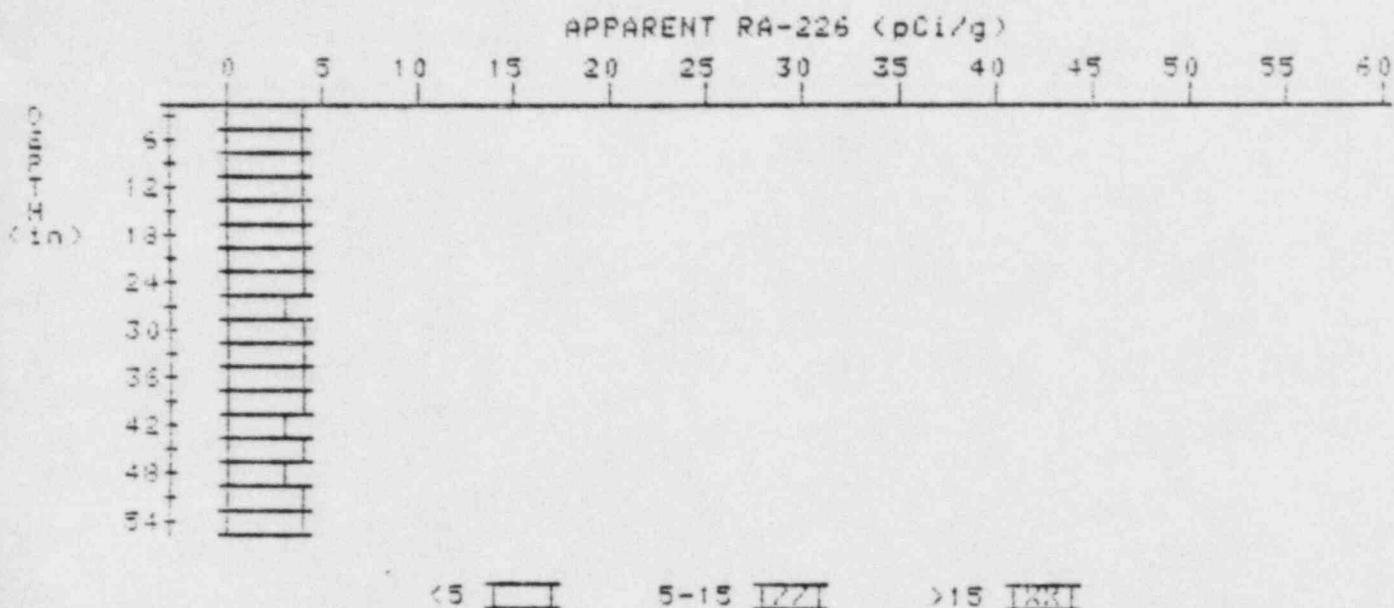
37
60

3
4

3
4

APPARENT RADIUM-226 CONCENTRATION 10 DECONVOLUTION GRAPH

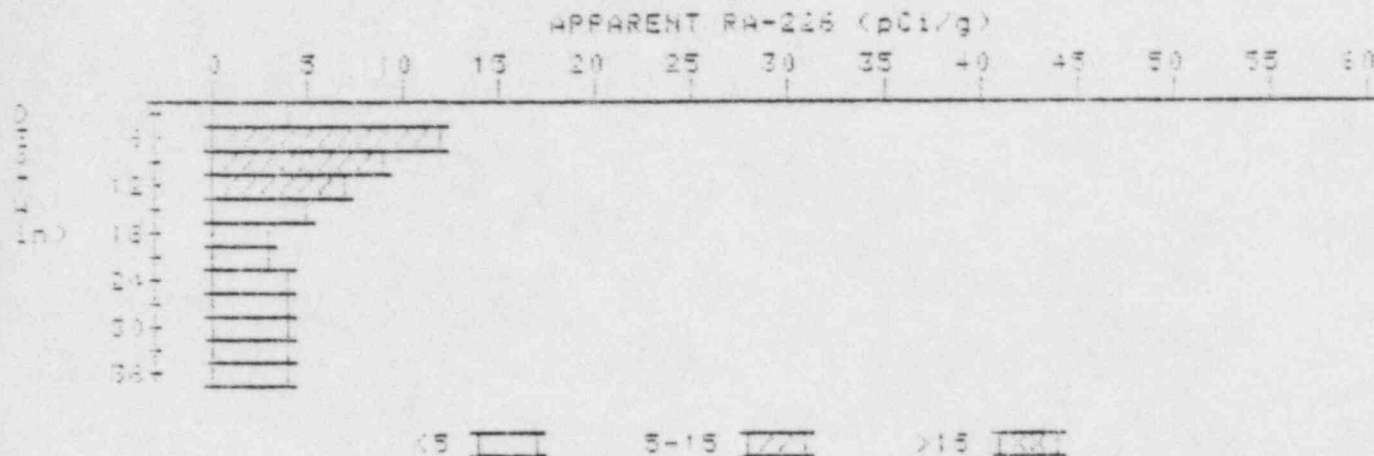
PROPERTY NUMBER: GJ-05527-RS
HOLE NUMBER: 10
LOCATION: 211275



