

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-11489-RS
ADDRESS: 523 28 3/4 ROAD

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
Grand Junction, Colorado 81502

APPROVED BY

M.K. Tucker *6/20/85*

M. TUCKER
DOE PROJECT ENGINEER

DATE

August 8, 1985

REAL1489:REA-614

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PDR WASTE PDR
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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-11489-RS, is a single-family residence located at 523 28 3/4 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, 40 cu. yd.; interior, 0 cu. yd.

Estimated cost to perform remedial action, including dislocation when applicable, is \$2,880. Remedial action on this property will take approximately 14 days to complete.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 523 28 3/4 Road, Grand Junction, Colorado

Zoning: Residential (RSF-8)

Lot Size: Approximately 8,400 sf (0.19 acres)

Legal Description: Beginning 30 feet south and 25 feet west of the northeast corner of the SW 1/4 SE 1/4 Section 7, T1S, R1E, U.M., thence west 100 feet, thence south 84 feet, thence east 100 feet, thence north 84 feet to beginning, City of Grand Junction, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 3 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:	Elm Avenue
South:	Single-family residence
East:	28 3/4 Road
West:	Single-family residence

2.2 Existing Facilities and Structures

Primary Structure:

Type:	Single-story residence
Size:	Approximately 991 sf
Construction Date:	1900
Construction:	Wood-frame
Foundation:	Assumed concrete foundation wall and footing
Footing Depth:	Approximately 24" to bottom of footing from grade
Basement:	None
Crawl Space:	Yes
Condition:	Fair

Other Structures:

Type:	Wood shed
Size:	Approximately 245 sf
Construction:	Wood-frame
Foundation:	None (dirt)
Condition:	Poor

General Remarks:

General landscaping and exterior improvements are good. 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: Modifications, alterations, and additions to 3 sides of the original structure.

Architectural Significance: None known

Historical Significance: None known

3.0 RADIOLOGIC SURVEY

3.1 Introduction

Radiologic data were collected by Bendix at DOE ID No. GJ-11489-RS on July 3, 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 east of the primary structure along 28 3/4 Road.

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, 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 16 uR/h
Highest Outside Gamma Reading (HOG): 56 uR/h

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

3.2.2 Interior Findings

Background Readings: 13 to 15 uR/h
Highest Inside Gamma Reading (HIG): 15 uR/h

Interior gamma exposure-rate measurements are summarized in Appendix Table 3.2.

3.3 Boreholes, Soil Samples, and Other Measurements

Areas which displayed elevated gamma levels were further investigated; these areas are shown in Appendix Figure 3.2. Data from these investigations are included in Appendix Table 3.1

3.4 Eadon/Radon Daughter Concentration (RDC)

Determined by CDH: 0.011 gross working level (WL). No additional RDC measurements were taken by Bendix.

3.5 Extent of Contamination

Appendix Figure 3.3 shows identified areas and estimated depths of contamination on this property, based on assessments of all measurements taken. As noted in this figure, areas recommended for remedial action that contain identified residual radioactive materials are:

- (Area A) Surface Material: Gravel
 Direction From Primary Structure: Northwest
 Other Directions: East of shed
 Total Depth of Contamination: 42 inches
 Comments: The sewer line is bedded in tailings.
 Approximate Square Footage: 160
- (Area B) Surface Material: Soil
 Direction From Primary Structure: Northeast
 Other Directions: Adjacent to 28 3/4 Road
 Total Depth of Contamination: 6 inches
 Comments: This area is in a road right-of-way.
 Approximate Square Footage: 60
- (Area C) Surface Material: Lawn
 Direction From Primary Structure: East
 Other Directions: Adjacent to 28 3/4 Road right-of-way
 Total Depth of Contamination: 6 inches
 Approximate Square Footage: 250
- (Area D) Surface Material: Lawn
 Direction From Primary Structure: Southeast
 Other Directions: Adjacent to 28 3/4 Road right-of-way
 Total Depth of Contamination: 12 inches
 Approximate Square Footage: 160
- (Area E) Surface Material: Soil
 Direction From Primary Structure: East
 Other Directions: Adjacent to 28 3/4 Road
 Total Depth of Contamination: 6 inches
 Comments: This area is in a road right-of-way.
 Approximate Square Footage: 226
- (Area F) Surface Material: Soil
 Direction From Primary Structure: Southeast
 Other Directions: Adjacent to 28 3/4 Road
 Total Depth of Contamination: Estimated at 12 inches
 Comments: This area is in a road right-of-way. The
 depth of contamination is based on data collected
 in Area D.
 Approximate Square Footage: 85

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-11489, includes removal of all areas identified as containing radioactive material (as discussed in Section 3.5 and shown in Appendix Figure 3.3) and transport of removed material to the disposal site.

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 \$2,880.

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

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

5.0 REFERENCES

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

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

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

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

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

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

U.S. Department of Energy, Programmatic Memorandum of Agreement (DOE No. DE-GM04-84AL28460) between the U.S. Department of Energy, the Advisory Council on Historic Preservation, and the Colorado State Historic Preservation Officer, for UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico, 1984.

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

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

6.0 APPENDIX

This Appendix contains the following:

Appendix Tables:

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

Appendix Figures:

Figure 2.1	Vicinity Map
Figure 2.2	Site Plan
Figure 3.1	Exterior Grid-Point Exposure Rates
Figure 3.2	Exterior Sample Locations
Figure 3.3	Exterior Estimated Extent of Contamination

Official Survey Report

Memo of Understanding

Team Leader Notes

Deconvolution Graphs (Apparent Radium-226 Concentration)

Exterior Gamma Scan Map

Radium Concentrations at Exterior Locations

DOE ID #GJ-11489-RS

523 28 3/4 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	181260	03	TC	5.1		*	Sewer line DC = 42 inches Based on the deconvolution graph
		06	TC	5.2		*	
		09	TC	5.3		*	
		12	TC	5.7		*	
		15	TC	6.4		*	
		18	TC	8.5		*	
		21	TC	11.7		*	
		24	TC	17.3		*	
		27	TC	28.2		*	
		30	TC	41.0		*	
		33	TC	49.8		*	
		36	TC	39.2		*	
		39	TC	22.4		*	
		42	TC	12.6		*	
		45	TC	8.4		*	
		48	TC	6.4		*	
		51	TC	5.3		*	
		54	TC	4.8		*	
		57	TC	4.8		*	
		60	TC	4.6		*	
		63	TC	4.5		*	
		66	TC	4.5		*	
		69	TC	4.3		*	
		72	TC	4.1		*	
		75	TC	3.9		*	
		78	TC	4.0		*	
		81	TC	3.9		*	
		84	TC	4.1		*	
		87	TC	4.1		*	
		90	TC	4.1		*	
2	188213	03	TC	2.9		*	Sewer line DC = 0 inches
		06	TC	3.2		*	
		09	TC	3.4		*	
		12	TC	3.4		*	
		15	TC	3.4		*	
		18	TC	3.6		*	
		21	TC	3.6		*	
		24	TC	3.7		*	
		27	TC	3.8		*	
		30	TC	3.7		*	
		33	TC	3.7		*	
		36	TC	3.6		*	
		39	TC	3.5		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-11489-RS

