

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-00590-MR
ADDRESS: 1827 NORTH 21ST STREET

AUGUST 1985

FOR

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT OFFICE

ALBUQUERQUE OPERATIONS OFFICE

DEPARTMENT OF ENERGY

BY

BENDIX FIELD ENGINEERING CORPORATION
P.O. Box 1569
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APPROVED BY

Michael K. Tucker

M. TUCKER
DOE PROJECT ENGINEER

DATE

August 26, 1985

REA00590:REA-618

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PDR WASTE
WM-54 PDR

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-00590-MR, is a single-family residence located at 1827 North 21st Street, Grand Junction, Colorado.

The purpose of this assessment is to evaluate the extent of uranium millsite contamination at this property. This assessment includes recommended remedial action, estimated volume of material to be removed, and estimated cost of the proposed action.

1.2 Evaluation and Recommendation

The action recommended is the removal of contaminated material 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, 4 cu. yd.; interior, 10 cu. yd.

Estimated cost to perform remedial action, including dislocation when applicable, is \$2,706. Remedial action on this property will take approximately 10 days to complete.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 1827 North 21st Street, Grand Junction, Colorado

Zoning: Residential (RSF-8)

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

Legal Description: Lot 5, Block 7, Del Rey Subdivision Replat, City of Grand Junction, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 2.5 mile(s) northeast of the State of Colorado Tailings Repository. Appendix Figure 2.1 shows the property location relative to its surroundings.

Utilities: Utility locations are shown in Appendix Figure 2.2.

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

Bordering Properties:

North:	Single-family residence
South:	Single-family residence
East:	North 21st Street
West:	Alley

2.2 Existing Facilities and Structures

Primary Structure:

Type:	Single-story residence
Size:	Approximately 1,250 sf
Construction Date:	1955
Construction:	Wood-frame
Foundation:	Concrete wall on spread footing
Footing Depth:	Approximately 80" to bottom of footing from grade
Basement:	Yes - full
Crawl Space:	None
Condition:	Good

Other Structures:

Type:	Shed
Size:	Approximately 80 sf
Construction:	Prefabricated metal
Foundation:	None
Condition:	Good

General Remarks:

The property is well maintained and there is a lawn sprinkler system. Trellises within the remedial action area contain well established vines. 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-00590-MR on May 24, 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 west wall where a fireplace had previously been, under and beside the concrete patio slab and south of the walkway leading to the patio.

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

3.2 Gamma Exposure-Rate Surveys

3.2.1 Exterior Findings

Background Readings: 14 to 17 uR/h
Highest Outside Gamma Reading (HOG): 41 uR/h

Exterior radium-concentration measurements are presented in Appendix Table 3.1. Grid-point survey results are shown in Appendix Figure 3.1.

3.2.2 Interior Findings

Background Readings: 12 to 18 uR/h
Highest Inside Gamma Reading (HIG): 36 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 Figure 3.2 shows 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 3.2 and 3.3. Data from these investigations are included in Appendix Tables 3.1 and 3.2.

3.4 Radon/Radon Daughter Concentration (RDC)

Determined by CDH: 0.0150 (gross) working level (WL). No additional RDC measurements were taken by Bendix.

3.5 Extent of Contamination

Appendix Figures 3.4a and 3.4b 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 concrete patio west of the primary structure has contaminated soil beneath the 5-inch-thick uncontaminated concrete slab. The total depth of contamination is 15 inches (approximately 208 sf).
- (AREA B) Along the north, south, and west side of the patio slab the depth of contamination is 12 inches (approximately 117 sf).

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-00590-MR, includes removal of all areas identified as containing radioactive material (as discussed in Section 3.5 and shown in Appendix Figures 3.4a and 3.4b) 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 \$2,706.

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

There is no owner preference with respect to remedial action and no legal or other complications are foreseen at this time.

5.0 REFERENCES

ARIX, A Professional Corporation, Procedures Manual for the Grand Junction Remedial Action Program, for Colorado Department of Health, Radiation Control Division, and the U.S. Department of Energy, 1983.

Bendix Field Engineering Corporation, Procedures Manual Radiologic Support Operations Grand Junction Vicinity Properties, (GJ-07), for U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico, 1984.

Bendix Field Engineering Corporation, Engineering, Construction, and Land Support Manual Grand Junction Vicinity Properties Project, (GJ-08), for U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico, 1984.

Bendix Field Engineering Corporation, Grand Junction Vicinity Properties Operating Manual, (GJ-16) for U.S. Department of Energy, Nuclear Energy Programs, Division of Remedial Action Projects, UMTRA, 1984.

Bendix Field Engineering Corporation, Vicinity Properties General Construction Specification, for U.S. Department of Energy, Nuclear Energy Programs, Division of Remedial Action Projects, UMTRA, 1984.

Bendix Field Engineering Corporation, Environmental Assessment of Preliminary Cleanup Activities at Offsite Properties Contaminated by Tailings from the Grand Junction Inactive Uranium Millsite, (GJ-04), for U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations, Albuquerque, New Mexico, 1983.

U.S. Department of Energy, Programmatic Memorandum of Agreement (DOE No. DE-GMD4-84AL28460) between the U.S. Department of Energy, the Advisory Council on Historic Preservation, and the Colorado State Historic Preservation Officer, for UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico, 1984.

U.S. Department of Energy, Vicinity Properties Management and Implementation Manual, for UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico, 1984.

U.S. Environmental Protection Agency, Standards for Remedial Action at Inactive Uranium Processing Sites (40 CFR Part 192), Washington, D.C., 1983.

6.0 APPENDIX

This Appendix contains the following:

Appendix Tables:

Table 3.1	Radium Concentrations at Exterior Locations
Table 3.2	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 3.1	Exterior Grid-Point Exposure Rates
Figure 3.2	Interior Gamma Exposure Rates and Sample Locations
Figure 3.3	Exterior Sample Locations
Figure 3.4a	Interior Estimated Extent of Contamination
Figure 3.4b	Exterior Estimated Extent of Contamination

Official Survey Report

Team Leader Notes

Deconvolution Graphs (Apparent Radium-226 Concentration)

Exterior Gamma Scan Map

Radium Concentrations at Exterior Locations

DOE ID #GJ-00590-MR

1827 North 21st Street

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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	112265	00	DS	2.0		*	Alley
		06	DS	1.2		*	
6	150255	00	DS	<1.0		*	West of primary structure
		06	DS	1.3		*	
7	154264	03	TC	3.0		*	DC = 0 inches
		06	TC	3.4		*	
		09	TC	3.6		*	
		12	TC	3.7		*	
		15	TC	3.7		*	
		18	TC	3.7		*	
		21	TC	3.7		*	
		24	TC	3.7		*	
		27	TC	3.8		*	
		30	TC	3.9		*	
		33	TC	4.0		*	
		36	TC	4.0		*	
		39	TC	4.1		*	
8	156250	03	TC	2.9		*	Southwest corner of the patio DC = 0 inches
		06	TC	3.3		*	
		09	TC	3.6		*	
		12	TC	3.7		*	
		15	TC	3.7		*	
		18	TC	3.8		*	
		21	TC	4.0		*	
		24	TC	3.9		*	
		27	TC	4.0		*	
		30	TC	4.1		*	
9	156276	00	DS	1.0		*	West of the primary structure
		06	DS	1.9		*	
10	163252	00	DS	6.9		*	South side of the patio
		06	DS	3.1		*	
		12	DS	2.4		*	
11	165276	00	DS	1.1		*	
		06	DS	<1.0		*	
12	166253	00	DS	<1.0		*	On step