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

APPARENT RADIUM-226 CONCENTRATION 13 DECONVOLUTION GRAPH

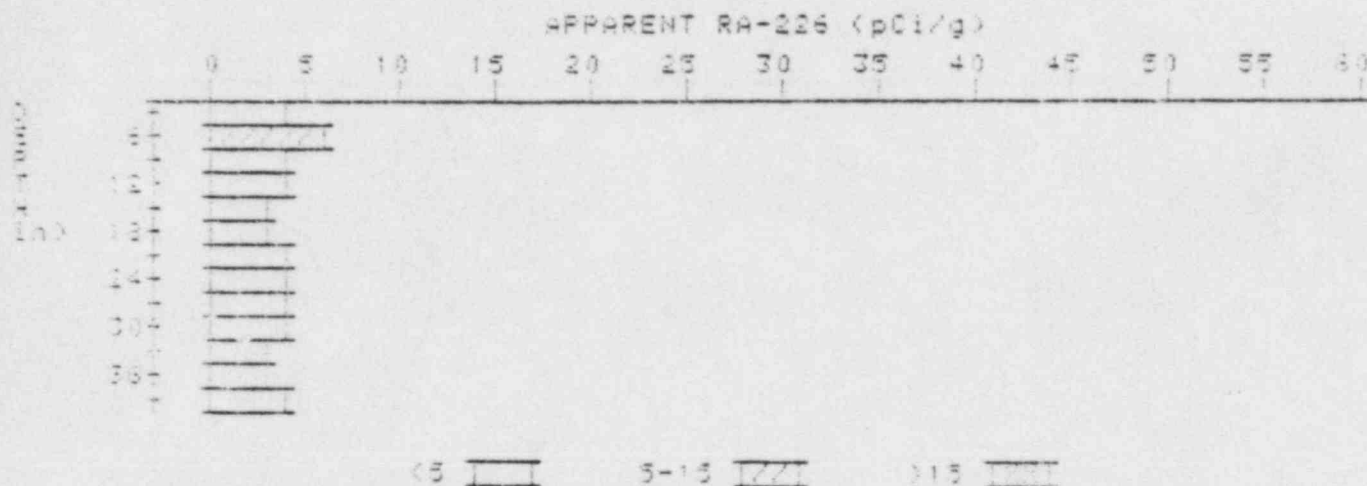
PROPERTY NUMBER: GJ-08527-R9
HOLE NUMBER: 13
LOCATION: 250210



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	7.8	7.3
6	9.8	11.3
9	9.1	9.2
12	6.6	7.0
15	6.4	4.7
18	4.4	6.5
21	4.0	5.6
24	5.9	9.9
27	5.6	9.9
30	5.7	6.7
33	5.6	6.6
36	5.5	6.6

APPARENT RADIUM-226 CONCENTRATION 15 DECONVOLUTION GRAPH

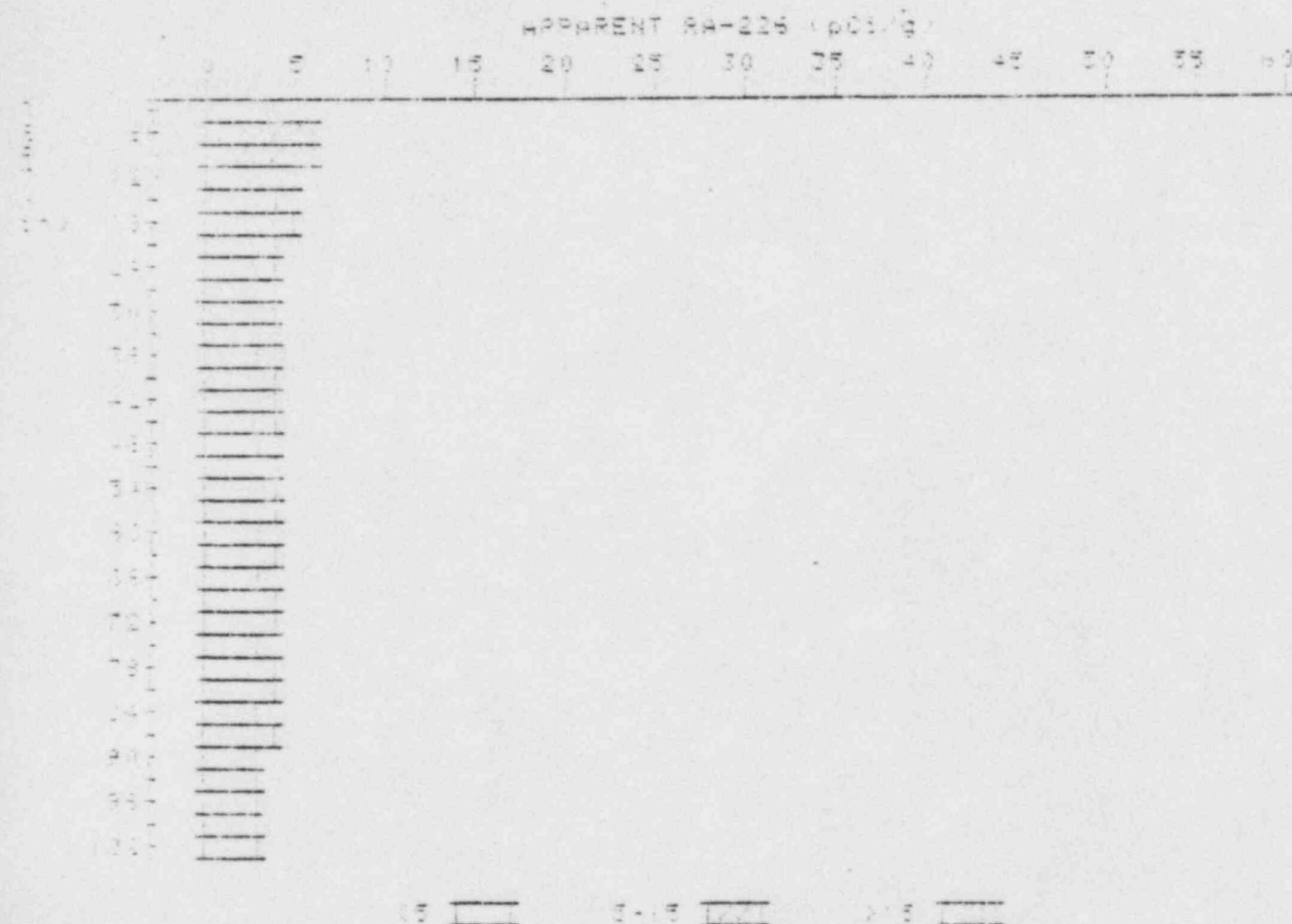
PROPERTY NUMBER: GJ-05327-R3
HOLE NUMBER: 15
LOCATION: 293253