523 28 3/4 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	188213	42	TC	3.5		*	
		45	TC	3.5		*	
		48	TC	3.5		*	
		51	TC	3.5		*	
		54	TC	3.6		*	
		57	TC	3.6		*	
		60	TC	3.6		*	
		63	TC	3.7		*	
		66	TC	3.6		*	
3	219199	03	TC	2.8		*	Southeast corner of primary structure DC = 0 inches
		06	TC	3.3		*	
		09	TC	3.5		*	
		12	TC	3.5		*	
		15	TC	3.5		*	
		18	TC	3.5		*	
		21	TC	3.5		*	
		24	TC	3.5		*	
		27	TC	3.6		*	
		30	TC	3.8		*	
		33	TC	3.8		*	
		36	TC	3.7		*	
4	225234	03	TC	3.1		*	Water line DC = 0 inches
		06	TC	3.4		*	
		09	TC	3.6		*	
		12	TC	3.6		*	
		15	TC	3.6		*	
		18	TC	3.7		*	
		21	TC	3.6		*	
		24	TC	3.8		*	
		27	TC	3.9		*	
		30	TC	3.9		*	
		33	TC	3.9		*	
		36	TC	3.8		*	
		39	TC	3.8		*	
		42	TC	3.7		*	
		45	TC	3.7		*	
		48	TC	3.7		*	
		51	TC	3.7		*	
		54	TC	3.8		*	
		57	TC	3.7		*	
		60	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.		
5	228223	00	DS	1.3		*	Gas line
		22	DS	1.5		*	On gas line
6	230200	00	DS	<1.0		*	Background
		03	TC	2.8		*	DC = 0 inches
		06	TC	3.3		*	
		09	TC	3.4		*	
		12	TC	3.4		*	
		15	TC	3.5		*	
		18	TC	3.5		*	
		21	TC	3.5		*	
		24	TC	3.5		*	
		27	TC	3.5		*	
		30	TC	3.6		*	
		33	TC	3.6		*	
		36	TC	3.6		*	
7	249236	03	TC	3.0		*	Water meter pit
		06	TC	3.4		*	DC = 0 inches
		09	TC	3.4		*	
		12	TC	3.5		*	
		15	TC	3.4		*	
		18	TC	3.5		*	
		21	TC	3.4		*	
		24	TC	3.5		*	
		27	TC	3.6		*	
		30	TC	3.6		*	
		33	TC	3.6		*	
		36	TC	3.6		*	
		39	TC	3.6		*	
		42	TC	3.5		*	
		45	TC	3.6		*	
		48	TC	3.6		*	
		51	TC	3.7		*	
		54	TC	3.7		*	
		57	TC	3.8		*	
8	252190	00	DS	4.3		*	East of primary
		06	DS	2.1		*	structure

Radium Concentrations at Exterior Locations

DOE ID #GJ-11489-RS

523 28 3/4 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.		
9	254207	00	DS	4.4		*	East of primary structure
		06	DS	1.5		*	
10	256215	00	DS	2.4		*	East of primary structure
		06	DS	1.9		*	
11	257190	03	TC	9.3		*	Southeast of primary structure DC = 12 inches Based on the deconvolution graph.
		06	TC	7.3		*	
		09	TC	5.9		*	
		12	TC	5.0		*	
		15	TC	4.4		*	
		18	TC	4.2		*	
		21	TC	4.1		*	
		24	TC	4.2		*	
		27	TC	3.9		*	
		30	TC	3.9		*	
		33	TC	3.9		*	
		36	TC	3.8		*	
		39	TC	3.8		*	
		42	TC	3.7		*	
12	258255	00	DS	5.0		*	East of primary structure near road
		06	DS	1.7		*	
13	259205	00	DS	7.1		*	East of primary structure near road
		06	DS	2.7		*	
14	262229	00	DS	3.2		*	East of primary structure near road
		06	DS	2.3		*	
15	263185	00	DS	2.4		*	East of primary structure near road
		06	DS	1.9		*	
16	263215	00	DS	4.6		*	East of primary structure near road
		06	DS	1.9		*	
17	263260	00	DS	3.6		*	East of primary structure near road
		06	DS	1.4		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-11489-RS

523 28 3/4 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.		
18	265197	00	DS	2.2		*	East of primary structure near road
		06	DS	2.6		*	

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 = 07-03-85
Team Leader = TRU

Table 3.2

Summary of Interior Gamma Exposure Rates

DOE ID No. GJ-11489-RS

523 28 3/4 Road

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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)
Cellar	*	*	*	*	16-17	*
Ground Floor	*	*	*	*	13-15	*
Shed	*	*	*	*	14-15	*

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

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-11489-RS

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<u>AREA</u>	<u>CALCULATIONS(ft)</u>	<u>SF</u>	<u>DEPTH(ft)</u>	<u>CF</u>	<u>CUBIC YARDS</u>
EXTERIOR					
A	5 x 32	= 160	x 3.5	= 560	
B	8 x 6	= 48			
	3 x 4	= 12			
		<hr/>			
		60	x 0.5	= 30	
C	8 x 15	= 120			
	5 x 10	= 50			
	4 x 20	= 80			
		<hr/>			
		250	x 0.5	= 125	
D	8 x 20	= 160	x 1.0	= 160	
E	7 x 23	= 161			
	5 x 10	= 50			
	3 x 5	= 15			
		<hr/>			
		226	x 0.5	= 113	
F	5 x 12	= 60			
	3 x 5	= 15			
	2 x 5	= 10			
		<hr/>			
		85	x 1.0	= 85	
		<hr/>			
TOTAL VOLUME - EXTERIOR				= 1,073	= 1,073/27 = 40

See Appendix Figure 3.3 For Areas

Table 4.2
Estimated Cost of Decontamination and Restoration
DOE ID No. GJ-11489-RS