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.		
13	169221	03	TC	2.8		*	DC = 0 inches
		06	TC	3.2		*	
		09	TC	3.4		*	
		12	TC	3.7		*	
		15	TC	3.7		*	
		18	TC	3.9		*	
		21	TC	3.8		*	
		24	TC	3.9		*	
		27	TC	3.9		*	
		30	TC	3.9		*	
		33	TC	3.9		*	
		36	TC	3.9		*	
		39	TC	3.9		*	
14	169271	03	TC	3.5		*	Auger refusal
		06	TC	3.8		*	
		09	TC	3.9		*	DC = 0 inches
		12	TC	3.9		*	
		15	TC	3.9		*	
		18	TC	3.9		*	
		21	TC	4.0		*	
		24	TC	4.0		*	
		27	TC	4.1		*	
		30	TC	4.1		*	
		33	TC	4.0		*	
		36	TC	4.1		*	
		39	TC	4.2		*	
		42	TC	4.3		*	
		45	TC	4.1		*	
		48	TC	4.1		*	
		51	TC	4.1		*	
		54	TC	4.2		*	
		57	TC	4.2		*	
		60	TC	4.1		*	
		63	TC	4.0		*	
		66	TC	4.2		*	
15	183225	00	DS	<1.0		*	Gas line
		18	DS	1.6		*	
16	191272	03	TC	2.9		*	Sewer line
		06	TC	3.1		*	
		09	TC	3.4		*	DC = 0 inches
		12	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.		
16	191272	15	TC	3.5		*	
		18	TC	3.7		*	
		21	TC	3.6		*	
		24	TC	3.6		*	
		27	TC	3.7		*	
		30	TC	3.7		*	
		33	TC	3.8		*	
		36	TC	3.7		*	
		39	TC	3.7		*	
		42	TC	3.7		*	
		45	TC	3.7		*	
		48	TC	3.8		*	
		51	TC	3.9		*	
		54	TC	3.8		*	
		57	TC	3.9		*	
		60	TC	3.8		*	
		63	TC	3.8		*	
		66	TC	3.9		*	
		69	TC	3.8		*	
		72	TC	3.8		*	
		75	TC	3.9		*	
		78	TC	3.8		*	
17	192221	00	DS	1.0		*	Background
		00	GS		1.1	*	
		03	TC	3.0		*	DC = 0 inches
		06	BH	3.4	1.5	*	
		09	TC	3.6		*	
		12	BH	3.6	2.0	*	
		15	TC	3.7		*	
		18	TC	3.6		*	
		21	TC	3.7		*	
		24	BH	3.8	1.2	*	
		27	TC	3.8		*	
		30	TC	3.7		*	
		33	TC	3.9		*	
		36	TC	3.8		*	
18	199260	03	TC	2.9		*	Water line
		06	TC	3.4		*	
		09	TC	3.5		*	DC = 0 inches
		12	TC	3.7		*	
		15	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.		
18	199260	18	TC	3.7		*	
		21	TC	3.8		*	
		24	TC	3.8		*	
		27	TC	3.8		*	
		30	TC	3.8		*	
		33	TC	3.9		*	
		36	TC	3.8		*	
		39	TC	3.8		*	
		42	TC	3.8		*	
		45	TC	3.7		*	
		48	TC	3.8		*	
		51	TC	3.7		*	
		54	TC	3.8		*	
		57	TC	3.7		*	
		60	TC	3.8		*	
		63	TC	3.7		*	
		66	TC	3.7		*	
		69	TC	3.7		*	
		72	TC	3.7		*	
		75	TC	3.6		*	
		78	TC	3.7		*	
		81	TC	3.7		*	
		84	TC	3.8		*	
		87	TC	3.7		*	
		90	TC	3.8		*	
		93	TC	3.8		*	
		96	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 = 05-24-85
 Team Leader = BMM

Radium Concentrations at Interior Locations

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
1		00	DS	4.1		*	West wall
		[6]	DS	3.1		*	
		00	GS		4.3	*	West wall
		[6]	GS		4.5	*	
2		03	TC	42.0		*	Patio
		06	TC	68.4		*	
		09	TC	57.1		*	
		12	BH	32.1	18.3	*	DC = 15 inches Based on the deconvolution graph
		15	TC	18.6		*	
		18	TC	12.8		*	
		21	TC	9.7		*	
		24	BH	8.0	5.3	*	
		27	TC	7.4		*	
		30	TC	7.2		*	
		33	TC	7.2		*	
		36	BH	7.0	4.6	*	
		39	TC	6.7		*	
		42	TC	6.4		*	
		45	TC	6.1		*	
		48	TC	5.8		*	
		51	TC	5.3		*	
		54	BH	5.1	2.9	*	
		57	TC	4.9		*	
		60	TC	4.9		*	
		63	TC	4.7		*	
		66	TC	4.6		*	
		69	TC	4.4		*	
3		03	TC	25.0		*	Patio
		06	TC	45.8		*	
		09	TC	53.8		*	
		12	TC	36.0		*	DC = 15 inches Based on the deconvolution graph
		15	TC	21.3		*	
		18	TC	13.5		*	
		21	TC	9.0		*	
		24	TC	7.1		*	
		27	TC	6.0		*	
		30	TC	5.6		*	
		33	TC	5.3		*	
		36	TC	5.2		*	
		39	TC	5.2		*	

Radium Concentrations at Interior Locations

DOE ID #CJ-00590-MR

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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.		
3		42	TC	5.1		*	
		45	TC	4.9		*	
		48	TC	4.7		*	
		51	TC	4.5		*	
		54	TC	4.4		*	
		57	TC	4.3		*	
		60	TC	4.3		*	
		63	TC	4.2		*	
		66	TC	4.1		*	
		69	TC	4.1		*	
		72	TC	4.1		*	
4		[15]	DS	<1.0		*	Patio side

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 = 05-24-85
 Team Leader = BMM

Summary of Interior Gamma Exposure Rates

DOE ID# GJ-00590-MR

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Location *	Number of Readings Taken at Waist Level	Range at Waist Level (uR/h)	Mean at Waist Level (uR/h)	Number of Readings Taken at Surface	Range at Surface (uR/h)	Mean Surface (uR/h)
BASEMENT	*	*	*	*	14-17	*
GROUND LEVEL	*	*	*	*	12-18	*
PATIO	12	15-31	22	12	16-36	25
SHED	04	13-14	14	04	13-14	14

* The historical 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 Figure 3.2.

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-00590-MR

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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 (porch)					
Concrete					
A	17.4 x 13.2 =	230			
	minus 7 x 3.2 =	(22)			
		<hr/>			
		208	x 0.4 =	83	
				<hr/>	
	Volume of Concrete			= 83 =	33/27 = 3
Contaminated Fill					
A	17.4 x 13.2 =	230			
	minus 7 x 3.2 =	(22)			
		<hr/>			
		208	x 0.9 =	187	
				<hr/>	
	Volume of Fill			= 187 =	187/27 = 7
					<hr/>
	TOTAL VOLUME - INTERIOR				= 10
EXTERIOR					
Contaminated Fill					
B	5 x 13 =	65			
	9 x 2 =	18			
	17 x 2 =	34			
		<hr/>			
		117	x 1.0 =	117	
				<hr/>	
	TOTAL VOLUME - EXTERIOR			117 =	117/27 = 4

See Appendix Figures 3.4a and 3.4b For Areas

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Table 4.2
Estimated Cost of Decontamination and Restoration
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INTERIOR

Remove/replace concrete floor 208 sf @ \$4/sf	\$ 832
Remove identified residual radioactive material 7 cy @ \$44/cy (manual-open)	308
Replace area with compacted roadbase 7 cy @ \$11.50/cy	81
Shore exterior walls 27 lf @ \$3/lf	81
	<hr/>
SUBTOTAL INTERIOR	\$ 1,302

EXTERIOR

Remove identified residual radioactive material 4 cy @ \$14.50/cy (machine-open)	58
Replace area with topsoil 4 cy @ \$9.50/cy	38
Replace area with sod 117 sf @ \$.50/sf	59
Remove/replace trellis (2) and vines Lump sum	200
	<hr/>
SUBTOTAL EXTERIOR	\$ 355

Table 4.2
Estimated Cost of Decontamination and Restoration
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TOTAL EXTERIOR	\$	355
TOTAL INTERIOR		1,302
ACCESS CONTROL		100
		<hr/>
SUBTOTAL	\$	1,757
CONTINGENCY @ 10%		176
		<hr/>
SUBTOTAL	\$	1,933
CONTRACTOR OVERHEAD & PROFIT @ 40%		773
		<hr/>
GRAND TOTAL	\$	2,706