Depth (ft)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.9	5.9
6	5.7	5.8
9	4.6	5.8
12	4.1	5.7
15	3.8	5.4
18	3.7	5.3
21	3.8	4.9
24	3.7	5.3
27	3.7	5.1
30	3.7	5.4
33	3.6	5.4
36	3.6	5.4
39	3.4	5.4

APPARENT RADIUM-226 CONCENTRATION 16 DECONVOLUTION GRAPH

PROPERTY NUMBER: 30-03327-RS
HOLE NUMBER: 16
LOCATION: 295238

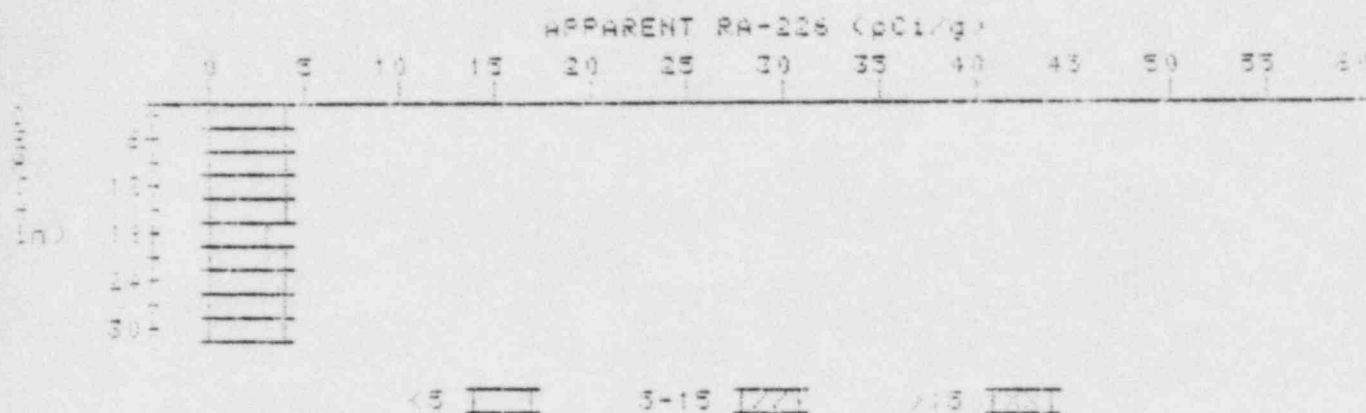


Depth (in)	Apparent Radium-226 (pCi/g)	Apparent Radium-226 (pCi/g)
	Indeconvolved	Deconvolved
0.0	4.7	4.7
0.5	5.2	5.2
1.0	5.1	5.1
1.5	4.7	4.7
2.0	4.4	4.4
2.5	4.3	4.3
3.0	4.0	4.0

[illegible][illegible][illegible]

