

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-11802-RS
ADDRESS: 574 30 ROAD

JULY 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 ⁶² CPH
M. TUCKER
DOE PROJECT ENGINEER

DATE

July 12, 1985

REAL1802:REA-AAB

8508010519 850712
PDR WASTE
WM-54 PDR

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-11802-RS, is a single-family residence located at 574 30 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, 45 cu. yd.; interior, 0 cu. yd.

Estimated cost to perform remedial action, including dislocation when applicable, is \$3,350. Remedial action on this property will take approximately 10 days to complete.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 574 30 Road, Grand Junction, Colorado

Zoning: Residential (R-2)

Lot Size: Approximately 43,560 sf (1.0 acres)

Legal Description: Beginning NW Corner SW4 NW4, Sec 9, 1S 1E, E 208ft 8in, S 208ft 8in, W 208ft 8in, N 208ft 8in, to the Beginning, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 3.5 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:	Overhead
Gas:	Underground
Telephone:	Overhead
Sewer:	Underground
Water:	Underground
Cable TV:	Overhead

Bordering Properties:

North:	Residence
South:	Residence
East:	Concrete irrigation ditch
West:	Concrete irrigation ditch

2.2 Existing Facilities and Structures

Primary Structure:

Type:	Single-story residence
Size:	Approximately 1,122 sf
Construction Date:	1920
Construction:	Wood frame
Foundation:	Concrete stemwall with spread footing
Footing Depth:	Approximately 80" to bottom of footing from grade
Basement:	Full - 1/2 finished
Crawl Space:	No
Condition:	Good

Other Structures:

Type:	Garage
Size:	Approximately 624 sf
Construction:	Wood frame
Foundation:	Concrete slab-on-grade
Condition:	Good

Type:	Shed
Size:	Approximately 150 sf
Construction:	Wood frame
Foundation:	Wood
Condition:	Good

General Remarks: Structures, utilities, landscaping, and other special features of this property are included in Appendix Figure 2.2.

Historical Data:

This structure is over 50 years old. Therefore, it does meet the eligibility criteria for consideration of inclusion on the National Register of Historic Places.

Alterations to Structure: 20' x 22' addition with full basement on east side of 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-11802-RS on April 19, 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 adjacent to the primary structure on the south side and from the west side of the primary structure extending to the west property line.

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

3.2 ~~Gamma~~ Exposure-Rate Surveys

3.2.1 Exterior Findings

Background Readings: 12 to 17 uR/h
Highest Outside Gamma Reading (HOG): 32 uR/h

Exterior radium-concentration measurements are presented in Appendix Table 3.1. Grid-point survey results are shown in Appendix Figures 3.1a and 3.1b. Appendix Figure 3.2 presents the ranges of elevated gamma readings and indicates areas of possible contamination.

3.2.2 Interior Findings

Background Readings: 12 to 15 uR/h
Highest Inside Gamma Reading (HIG): 17 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 3.3a, 3.3b, and 3.4. Data from these investigations are included in Appendix Tables 3.1 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 Figure 3.5 shows identified areas and estimated depths of contamination on this property, based on assessments of all measurements taken. As noted in this figure, areas recommended for remedial action that contain identified residual radioactive materials are:

- (AREA A) The yard west of the primary structure is contaminated to an average depth of 9 inches (approximately 1,495 sf).
 - (AREA B) A small grass area adjacent to a concrete planter south of the primary structure is contaminated to an estimated depth of 9 inches, based on data collected in Area A (approximately 9 sf).
 - (AREA C) An area of dirt and gravel west of the garage is contaminated to a depth of 6 inches (approximately 24 sf).
 - (AREA D) A small deposit adjacent to the steps south of the primary structure is contaminated to a depth of 6 inches (approximately 6 sf).
- (AREAS REQUIRING FURTHER INVESTIGATION DURING REMEDIAL ACTION)
The water line in Area A should be investigated during remedial action.

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-11802-RS, includes removal of all areas identified as containing radioactive material (as discussed in Section 3.5 and shown in Appendix Figure 3.5) and transport of removed material to the disposal site.

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 \$3,350.

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	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 3.2	Exterior Gamma Scan
Figure 3.3a	Interior Gamma Exposure Rates and Sample Locations - Basement
Figure 3.3b	Interior Gamma Exposure Rates and Sample Locations - Ground Floor
Figure 3.4	Exterior Sample Locations
Figure 3.5	Estimated Extent of Contamination

Official Survey Report

Memo of Understanding

Team Leader Notes

Deconvolution Graphs (Apparent Radium-226 Concentration)

Radium Concentrations at Exterior Locations

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Loc No.	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
8	144269	03	TC	1.9		*	Water meter pit DC = 0 inches
		06	TC	2.1		*	
		09	TC	2.4		*	
		12	TC	2.7		*	
		15	TC	2.9		*	
		18	TC	3.0		*	
		21	TC	3.1		*	
		24	TC	3.2		*	
		27	TC	3.3		*	
9	146254	00	DS	5.9		*	By driveway
		06	DS	4.3		*	
		12	DS	1.5		*	
		00-06	SS			15.3	
10	152254	00	DS	10.6		*	By ditch
		06	DS	7.0		*	
		12	DS	2.1		*	
		00-06	SS			32.2	
11	155263	00	DS	12.7		*	5 feet from ditch DC = 9 inches Based on the deconvolution graph
		06	DS	<1.0		*	
		00-06	SS			24.5	
		03	TC	5.9		*	
		06	TC	6.1		*	
		09	TC	5.3		*	
		12	TC	4.4		*	
		15	TC	3.9		*	
		18	TC	3.7		*	
		21	TC	3.5		*	
		24	TC	3.4		*	
		27	TC	3.4		*	
		30	TC	3.6		*	
		33	TC	3.6		*	
		36	TC	3.6		*	
12	160250	00	DS	4.7		*	8.9
		06	DS	1.1		*	
		00-06	SS				
13	160285	00	DS	1.8		*	
14	160295	00	DS	<1.0		*	