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EXTERIOR

Remove/store/replace personal property items

Lump sum \$ 100

Remove identified residual radioactive material

6 cy @ \$44/cy (manual-open) 264

34 cy @ 14.50/cy (machine-open) 493

Replace sewer line

35 lf @ \$2/lf 70

Backfill areas

with topsoil - 11 cy @ \$9.50/cy 105

with roadbase - 29 cy @ \$11.50/cy 334

with sod - 410 sf @ \$.40/sf 164

with bushes - 3 ea @ \$20/ea 60

with trees - 2 ea @ \$40/ea 80

Cleanup

Lump sum 100

TOTAL EXTERIOR \$ 1,770

TOTAL INTERIOR 0

ACCESS CONTROL 100

SUBTOTAL \$ 1,870

CONTINGENCY @ 10% 187

SUBTOTAL \$ 2,057

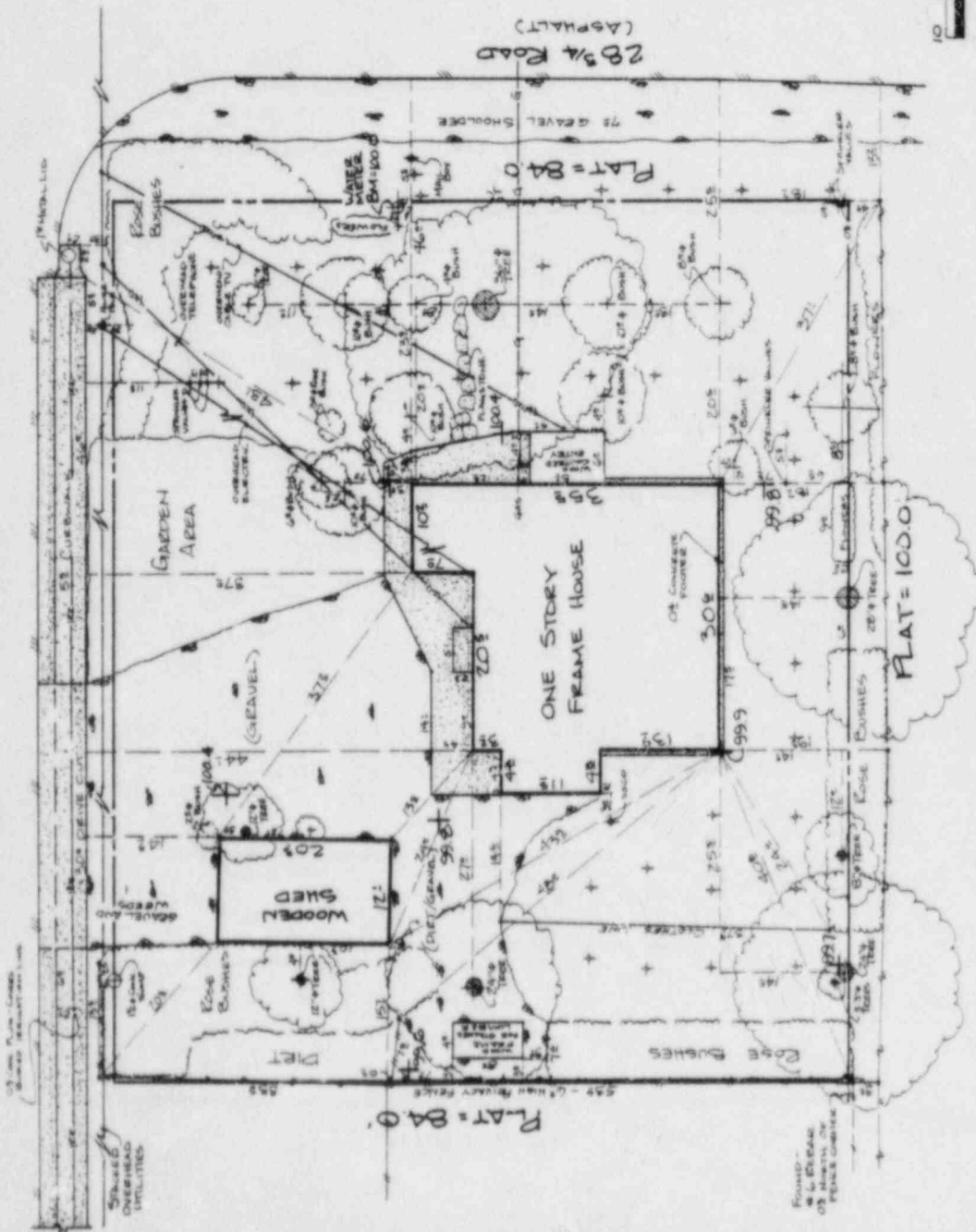
CONTRACTOR OVERHEAD & PROFIT @ 40% 823

GRAND TOTAL \$ 2,880

CK080685

REAL1489/REA-614/LMR

ELM AVENUE
(ASPHALT)



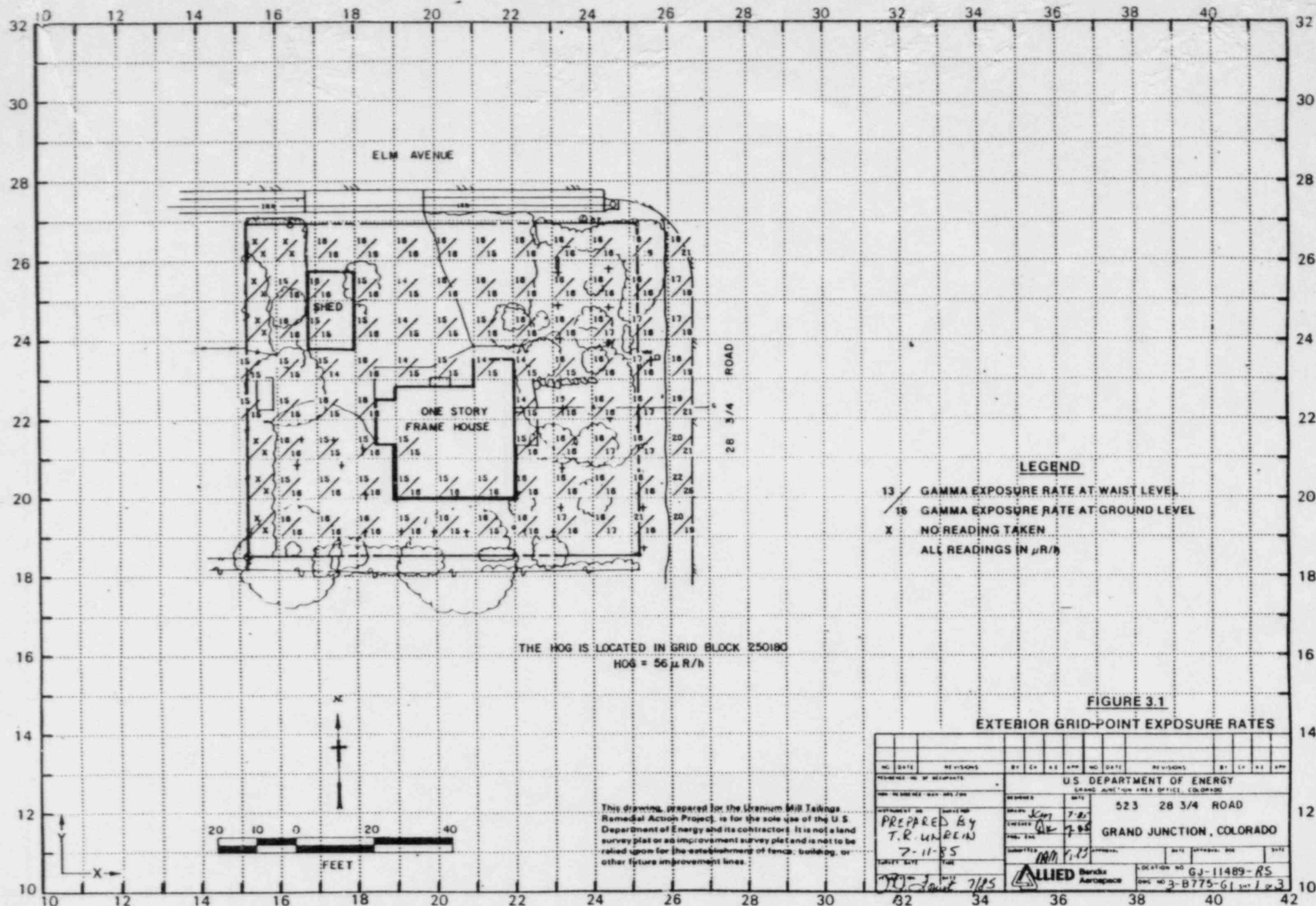
BEGINNING 30.0 FEET SOUTH AND 25.0 FEET WEST
OF THE NORTHEAST CORNER OF THE SW 1/4 SE 1/4
SECTION 7, T.15, R.1E., U.M., CITY OF GRAND JUNCTION,
COLORADO; THENCE WEST 100.0 FEET, THENCE
SOUTH 84.0 FEET, THENCE EAST 100.0 FEET,
THENCE NORTH 84.0 FEET TO BEGINNING.