APPARENT RADIUM-226 CONCENTRATION 18 DECONVOLUTION GRAPH

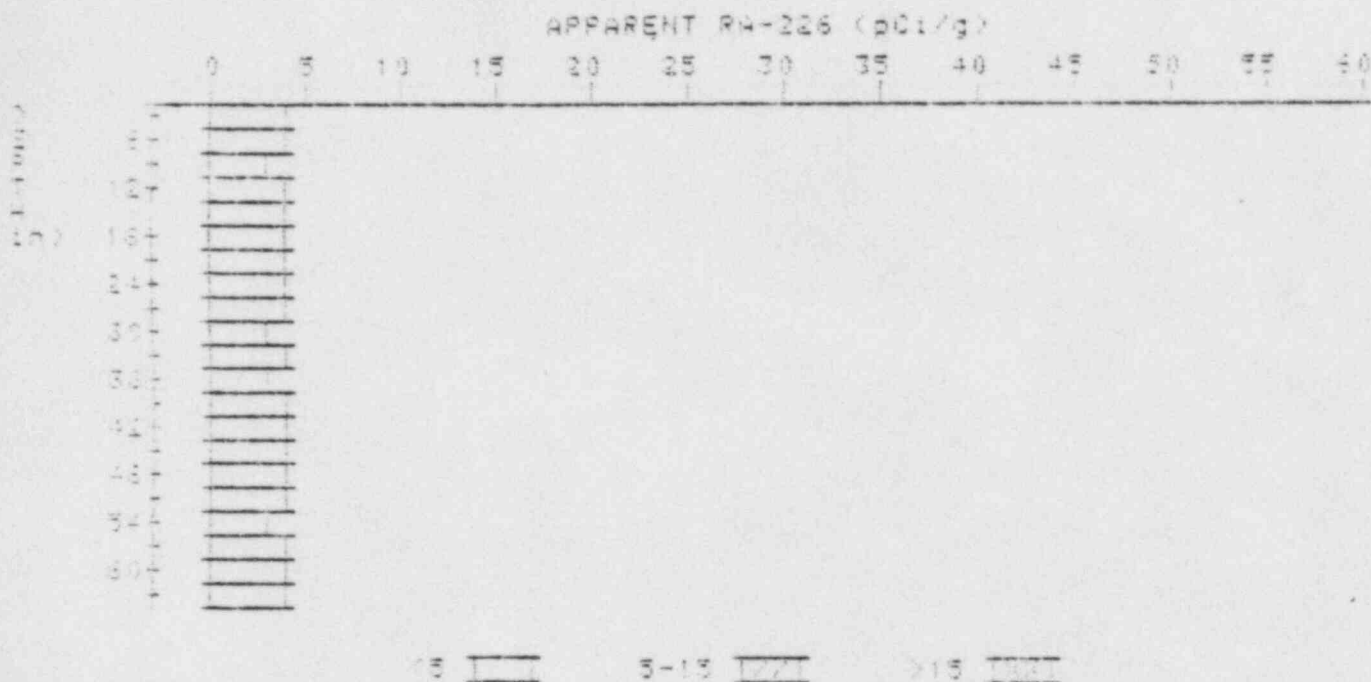
PROPERTY NUMBER: QJ-05327-R9
HOLE NUMBER: 10
LOCATION: 315220



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	4.0
12	3.7	3.8
15	3.7	3.8
18	3.8	3.8
21	3.7	3.8
24	3.7	3.8
27	3.8	4.0
30	3.8	3.8

APPARENT RADIUM-226 CONCENTRATION 19 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-05527-R9
HOLE NUMBER: 19
LOCATION: 130236



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
0	4.8	4.8
2	4.8	4.8
4	4.8	4.4
6	4.8	4.1
8	4.8	4.0
10	4.8	4.0
12	4.8	4.0
14	4.8	4.0
16	4.8	4.0
18	4.8	4.0
20	4.8	4.0
22	4.8	4.0
24	4.8	4.0
26	4.8	4.0
28	4.8	4.0
30	4.8	4.0
32	4.8	4.0
34	4.8	4.0
36	4.8	4.0
38	4.8	4.0
40	4.8	4.0
42	4.8	4.0
44	4.8	4.0
46	4.8	4.0
48	4.8	4.0
50	4.8	4.0
52	4.8	4.0
54	4.8	4.0
56	4.8	4.0
58	4.8	4.0
60	4.8	4.0