DS082285
REA00590/REA-618/LMR

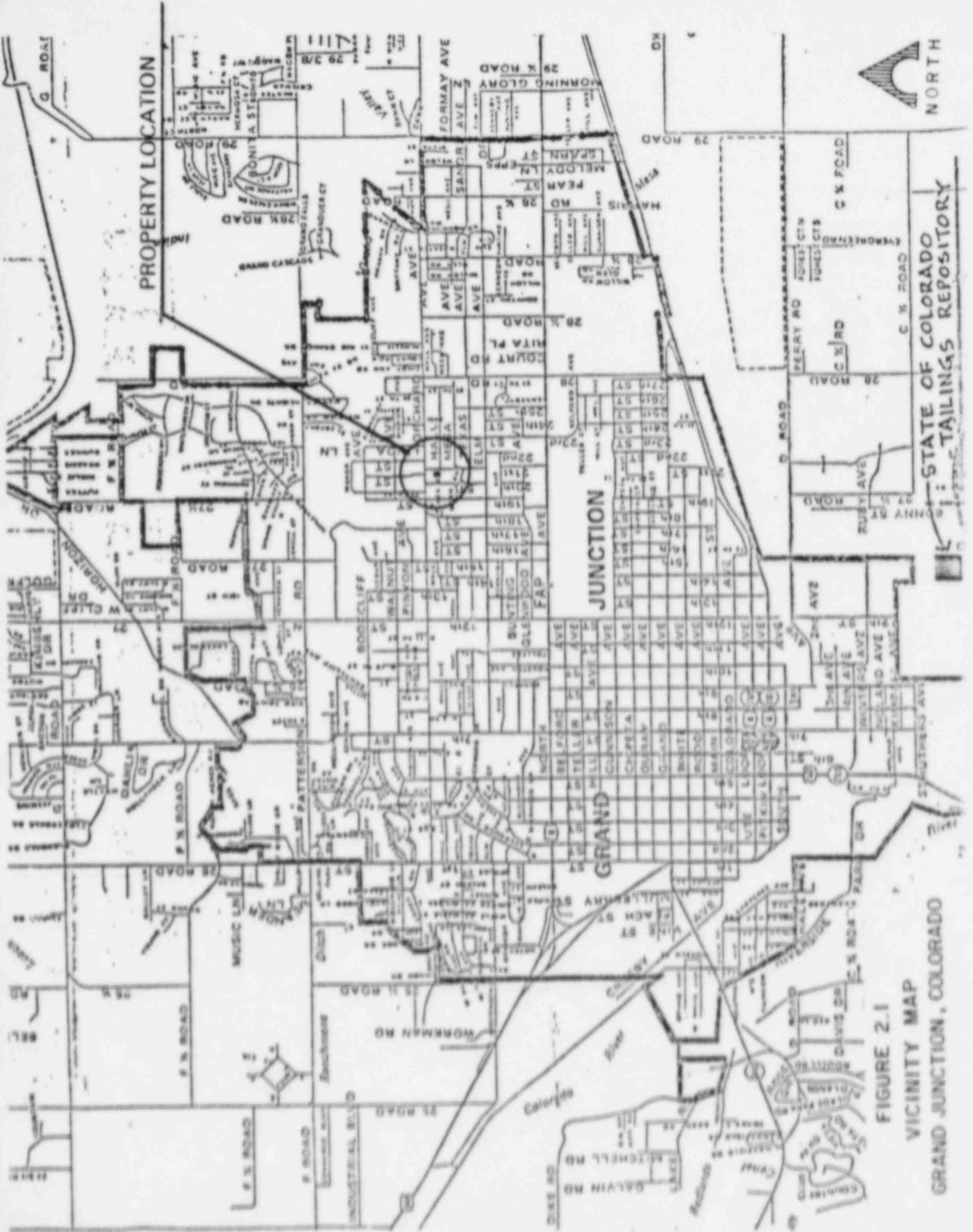


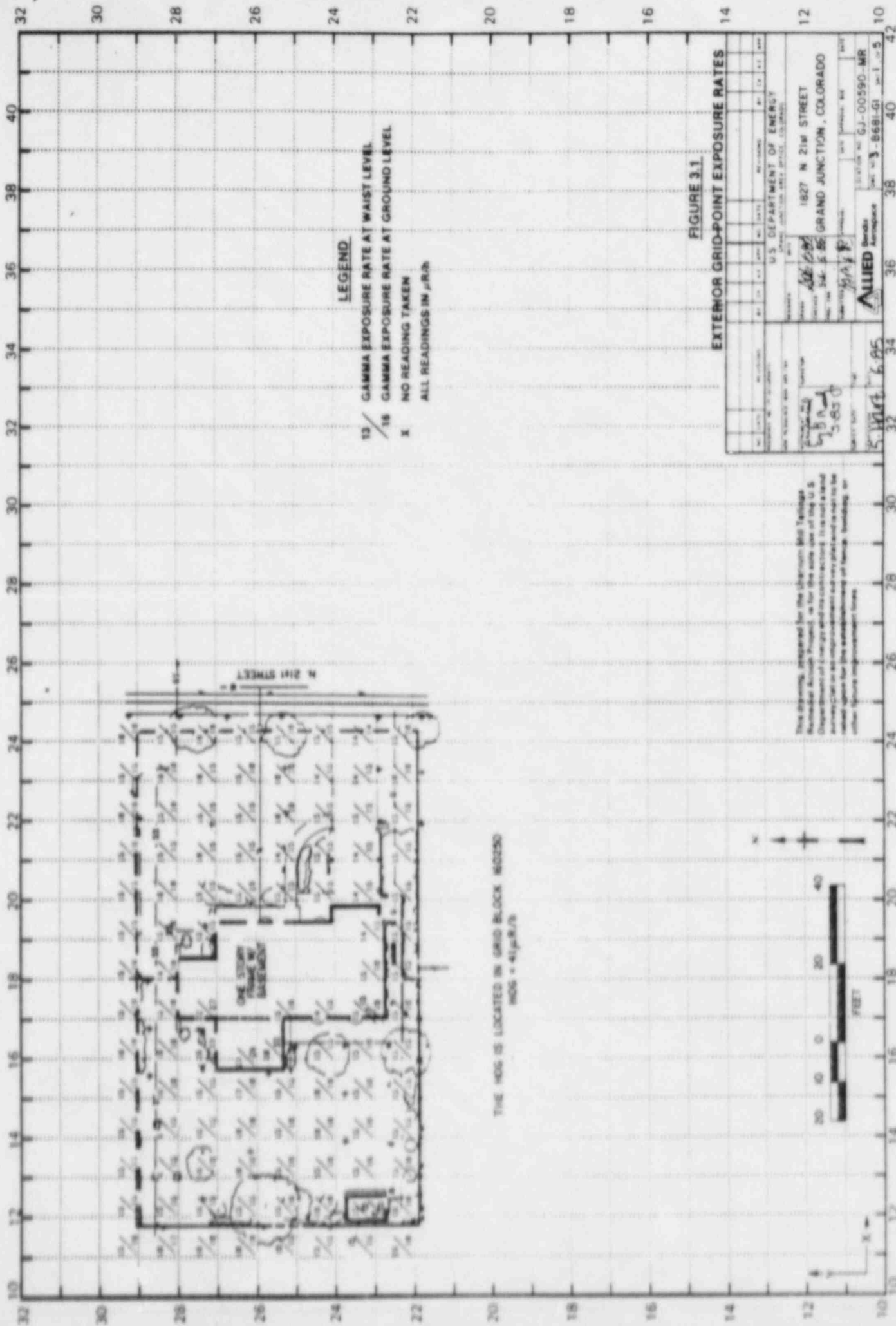
FIGURE 2.1
VICINITY MAP
GRAND JUNCTION, COLORADO