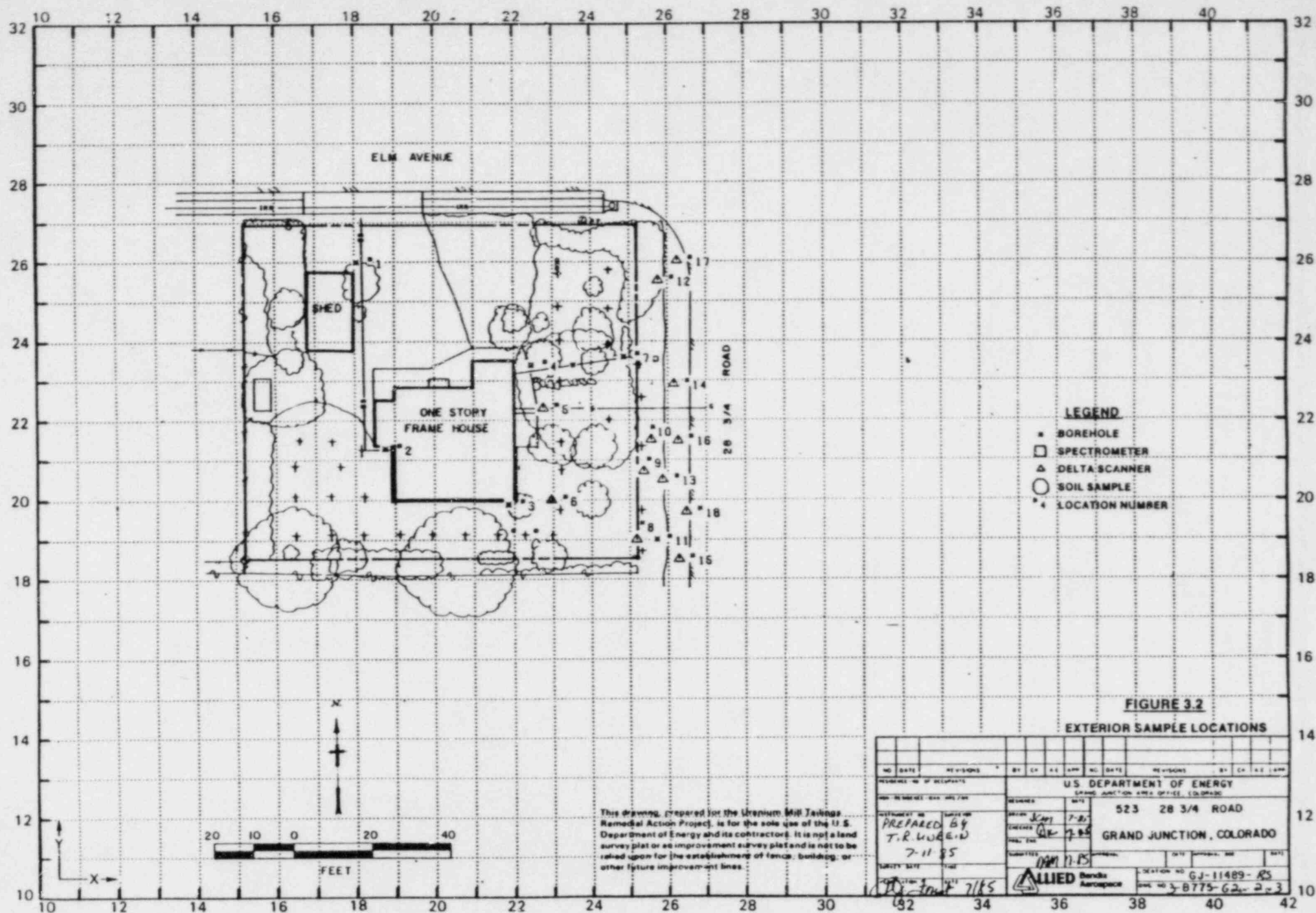
FIGURE 2.2 SITE PLAN

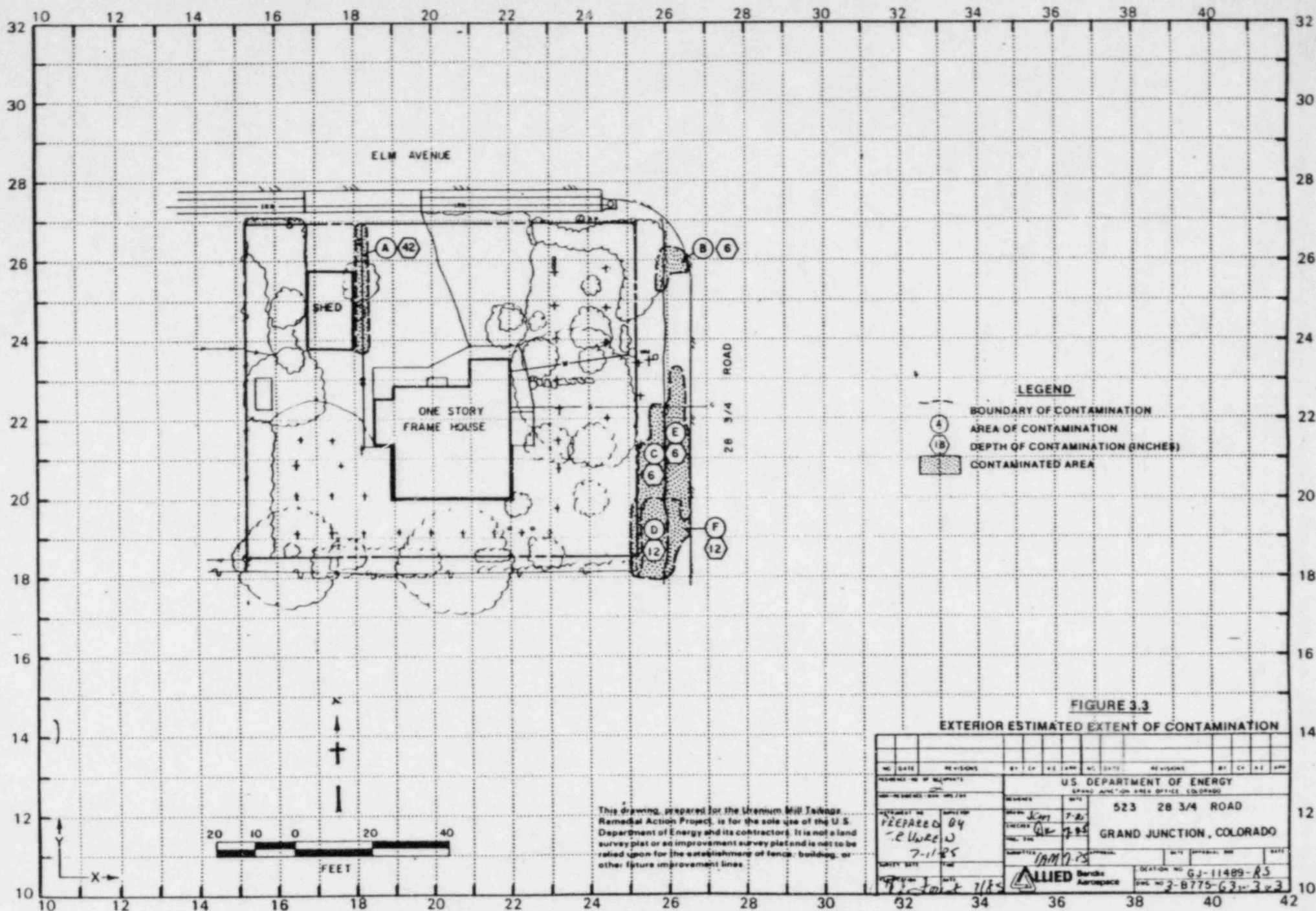
TAX. SCHEDULE No. 2943-074-00-023

U.S. DEPARTMENT OF ENERGY	DCE ID NO.
GRAND JUNCTION PROJECT OFFICE, COLORADO	GJ1148925
ADDRESS 523 28 3/4 ROAD	APPROVED
GRAND JUNCTION, COLORADO	APPROVED
SURV. GJ10.25.85	DRAFT RSK 6.26.85
DRAWING NO. 5. C. 715 F. 1	SHEET 1 OF 1

This drawing, prepared for the Grand Junction Project, is for the purpose of showing the location of the proposed project. It is not a legal document and should not be used for the establishment of fence, building, or other future improvement lines.







3/85

DOE ID NO. GJ-11489-RS Date July 12, 1985

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

Official Survey Report

Property Address 523 28 3/4 Road
Property Owner Irwin E. Dutton
Address of Owner (if different from above) Same
Report Prepared By T.R. Unrein

I. PRESENCE/ABSENCE OF RESIDUAL RADIOACTIVE MATERIALS

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

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

1 XX 1 In open areas.

1 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 = 15 uR/h
HOG = 56 uR/h



Bendix
Aerospace

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Grand Junction, CO 81502-1569
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Telex: 454-338

July 23, 1985

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

ATTN: Coleen Campbell

Dear Coleen:

The following is in response to your questions and comments concerning Department of Energy (DOE) Identification (ID) number GJ-11489-RS (537 28-3/4 Road), dated 22 July 1985.

1. Please find enclosed a copy of the interior map which shows the approximate location and dimensions of the cellar.
2. There is no crawl space on this property, so no gamma readings were taken.

Thank you for your time and cooperation. If you should have additional questions or comments you may contact me at 242-8621, extension 418.

Very truly yours,

A handwritten signature in cursive script, reading 'Thomas R. Unrein'.

Thomas R. Unrein
RSD Survey Team Leader