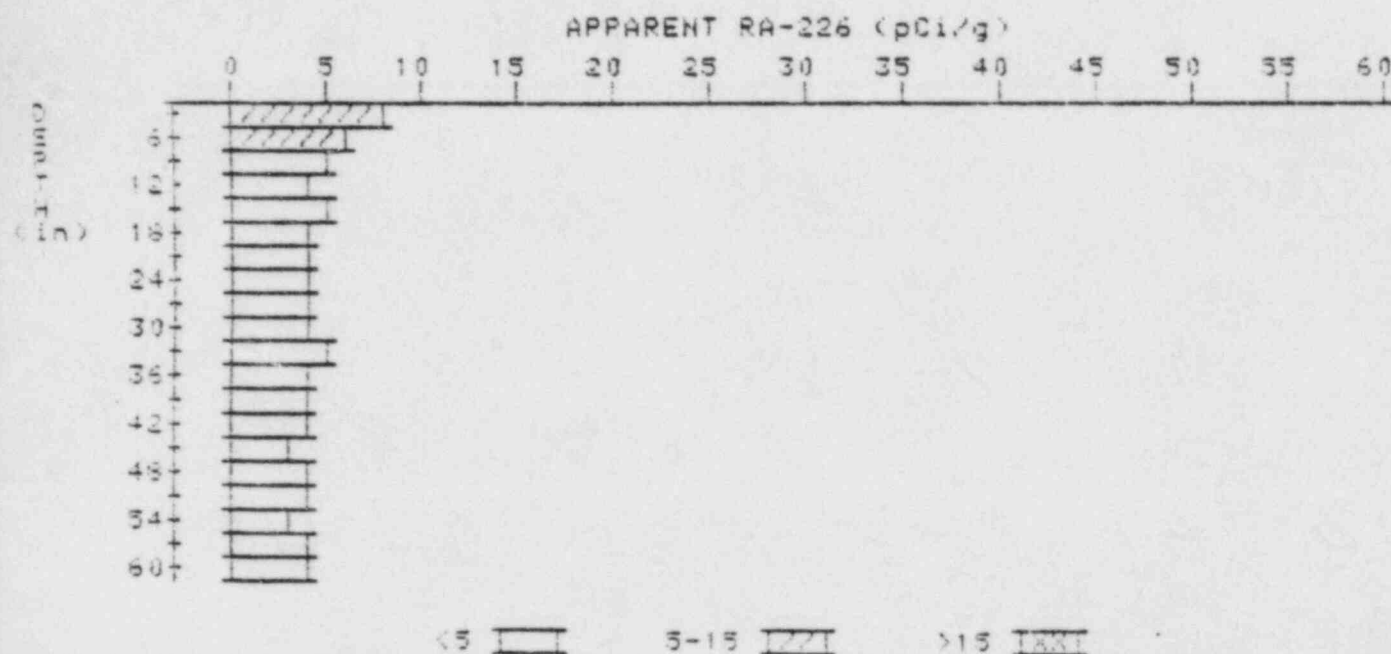
0.0014

0.0004

0.0004

APPARENT RADIUM-226 CONCENTRATION 23 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-05527-RS
HOLE NUMBER: 23
LOCATION: 167247



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	8.4	8.4
6	6.8	6.3
9	5.8	4.6
12	4.7	3.6
15	4.5	4.5
18	4.3	4.1
21	4.2	4.0
24	4.2	4.2
27	4.2	4.2
30	4.2	4.2
33	4.2	4.6
36	4.0	3.8
39	3.9	3.7
42	3.9	4.1
45	3.8	3.4
48	3.9	4.1
51	3.9	4.1
54	3.6	3.4

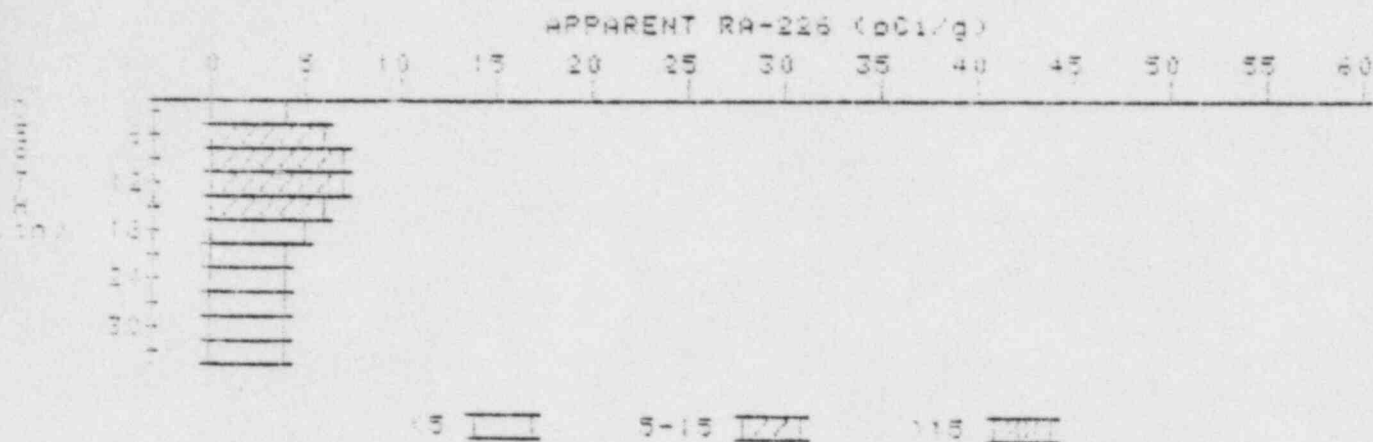
57
60

3.9
3.9

4.1
3.9

APPARENT RADIUM-226 CONCENTRATION 27 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-95527-R6
HOLE NUMBER: 27
LOCATION: 200243



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.6	4.6
6	5.3	5.7
9	5.2	5.7
12	5.2	5.5
14	5.4	5.6
16	4.9	4.7
21	4.8	4.5
24	4.1	3.6
27	4.0	4.2
30	3.8	3.6
33	3.7	3.7