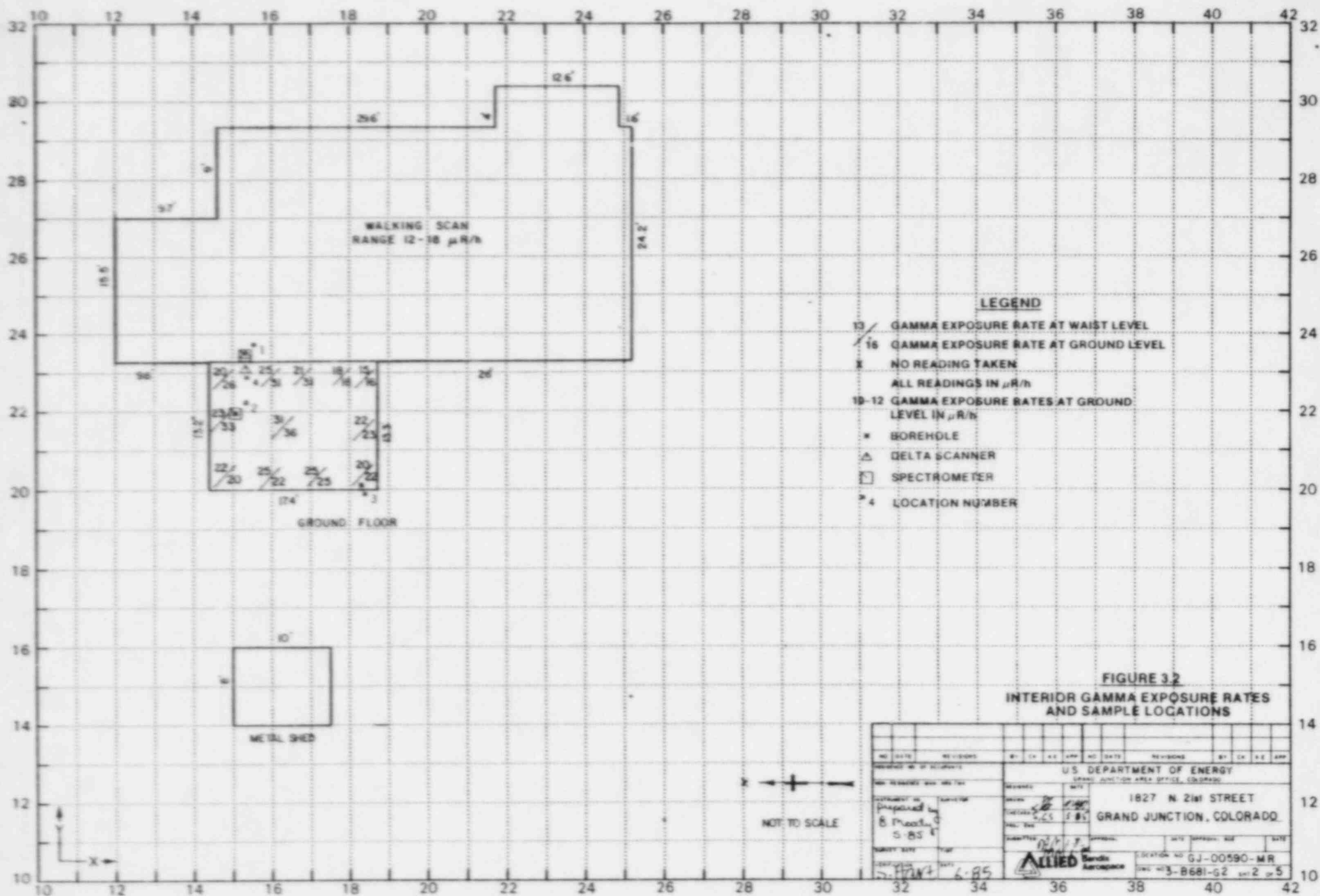
STATE OF COLORADO
TAILINGS REPOSITORY

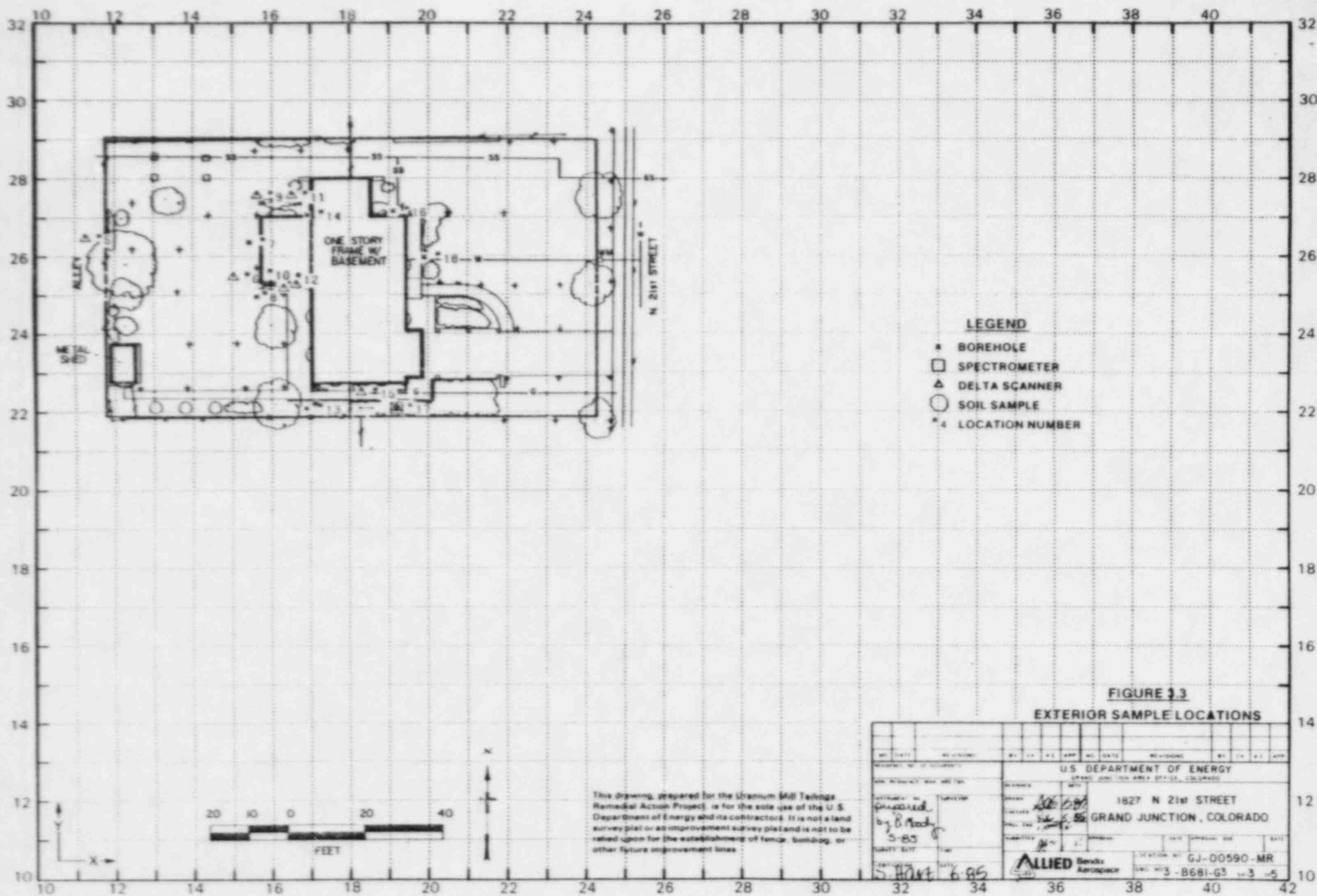
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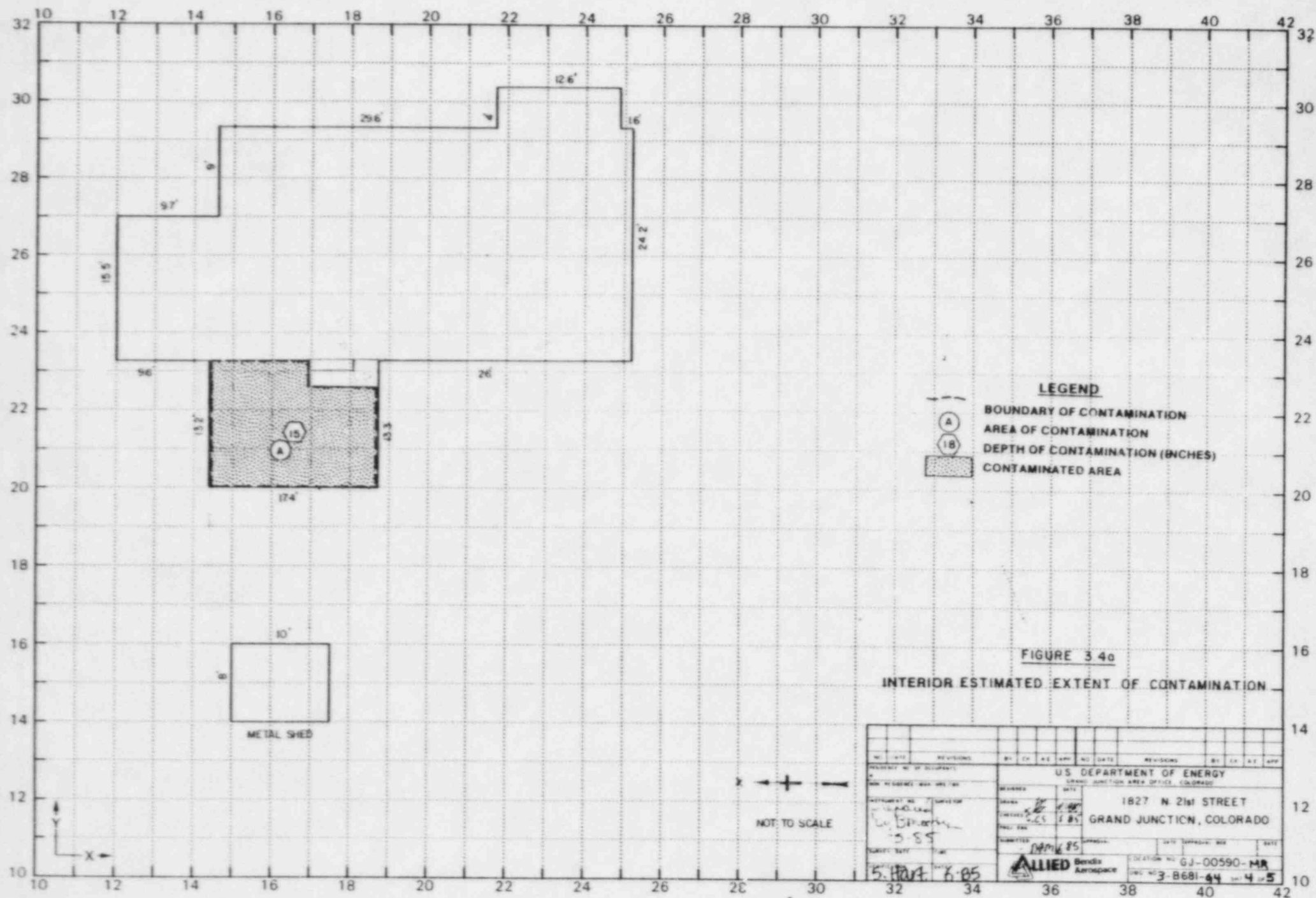
FIGURE 2.2 SITE PLAN