TRU:pr

MEMORANDUM

ALLIED Bendix
Aerospace

Bendix Field Engineering Corporation
Grand Junction Operations
Grand Junction, Colorado

Date: July 3, 1985

To: Files

From: Thomas R. Unrein

Subject: Team Leader Notes - GJ-11489-RS

Address: 537 28-3/4 Road

Owner: Irwin E. Dutton

Team Members

T. Unrein (Team Leader)
D. Clay
D. Bell
K. Roemer

V. Hebel
D. Dow
V. Rothman
R. Wilkins

Instruments

Total Count: C-4005, C-9202
Delta Scintillometer: C-4068, C-3942
Crutch Scintillometer: C-1071, C-1205, C-1181, C-1150, C-1136

Bendix crew left the office at 7:36 AM; as we proceeded to our property we were involved in a three-car accident. There were no injuries and only minor damage to the vehicles.

At the property I talked with the owner; he informed me that he once worked at the Climax mine, and the only area where tailings were used was the sewer line. The tailings were used to bed the pipe. He also stated that from his house (west side) to the south part of his garage he had previously excavated the pipe and tailings. He did not remove any pipe or tailings from that point to

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to the street. Two holes were augered, one by the house which showed no contamination, and one by the garage which showed contamination. The owner also stated that the pipe is approximately 36-inches deep.

We found no interior contamination.

Except for the sewer line, the only other area of contamination was found east of the primary structure.

During the survey, D. Clay (team member) was injured by stepping on a nail. I sent him to the doctor for a tetanus vaccination.

The survey was completed by 12:30 PM. All team members were frisked before going to another property.

Note: We found spillover contamination on this property (GJ-11489); the contamination extended south to 521 28-3/4 Road. The contamination is between the road and the property; the range was 400 counts per second (cps). The necessary paperwork has been generated.

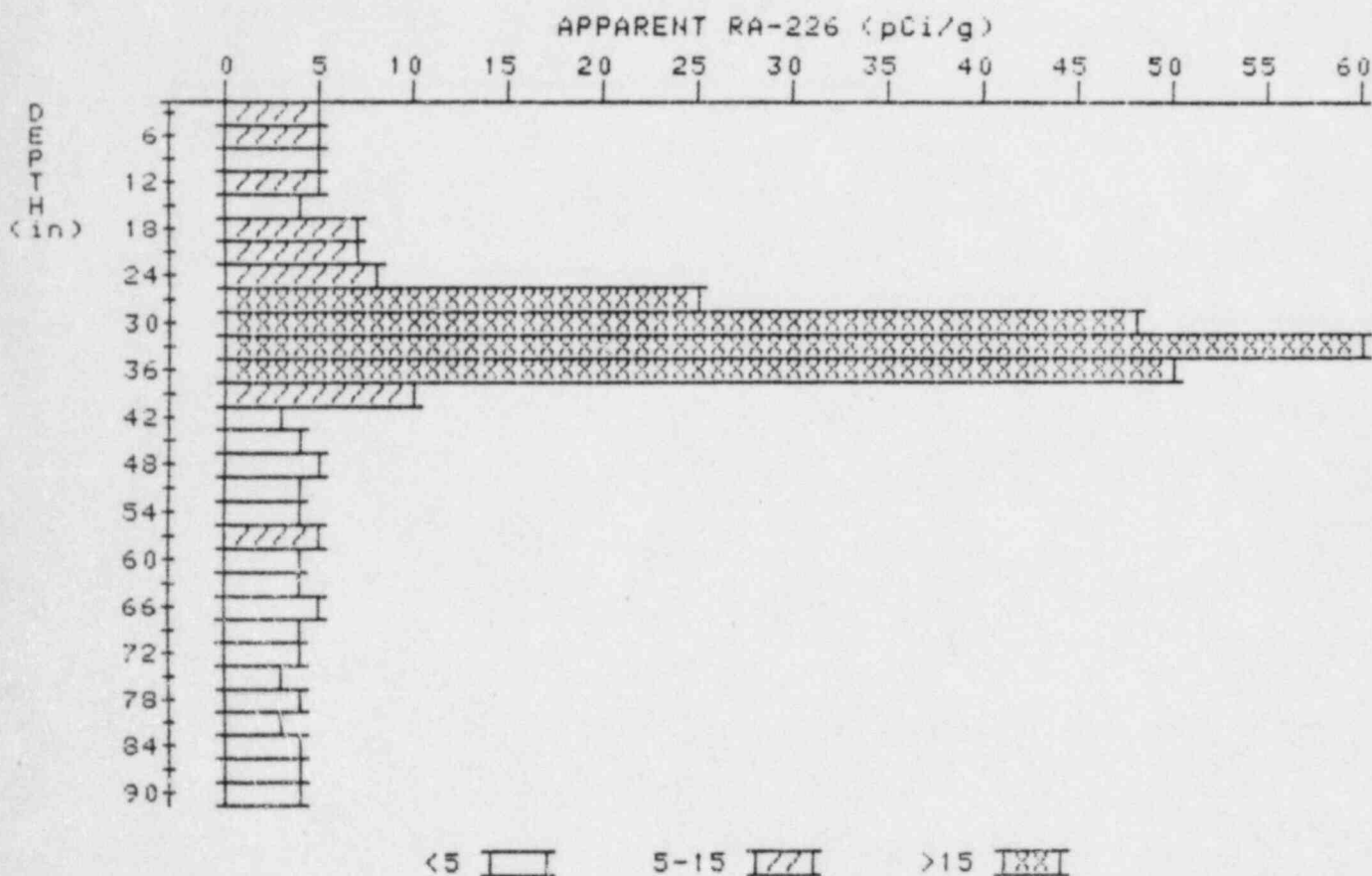
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