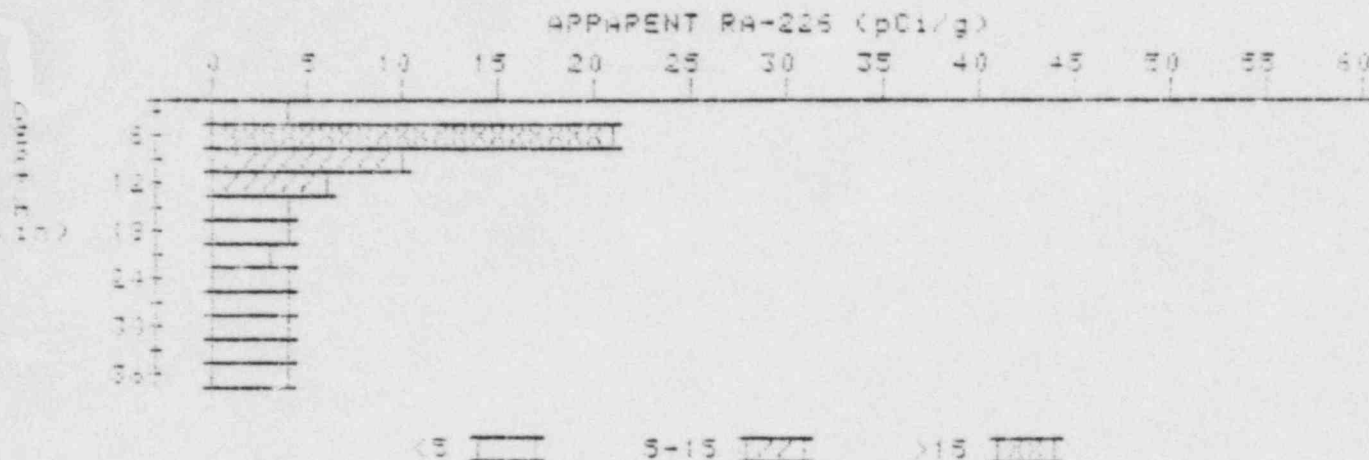
APPARENT RADIUM-226 CONCENTRATION 29
DECONVOLUTION GRAPH

[illegible]

	Reduction	Reduction
	(g/g)	(g/g)
Carbon	Uninvolved	Uninvolved
(%)		
100.0	100.0	100.0
99.9	99.9	99.9
99.8	99.8	99.8
99.7	99.7	99.7
99.6	99.6	99.6
99.5	99.5	99.5
99.4	99.4	99.4
99.3	99.3	99.3
99.2	99.2	99.2
99.1	99.1	99.1
99.0	99.0	99.0
98.9	98.9	98.9
98.8	98.8	98.8
98.7	98.7	98.7
98.6	98.6	98.6
98.5	98.5	98.5
98.4	98.4	98.4
98.3	98.3	98.3
98.2	98.2	98.2
98.1	98.1	98.1
98.0	98.0	98.0
97.9	97.9	97.9
97.8	97.8	97.8
97.7	97.7	97.7
97.6	97.6	97.6
97.5	97.5	97.5
97.4	97.4	97.4
97.3	97.3	97.3
97.2	97.2	97.2
97.1	97.1	97.1
97.0	97.0	97.0
96.9	96.9	96.9
96.8	96.8	96.8
96.7	96.7	96.7
96.6	96.6	96.6
96.5	96.5	96.5
96.4	96.4	96.4
96.3	96.3	96.3
96.2	96.2	96.2
96.1	96.1	96.1
96.0	96.0	96.0
95.9	95.9	95.9
95.8	95.8	95.8
95.7	95.7	95.7
95.6	95.6	95.6
95.5	95.5	95.5
95.4	95.4	95.4
95.3	95.3	95.3
95.2	95.2	95.2
95.1	95.1	95.1
95.0	95.0	95.0
94.9	94.9	94.9
94.8	94.8	94.8
94.7	94.7	94.7
94.6	94.6	94.6
94.5	94.5	94.5
94.4	94.4	94.4
94.3	94.3	94.3
94.2	94.2	94.2
94.1	94.1	94.1
94.0	94.0	94.0
93.9	93.9	93.9
93.8	93.8	93.8
93.7	93.7	93.7
93.6	93.6	93.6
93.5	93.5	93.5
93.4	93.4	93.4
93.3	93.3	93.3
93.2	93.2	93.2
93.1	93.1	93.1
93.0	93.0	93.0
92.9	92.9	92.9
92.8	92.8	92.8
92.7	92.7	92.7
92.6	92.6	92.6
92.5	92.5	92.5
92.4	92.4	92.4
92.3	92.3	92.3
92.2	92.2	92.2
92.1	92.1	92.1
92.0	92.0	92.0
91.9	91.9	91.9
91.8	91.8	91.8
91.7	91.7	91.7
91.6	91.6	91.6
91.5	91.5	91.5
91.4	91.4	91.4
91.3	91.3	91.3
91.2	91.2	91.2
91.1	91.1	91.1
91.0	91.0	91.0
90.9	90.9	90.9
90.8	90.8	90.8
90.7	90.7	90.7
90.6	90.6	90.6
90.5	90.5	90.5
90.4	90.4	90.4
90.3	90.3	90.3
90.2	90.2	90.2
90.1	90.1	90.1
90.0	90.0	90.0
89.9	89.9	89.9
89.8	89.8	89.8
89.7	89.7	89.7
89.6	89.6	89.6
89.5	89.5	89.5
89.4	89.4	89.4
89.3	89.3	89.3