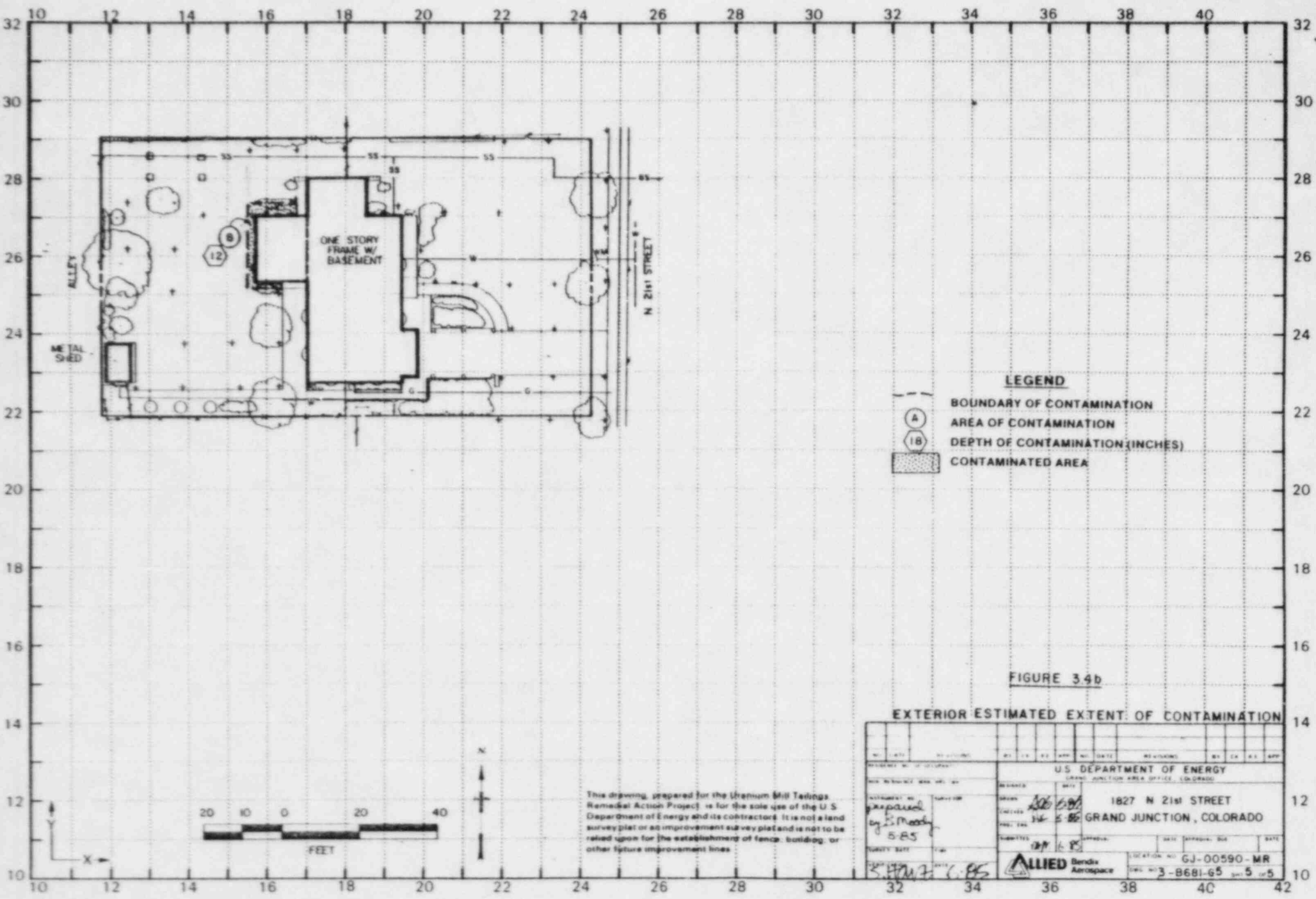
U.S. DEPARTMENT OF ENERGY GRAND JUNCTION PROJECT OFFICE, COLORADO	USE AND NO GJ-0990-FJR
ADDRESS 1827 NORTH 21ST STREET	AUGUST 1965
GRAND JUNCTION, COLORADO	<small>THIS DOCUMENT CONTAINS NEITHER RECOMMENDATIONS NOR CONCLUSIONS OF THE NATIONAL BUREAU OF STANDARDS. IT IS THE PROPERTY OF THE NATIONAL BUREAU OF STANDARDS AND IS LOANED TO YOUR INSTITUTION; IT AND ITS CONTENTS ARE NOT TO BE DISTRIBUTED OUTSIDE YOUR INSTITUTION.</small>
Subj: RADIATION PROTECT. RES. IN RBQ	ON FILE IN 1785
FILE NO. S.C.G.O. F1	











U.S. DEPARTMENT OF ENERGY											
GRAND JUNCTION AREA OFFICE - COLORADO											
PROJECT NO. 1827 N 21st STREET						LOCATION NO. GJ-00590-MR					
DATE 5-85						DATE 3-86					
BY S. MOODY						BY S. MOODY					
CHECKED BY S. MOODY						CHECKED BY S. MOODY					
APPROVED BY S. MOODY						APPROVED BY S. MOODY					
DATE 5-85						DATE 3-86					
ALLIED Bendix Aerospace						ALLIED Bendix Aerospace					

3/85

DOE ID NO. GJ-00590-MR

Date June 3, 1985

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

Official Survey Report

Property Address 1827 North 21st Street

Property Owner Herbert and Norma Weldon

Address of Owner (if different from above)

Report Prepared By Brenda Moody

I. PRESENCE/ABSENCE OF RESIDUAL RADIOACTIVE MATERIALS

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

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

1 1 In open areas.

1 1 Under or around exterior improvements.

1 1 Under or around a typically nonoccupied structure.

1 XXX 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.

XXXXX 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 = 36 uR/h
HOG = 41 uR/h

Memorandum



Bendix Field Engineering Corporation
Grand Junction Operations
Grand Junction, Colorado

Date: May 24, 1985

To: Files

From: Brenda Moody

A handwritten signature in cursive script, appearing to read 'Brenda Moody'.

Subject: Team Leader Notes - GJ-00590-MR (1827 N. 21st St.)

Owners: Herbert and Norma Weldon

Occupancy: 2

Field Crew

B. Moody

M. Gilfillan

M. Duran

V. Young

R. Herman

L. Kula

S. Larsen

Instruments

See Operational Summary Sheet

ORNL and CDH data indicates contamination under the patio slab, in the west wall of the primary structure, and south of the walkway leading to the patio.

A complete walking scan of the exterior of the property was performed. Slightly elevated readings were found in the alley. Elevated readings were found surrounding the enclosed patio area. A walking scan performed on the ground floor and basement showed background readings. A delta was performed on the west wall and floor area. A surface spectrometer measurement was done also. Another delta was performed on the east wall of the patio to confirm readings of shine on that wall.

A borehole was drilled south of the walkway leading to the patio and no contamination was found.

Mr. Weldon was very helpful in supplying a map of his sprinkler system which is throughout the property. He also confirmed our elevated readings by saying he used the tailings under the patio slab when he built it.

No injuries occurred.

All members were alpha scanned.

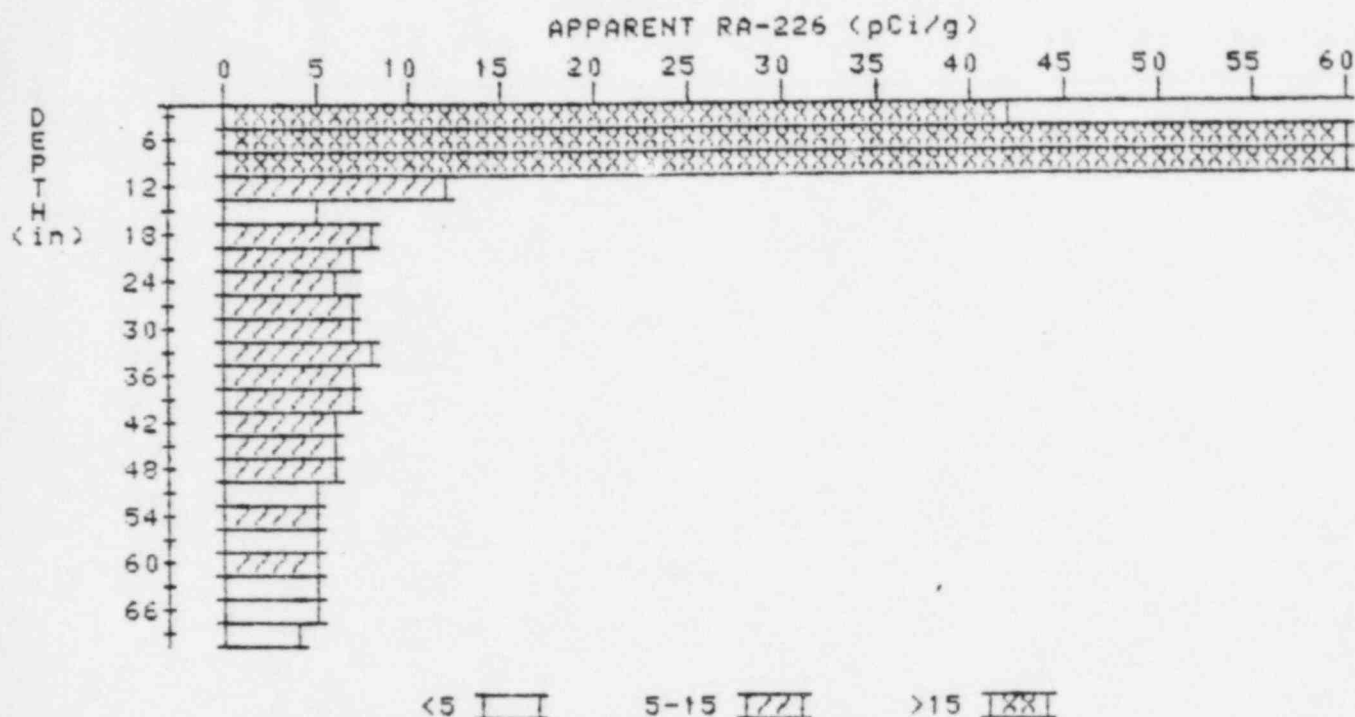
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

2

PROPERTY NUMBER: GJ-00590-MR

HOLE NUMBER: 2

- LOCATION:



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	42.0	42.0
6	68.4	135.4
9	57.1	81.5
12	32.1	11.7
15	18.6	4.9
18	12.8	8.0
21	9.7	7.2
24	8.0	6.0
27	7.4	6.7
30	7.2	6.8
33	7.2	7.6
36	7.0	7.2
39	6.7	6.7
42	6.4	6.4
45	6.1	6.1

48
51
54
57
60
63
66
69

5.8
5.3
5.1
4.9
4.9
4.7
4.6
4.4

6.2
4.8
5.1
4.5
5.3
4.5
4.8
4.4

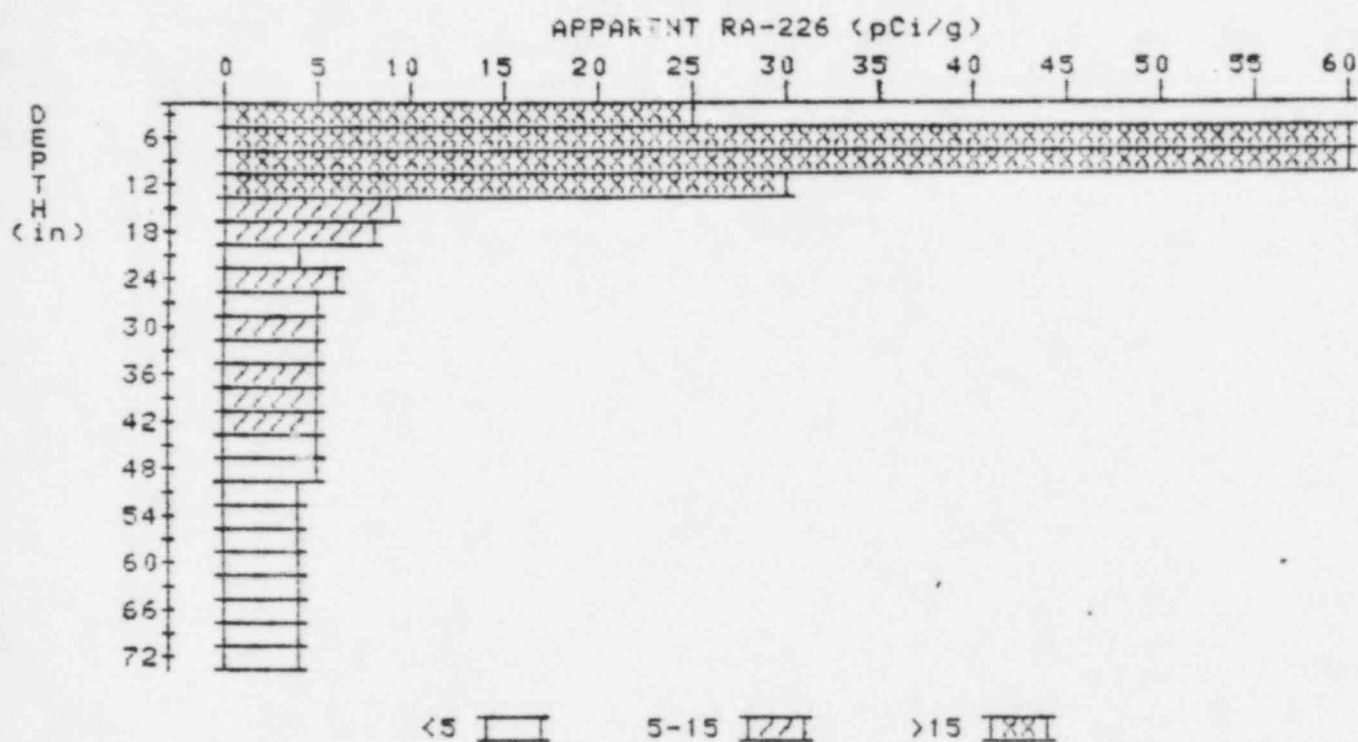
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

3

PROPERTY NUMBER: GJ-00590-MR

HOLE NUMBER: 3

LOCATION:



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	25.0	25.0
6	45.8	68.6
9	53.8	99.7
12	36.0	30.5
15	21.3	9.0
18	13.5	7.6
21	9.0	4.4
24	7.1	5.7
27	6.0	4.8
30	5.6	5.4
33	5.3	4.9
36	5.2	5.0
39	5.2	5.4
42	5.1	5.3
45	4.9	4.9

48	4.7	4.7
51	4.5	4.3
54	4.4	4.4
57	4.3	4.1
60	4.3	4.5
63	4.2	4.2
66	4.1	3.9
69	4.1	4.1
72	4.1	4.1

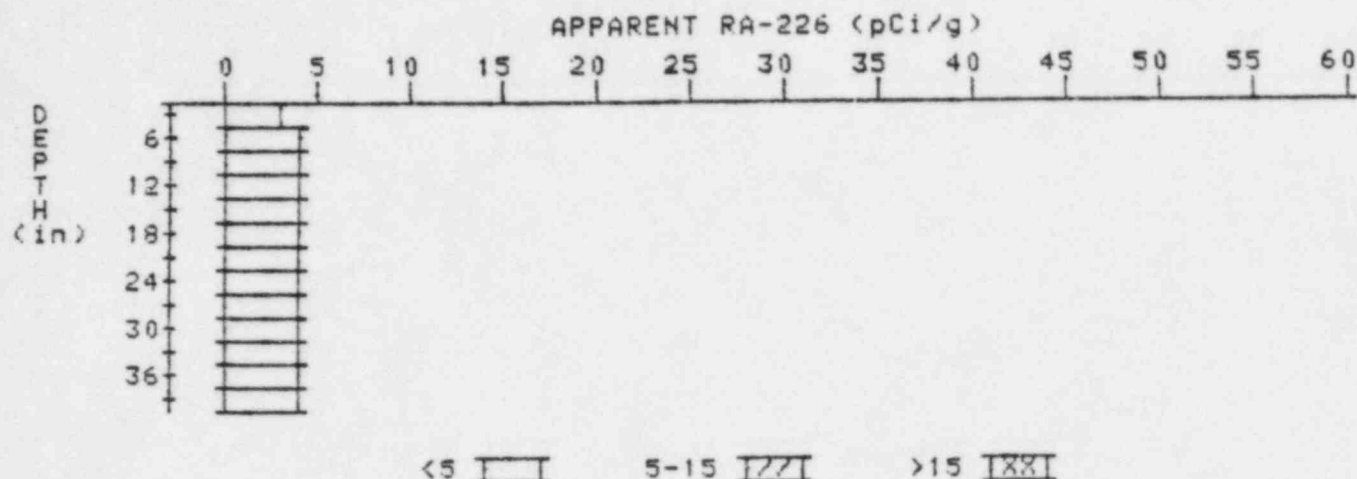
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

7

PROPERTY NUMBER: GJ-00590-MR

HOLE NUMBER: 7

LOCATION: 154264



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.0	3.0
6	3.4	3.8
9	3.6	3.8
12	3.7	3.9
15	3.7	3.7
18	3.7	3.7
21	3.7	3.7
24	3.7	3.5
27	3.8	3.8
30	3.9	3.9
33	4.0	4.2
36	4.0	3.8
39	4.1	4.1

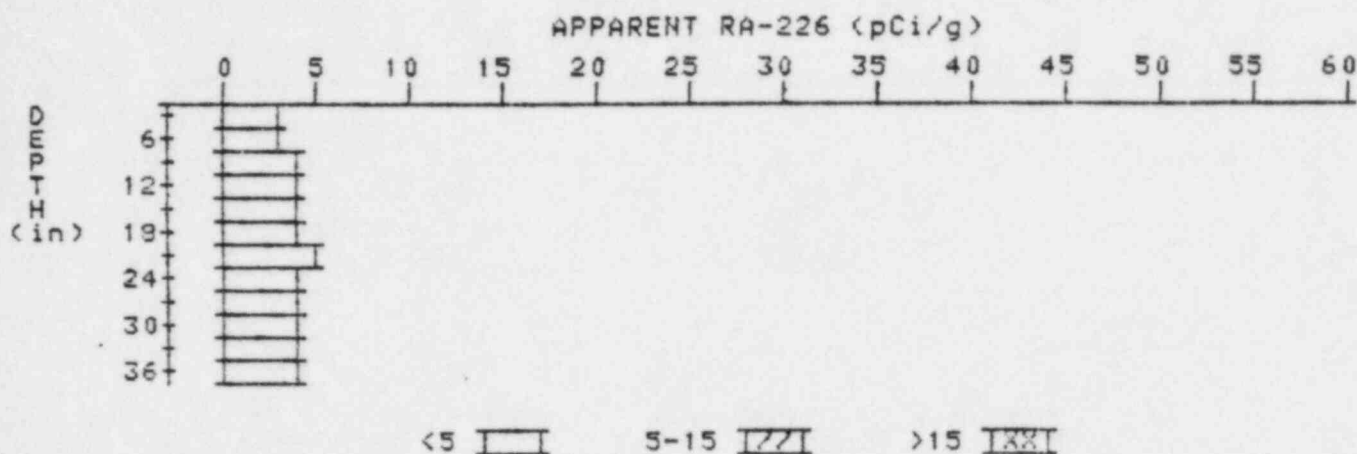
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