1

PROPERTY NUMBER: GJ-11489-RS

HOLE NUMBER: 1

LOCATION: 181260



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.1	5.1
6	5.2	5.2
9	5.3	4.8
12	5.7	5.2
15	6.4	3.9
18	8.5	6.5
21	11.7	7.4
24	17.3	7.9
27	28.2	24.8
30	41.0	48.1

33	49.8	84.3
36	39.2	50.2
39	22.4	10.0
42	12.6	2.6
45	8.4	4.5
48	6.4	4.8
51	5.3	4.2
54	4.8	3.9
57	4.8	5.2
60	4.6	4.4
63	4.5	4.3
66	4.5	4.9
69	4.3	4.3
72	4.1	4.1
75	3.9	3.4
78	4.0	4.4
81	3.9	3.4
84	4.1	4.5
87	4.1	4.1
90	4.1	4.1

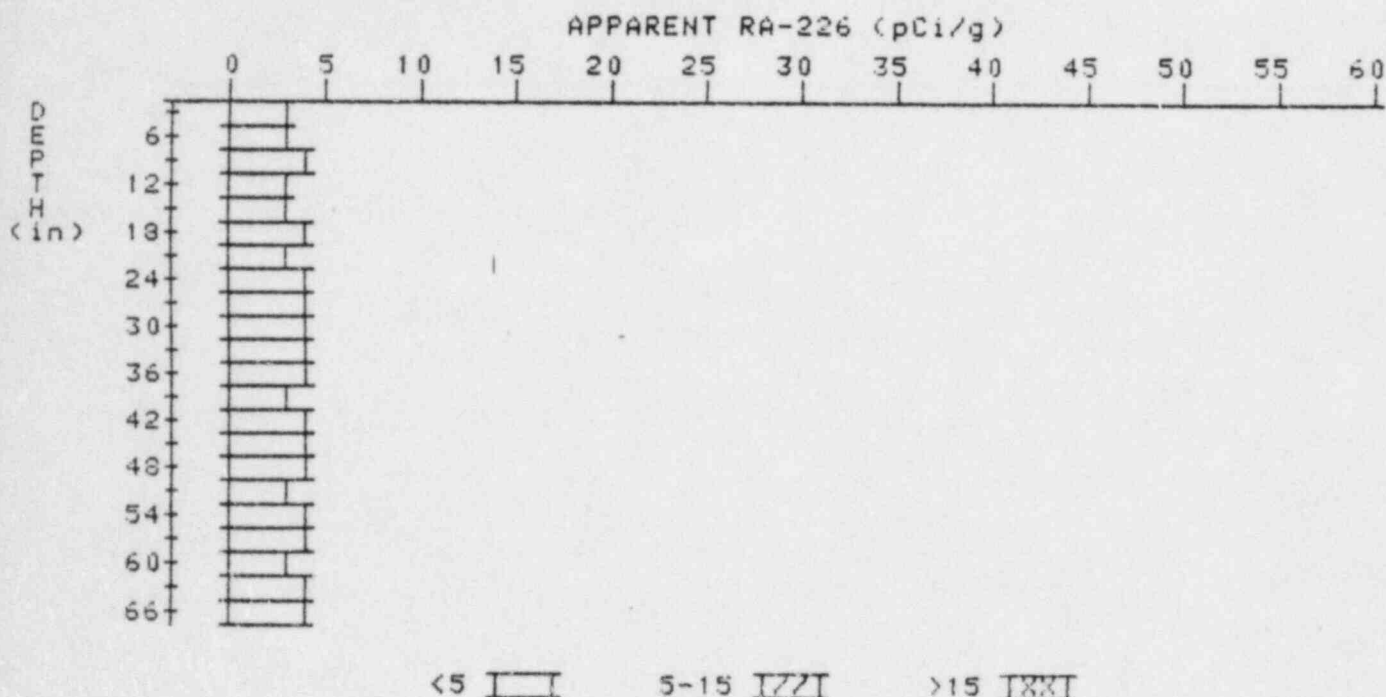
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