APPARENT RADIUM-226 CONCENTRATION 31 DECONVOLUTION GRAPH

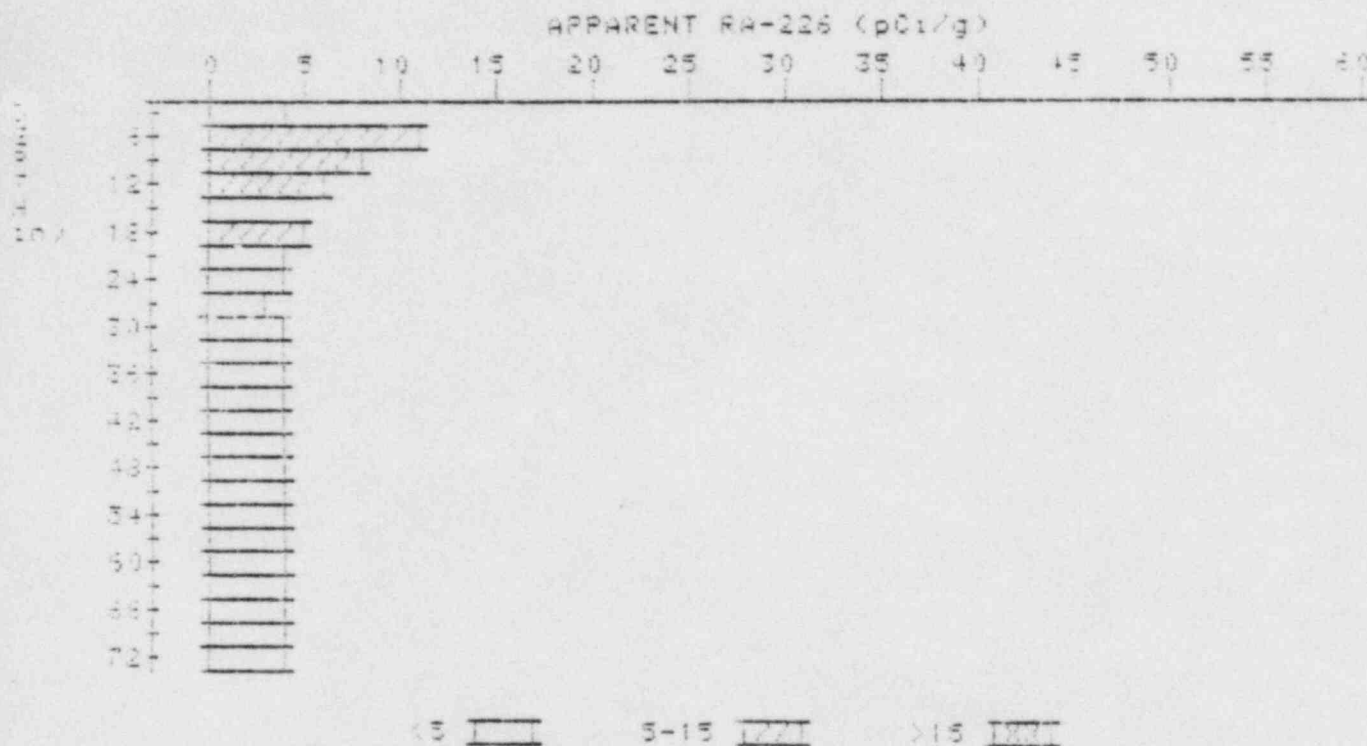
PROPERTY NUMBER: GJ-05527-R9
HOLE NUMBER: 31
LOCATION: 300201



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	19.0	19.0
6	16.7	21.1
9	11.9	9.9
12	8.2	5.7
15	5.9	3.5
18	4.8	3.9
21	4.2	3.8
24	4.0	4.0
27	3.8	3.6
30	3.7	3.7
33	3.6	3.6
36	3.5	3.5

APPARENT RADIUM-226 CONCENTRATION 33 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-05527-RS
HOLE NUMBER: 33
LOCATION: 303249



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
0	8.9	8.9
3	8.6	10.6
6	7.2	7.7
9	8.6	8.7
12	5.7	4.4
15	4.9	4.4
18	4.0	4.0
21	4.0	4.4
24	4.0	4.4
27	4.0	4.4
30	4.0	4.4
33	4.0	4.4
36	4.0	4.4
39	4.0	4.4
42	4.0	4.4
45	4.0	4.4
48	4.0	4.4
51	4.0	4.4
54	4.0	4.4
57	4.0	4.4
60	4.0	4.4
63	4.0	4.4
66	4.0	4.4
69	4.0	4.4