8

PROPERTY NUMBER: GJ-00590-MR

HOLE NUMBER: 8

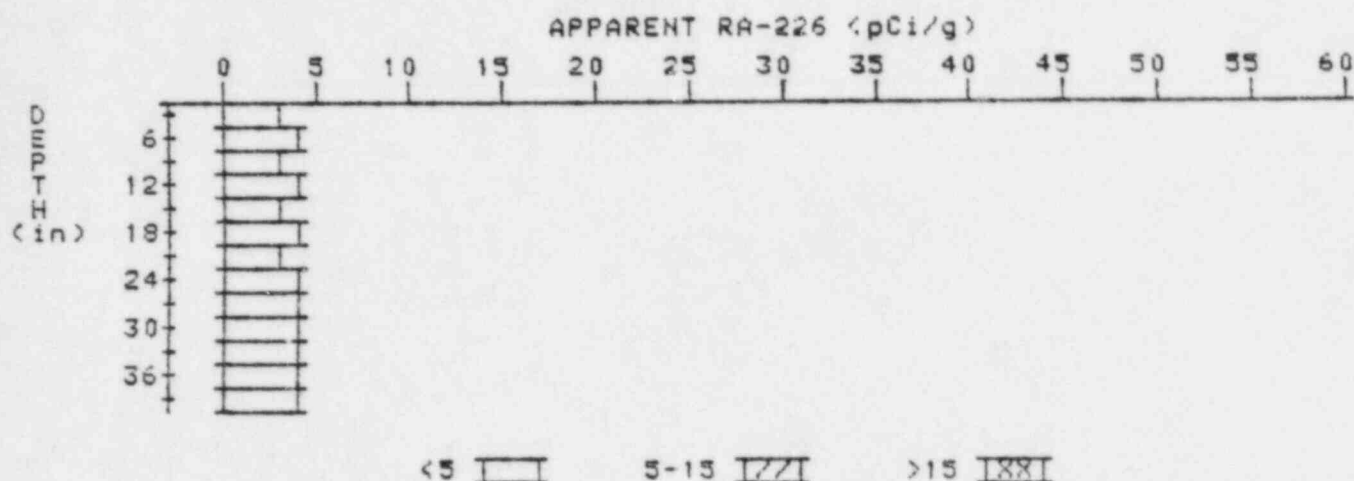
LOCATION: 156250



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.9	2.9
6	3.3	3.5
9	3.6	4.0
12	3.7	3.9
15	3.7	3.5
18	3.8	3.6
21	4.0	4.5
24	3.9	3.5
27	4.0	4.0
30	4.1	4.3
33	4.1	4.5
36	3.9	3.9

APPARENT RADIUM-226 CONCENTRATION 13 DECONVOLUTION GRAPH

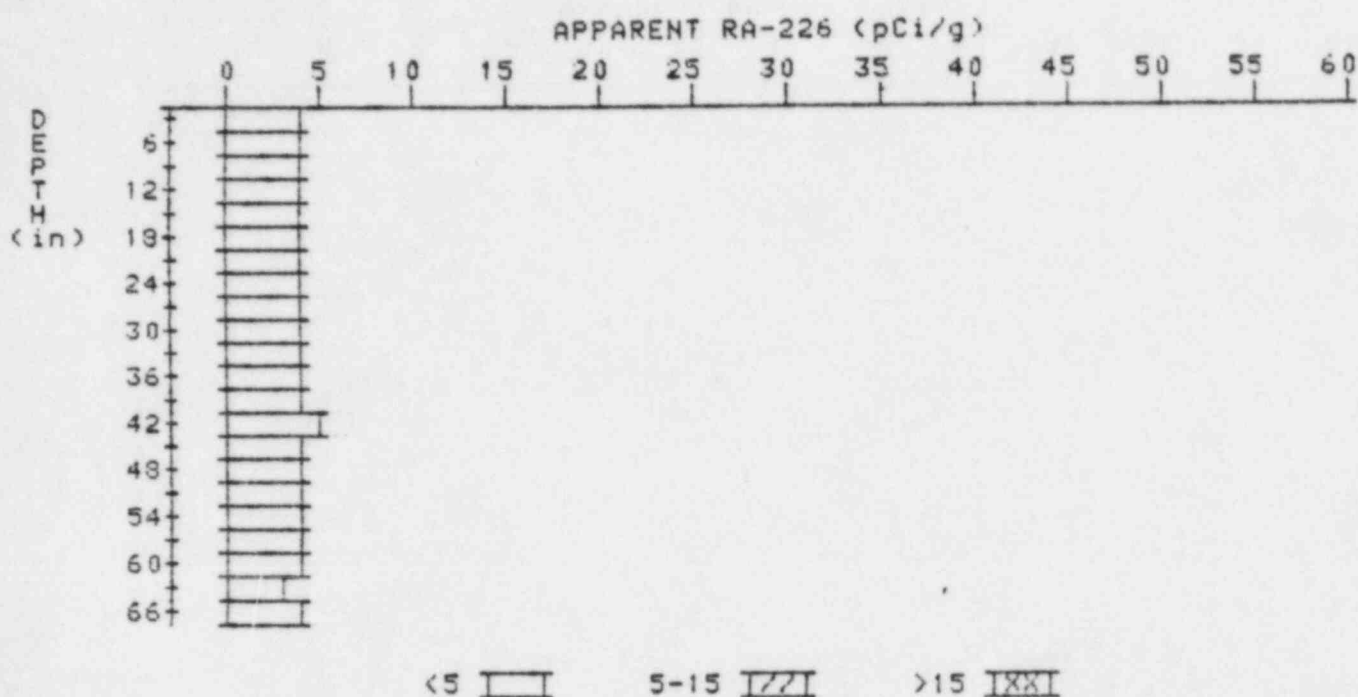
PROPERTY NUMBER: GJ-00590-MR
HOLE NUMBER: 13
LOCATION: 169221



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.8	2.8
6	3.2	3.6
9	3.4	3.2
12	3.7	4.2
15	3.7	3.3
18	3.9	4.4
21	3.9	3.4
24	3.9	4.1
27	3.9	3.9
30	3.9	3.9
33	3.9	3.9
36	3.9	3.9
39	3.9	3.9

APPARENT RADIUM-226 CONCENTRATION 14 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-00590-MR
HOLE NUMBER: 14
LOCATION: 169271



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	4.1
12	3.9	3.9
15	3.9	3.9
18	3.9	3.7
21	4.0	4.2
24	4.0	3.8
27	4.1	4.3
30	4.1	4.3
33	4.0	3.6
36	4.1	4.1
39	4.2	4.2
42	4.3	4.8
45	4.1	3.7
48	4.1	4.1

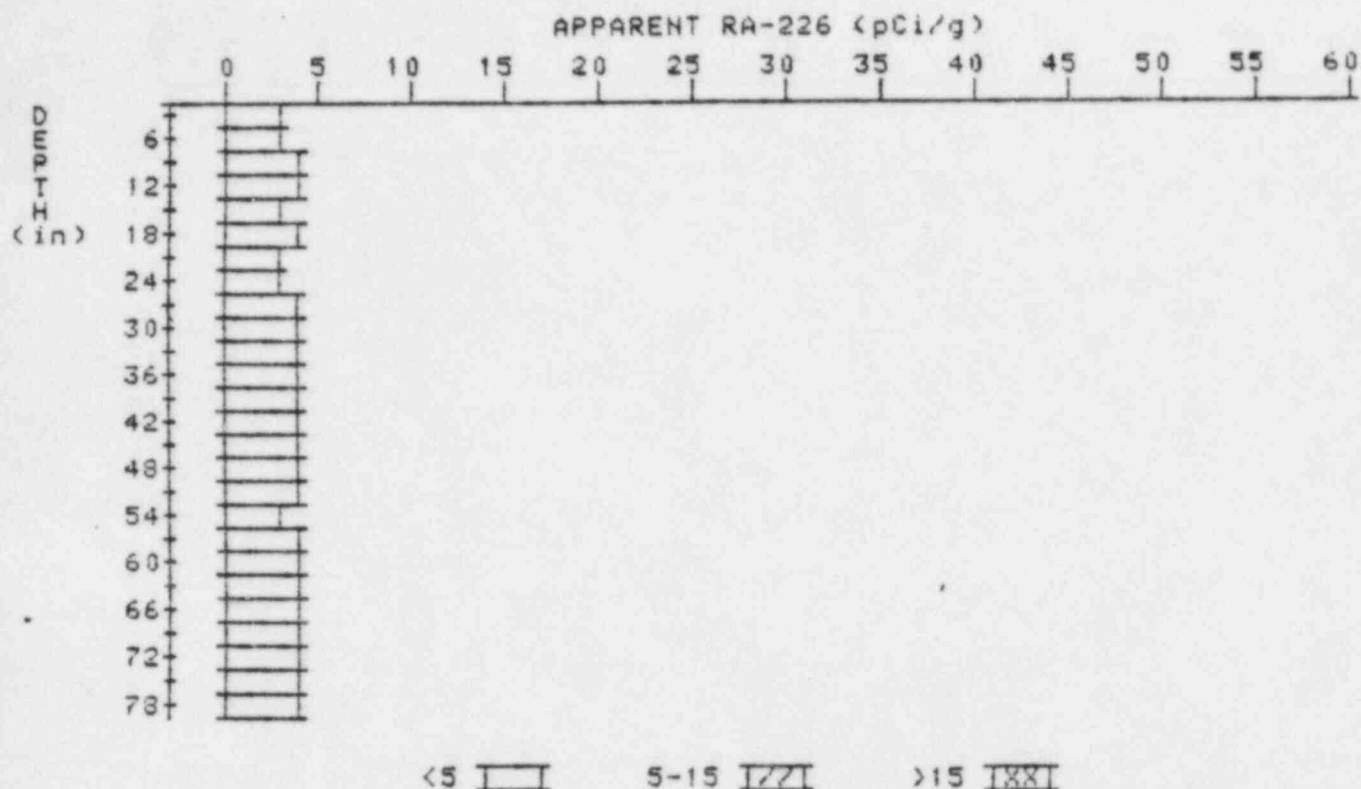
51	4.1	3.9
54	4.2	4.4
57	4.2	4.4
60	4.1	4.1
63	4.0	3.5
66	4.2	4.2