2

PROPERTY NUMBER: GJ-11489-RS

HOLE NUMBER: 2

LOCATION: 188213

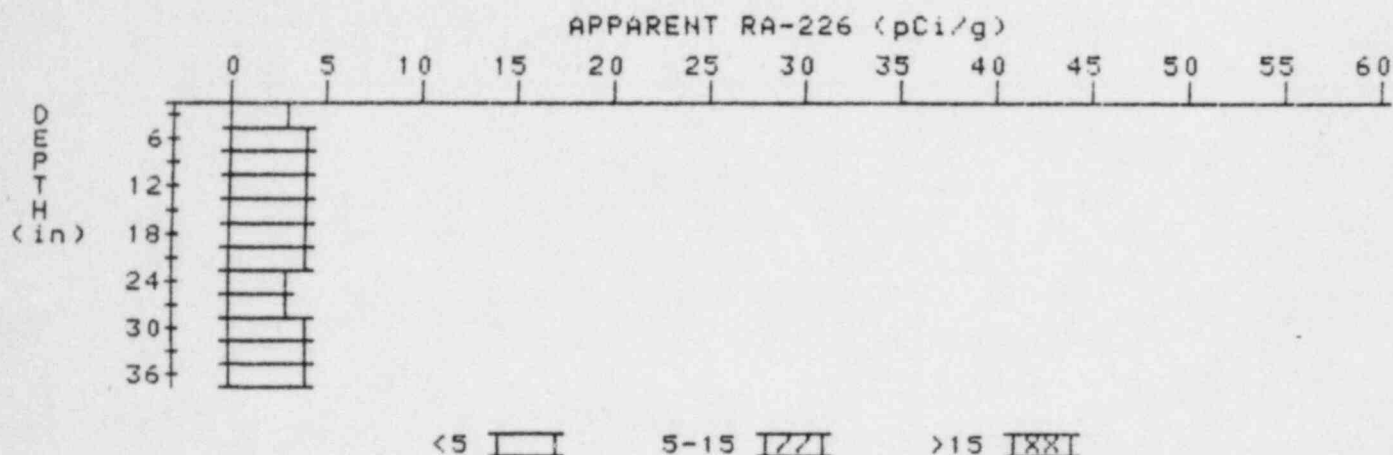


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.9	2.9
6	3.2	3.4
9	3.4	3.8
12	3.4	3.4
15	3.4	3.0
18	3.6	4.0
21	3.6	3.4
24	3.7	3.7
27	3.8	4.2
30	3.7	3.5
33	3.7	3.9
36	3.6	3.6
39	3.5	3.3
42	3.5	3.5
45	3.5	3.5
48	3.5	3.5

51	3.5	3.3
54	3.6	3.8
57	3.6	3.6
60	3.6	3.4
63	3.7	4.1
66	3.6	3.6

APPARENT RADIUM-226 CONCENTRATION 3 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-11489-RS
HOLE NUMBER: 3
LOCATION: 219199



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.8	2.8
6	3.3	3.8
9	3.5	3.9
12	3.5	3.5
15	3.5	3.5
18	3.5	3.5
21	3.5	3.5
24	3.5	3.3
27	3.6	3.4
30	3.8	4.2
33	3.8	4.0
36	3.7	3.7

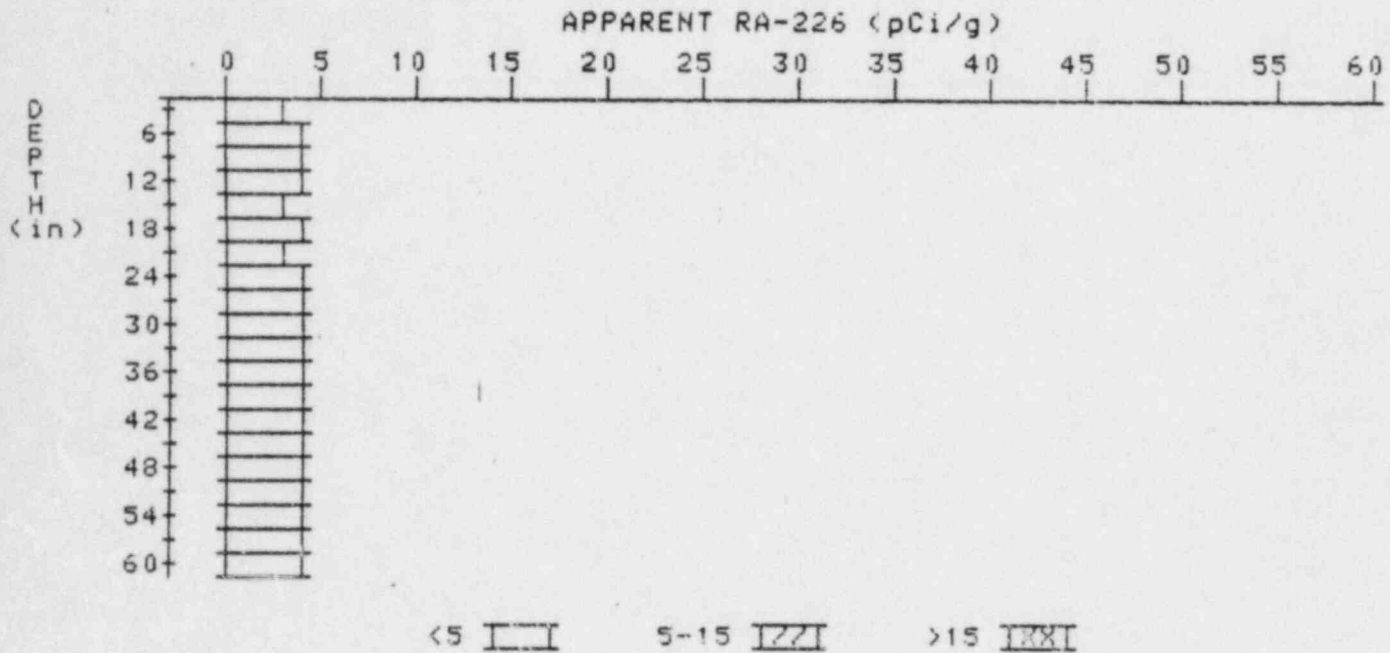
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

4

PROPERTY NUMBER: GJ-11489-RS

HOLE NUMBER: 4

LOCATION: 225234



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.1	3.1
6	3.4	3.6
9	3.6	4.0
12	3.6	3.6
15	3.6	3.4
18	3.7	4.1
21	3.6	3.1
24	3.8	4.0
27	3.9	4.1
30	3.9	3.9
33	3.9	4.1
36	3.8	3.6
39	3.8	4.0
42	3.7	3.5
45	3.7	3.7
48	3.7	3.7
51	3.7	3.5
54	3.8	4.2

57
60

3.7
3.7

3.5
3.7

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

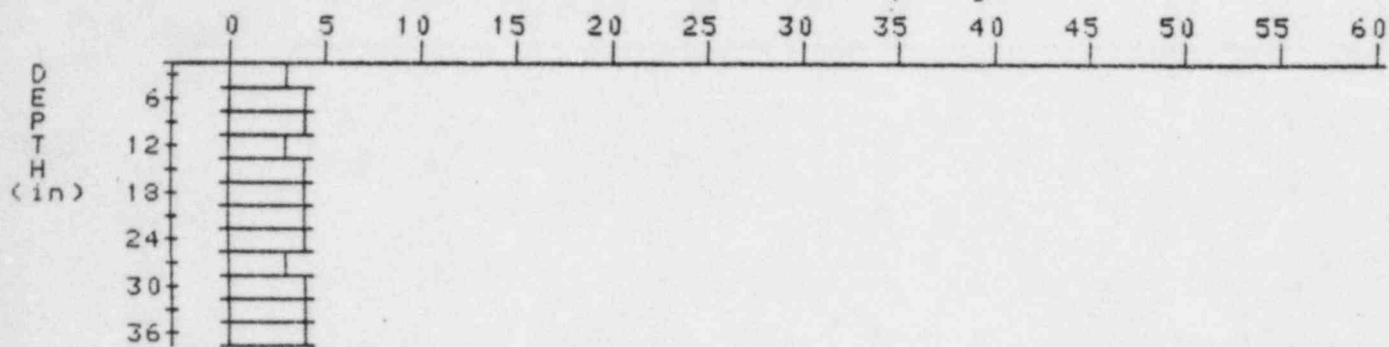
6

PROPERTY NUMBER: GJ-11489-RS

HOLE NUMBER: 6

LOCATION: 230200

APPARENT RA-226 (pCi/g)