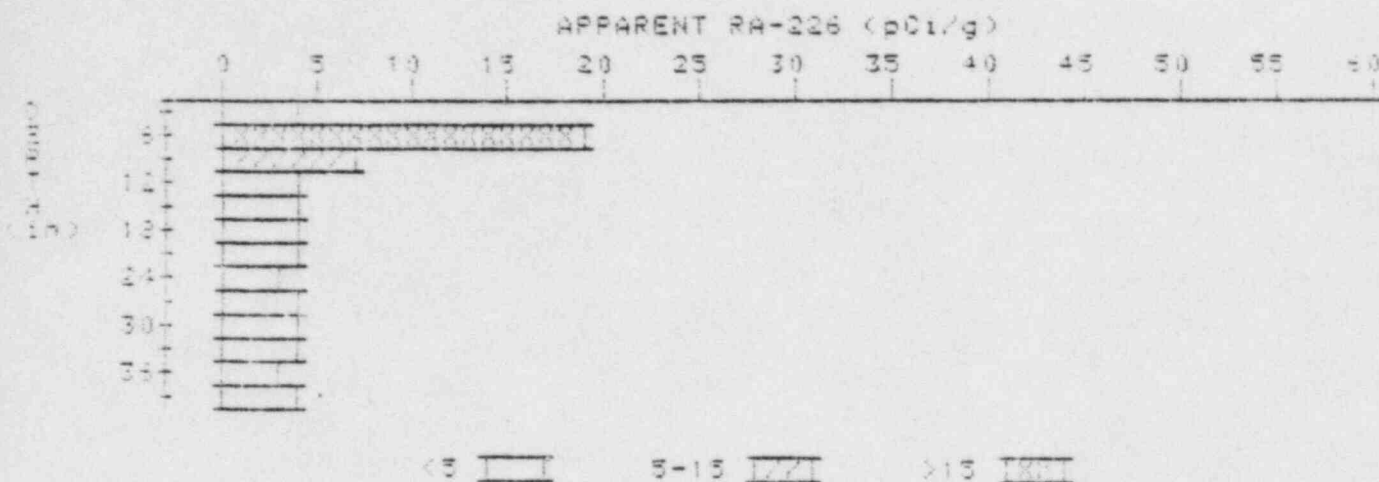
48
51
54
57
60
63
66
69
72

64
67
70
73
76
79
82
85
88

91
94
97
100
103
106
109
112
115

APPARENT RADIUM-226 CONCENTRATION 34 DECONVOLUTION GRAPH

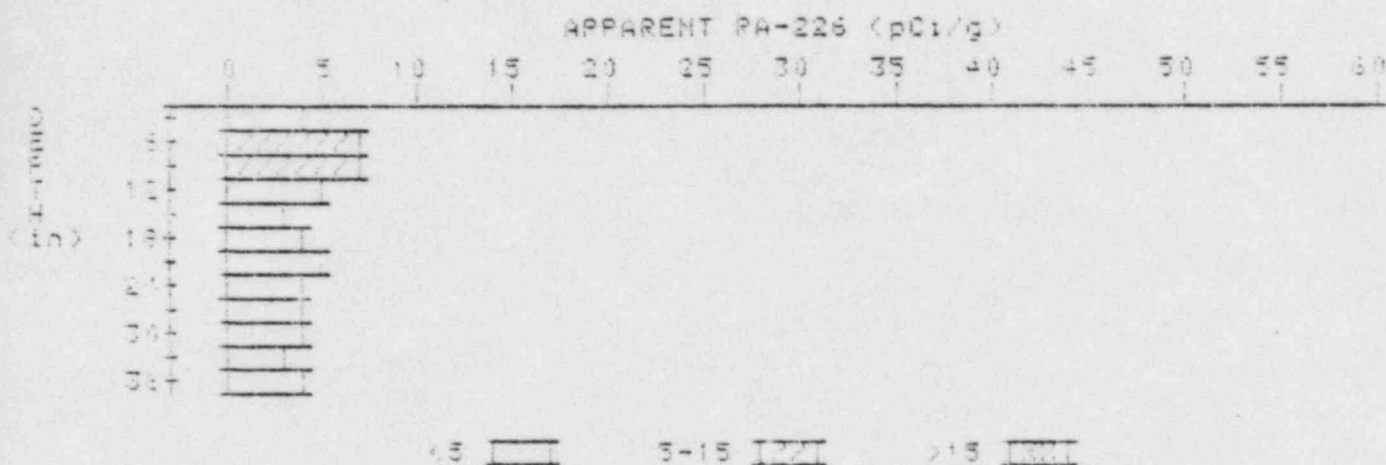
PROPERTY NUMBER: GJ-05527-R3
HOLE NUMBER: 34
LOCATION: 320210



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	13.2	13.2
6	12.9	12.9
9	9.2	7.4
12	6.5	4.4
15	5.0	3.6
18	4.3	3.6
21	4.0	3.0
24	3.6	3.6
27	3.6	4.4
30	3.6	3.6
33	3.6	4.0
36	3.7	3.6
39	3.6	3.6

APPARENT RADIUM-226 CONCENTRATION 35 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-05527-R6
HOLE NUMBER: 35
LOCATION: 320240



Depth (in)	Apparent Radium-226 (pCi/g) Under-involved	Apparent Radium-226 (pCi/g) Deconvolved
3	7.3	7.8
6	7.2	7.4
9	6.8	7.2
12	6.4	6.9
15	4.6	5.4
18	4.5	4.3
21	4.5	4.9
24	4.3	4.3
27	4.1	3.7
30	4.1	4.8
33	3.9	3.4
36	4.0	4.0