APPARENT RADIUM-226 CONCENTRATION 16 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-00590-MR

HOLE NUMBER: 16

LOCATION: 191272

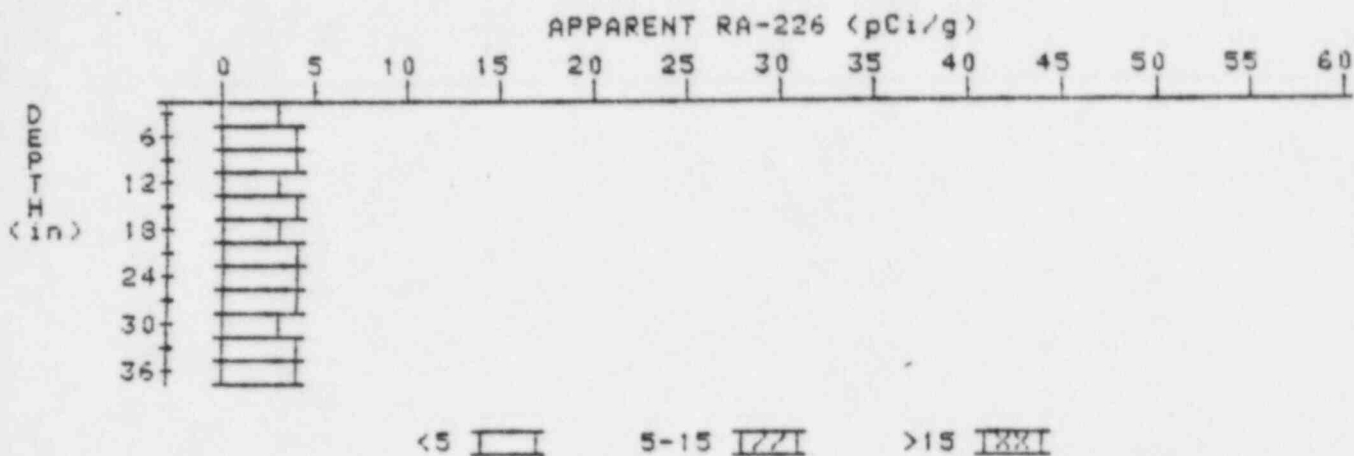


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.9	2.9
6	3.1	2.9
9	3.4	3.8
12	3.5	3.7
15	3.5	3.1
18	3.7	4.2
21	3.6	3.4
24	3.6	3.4
27	3.7	3.9
30	3.7	3.5
33	3.8	4.2
36	3.7	3.5
39	3.7	3.7

42	3.7	3.7
45	3.7	3.5
48	3.8	3.3
51	3.9	4.3
54	3.8	3.4
57	3.9	4.3
60	3.8	3.6
63	3.8	3.6
66	3.9	4.3
69	3.8	3.6
72	3.8	3.6
75	3.9	4.3
78	3.8	3.6

APPARENT RADIUM-226 CONCENTRATION 17 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-00590-MR
HOLE NUMBER: 17
LOCATION: 192221



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.0	3.0
6	3.4	3.3
9	3.6	4.0
12	3.6	3.4
15	3.7	4.1
18	3.6	3.2
21	3.7	3.7
24	3.8	4.0
27	3.8	4.0
30	3.7	3.2
33	3.9	4.4
36	3.8	3.8

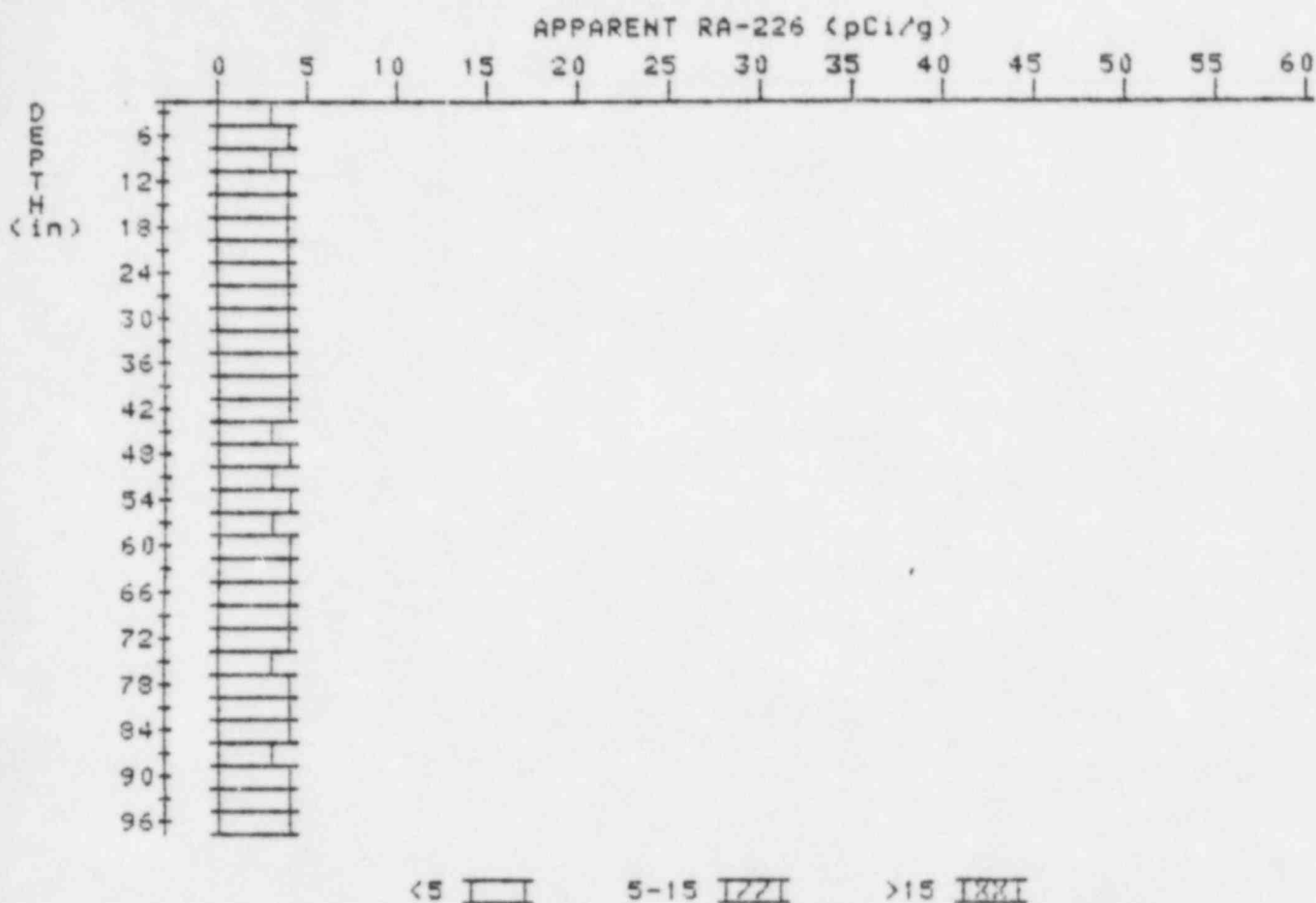
APPARENT RADIUM-226 CONCENTRATION 18

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-00590-MR

HOLE NUMBER: 18

LOCATION: 199260



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.9	2.9
6	3.4	4.1
9	3.5	3.3
12	3.7	4.1
15	3.7	3.7
18	3.7	3.5
21	3.8	4.0
24	3.8	3.8
27	3.8	3.8

30	3.8	3.6
33	3.9	4.3
36	3.8	3.6
39	3.8	3.8
42	3.8	4.0
45	3.7	3.3
48	3.8	4.2
51	3.7	3.3
54	3.8	4.2
57	3.7	3.3
60	3.8	4.2
63	3.7	3.5
66	3.7	3.7
69	3.7	3.7
72	3.7	3.9
75	3.6	3.2
78	3.7	3.9
81	3.7	3.5
84	3.8	4.2
87	3.7	3.3
90	3.8	4.0
93	3.8	3.8
96	3.8	3.8