<5

5-15

>15

Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.8	2.8
6	3.3	4.0
9	3.4	3.6
12	3.4	3.2
15	3.5	3.7
18	3.5	3.5
21	3.5	3.5
24	3.5	3.5
27	3.5	3.3
30	3.6	3.8
33	3.6	3.6
36	3.6	3.6

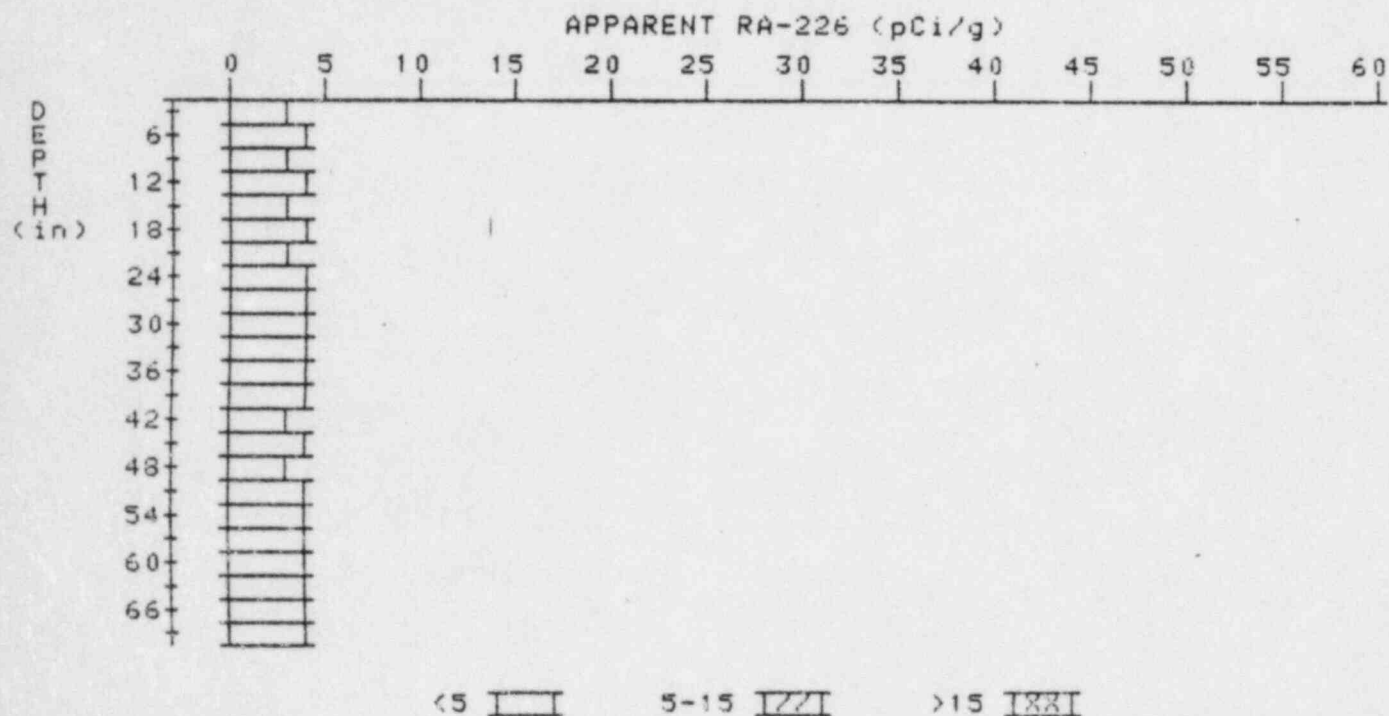
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

7

PROPERTY NUMBER: GJ-11489-RS

HOLE NUMBER: 7

LOCATION: 249236

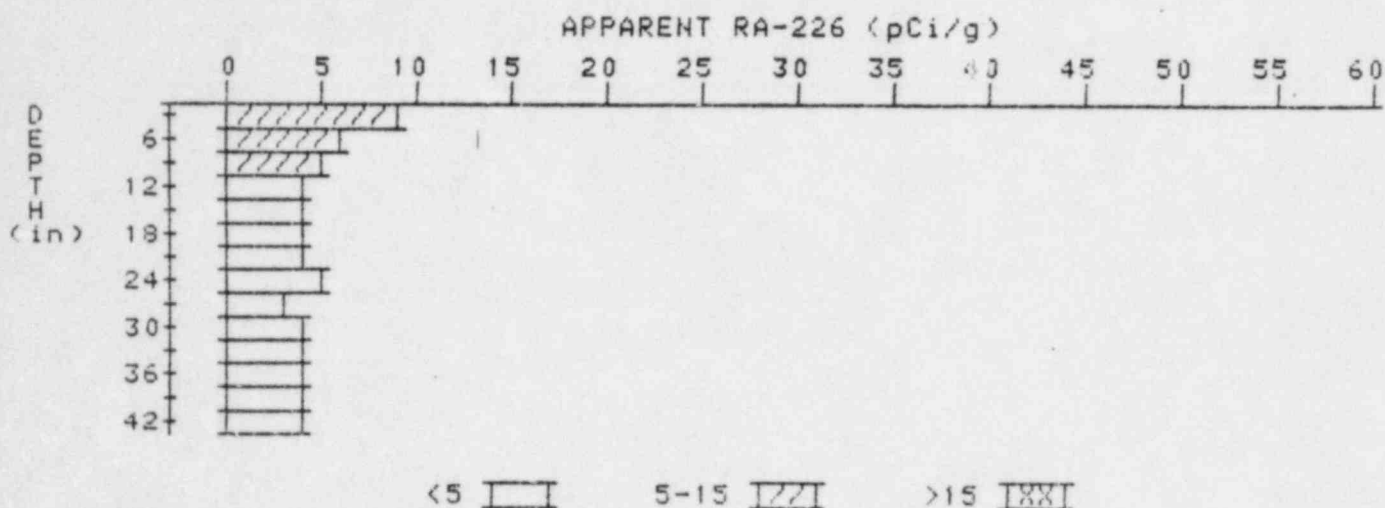


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.0	3.0
6	3.4	4.1
9	3.4	3.2
12	3.5	3.9
15	3.4	3.0
18	3.5	3.9
21	3.4	3.0
24	3.5	3.5
27	3.6	3.8
30	3.6	3.6
33	3.6	3.6
36	3.6	3.6
39	3.6	3.8
42	3.5	3.1
45	3.6	3.8

48	3.6	3.4
51	3.7	3.9
54	3.7	3.5
57	3.8	4.0
60	3.8	3.8
63	3.8	3.8
66	3.8	4.0
69	3.7	3.7

APPARENT RADIUM-226 CONCENTRATION 11 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-11489-RS
HOLE NUMBER: 11
LOCATION: 257190



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	9.3	9.3
6	7.3	6.2
9	5.9	5.0
12	5.0	4.5
15	4.4	3.7
18	4.2	4.0
21	4.1	3.7
24	4.2	4.9
27	3.9	3.4
30	3.9	3.9
33	3.9	4.1
36	3.8	3.6
39	3.8	4.0
42	3.7	3.7