Radium Concentrations at Exterior Locations

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Loc No.	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
15	170270	00	DS	7.7		*	
		06	DS	3.9		*	
		00-06	SS			13.5	
		03	TC	5.6		*	Middle of front lawn on west side
		06	TC	5.8		*	
		09	TC	5.0		*	
		12	TC	4.2		*	
		15	TC	3.8		*	
		18	BH	3.5	1.0	*	DC = 9 inches
		21	TC	3.3		*	Based on the
		24	TC	3.0		*	deconvolution graph
		27	TC	3.0		*	
		30	BH	3.0	<1.0	*	
		33	TC	4.0		*	
16	180304	00	DS	1.5		*	
17	184264	00	DS	7.6		*	
		06	DS	3.3		*	By steps
		12	DS	1.8		*	
		00-06	SS			11.7	
18	185295	00	DS	7.0		*	Northwest of primary structure
		06	DS	3.5		*	
		12	DS	<1.0		*	
		00-06	SS			13.0	
19	190200	00	DS	<1.0		*	Background hole
		00-06	SS			1.8	
		03	TC	3.0		*	South side by fruit trees
		06	TC	3.2		*	
		09	TC	3.6		*	
		12	TC	3.8		*	DC = 0 inches
		15	TC	3.7		*	
		18	BH	3.6	1.1	*	
		21	TC	3.6		*	
		24	TC	3.6		*	
		27	TC	3.5		*	
		30	BH	3.4	1.4	*	
		33	TC	3.5		*	
20	190280	00	DS	2.1		*	West of primary structure
		03	TC	3.3		*	
		06	TC	3.4		*	

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Loc No.	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot.	Ct Spectr.		
20	190280	09	TC	3.4		*	
		12	TC	3.5		*	
		15	TC	3.5		*	
		18	TC	3.5		*	
		21	TC	3.4		*	
		24	TC	3.3		*	
		27	TC	3.3		*	
		30	TC	3.2		*	
		33	TC	3.0		*	
21	194268	18	DS	1.3		*	Gas line
22	203249	00	DS	<1.0		*	Edge of driveway
		03	TC	2.9		*	
		06	TC	3.3		*	
		09	TC	3.5		*	
		12	TC	3.6		*	
		15	TC	3.6		*	DC = 0 inches
		18	TC	3.6		*	
		21	TC	3.6		*	
		24	TC	3.6		*	
		27	TC	3.4		*	
		30	TC	3.3		*	
		33	TC	3.2		*	
		36	TC	3.1		*	
23	210267	00	DS	1.2		*	
		03	TC	2.7		*	
		06	TC	3.1		*	
		09	TC	3.2		*	
		12	TC	3.2		*	
		15	TC	3.3		*	
		18	TC	3.3		*	DC = 0 inches
		21	TC	3.4		*	
		24	TC	3.4		*	
		27	TC	3.4		*	
		30	TC	3.3		*	
		33	TC	3.2		*	
24	218268	00	DS	2.6		*	DC = 6 inches
		00-06	SS			4.7	Based on all
		03	TC	3.6		*	available data
		06	TC	3.7		*	
		09	TC	3.6		*	By south porch

Radium Concentrations at Exterior Locations

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Loc No.	Grid Location	Depth (in.)	Meas. Type	In Situ Po-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
24	218268	12	TC	3.3		*	
		15	TC	3.3		*	
		18	TC	3.3		*	
		21	TC	3.2		*	
		24	TC	3.3		*	
		27	TC	3.4		*	
		30	TC	3.3		*	
		33	TC	3.3		*	
		36	TC	3.0		*	
		39	TC	2.9		*	
		42	TC	3.0		*	
		45	TC	3.1		*	
		48	TC	3.1		*	
		51	TC	3.2		*	
		54	TC	3.3		*	
		57	TC	3.3		*	
		60	TC	3.3		*	
		63	TC	3.4		*	
		66	TC	3.3		*	
		69	TC	3.3		*	
		72	TC	3.4		*	
		75	TC	3.2		*	
		78	TC	3.2		*	
		81	TC	3.1		*	
		84	TC	3.1		*	
		87	TC	3.0		*	
		90	TC	3.0		*	
		93	TC	3.2		*	
		96	TC	3.4		*	
		99	TC	3.3		*	
		102	TC	3.4		*	
25	230290	00	DS	2.4		*	North side of primary
		03	TC	2.6		*	structure
		06	TC	3.1		*	Hit footing
		09	TC	3.3		*	
		12	TC	3.4		*	
		15	TC	3.4		*	DC = 0 inches
		18	TC	3.3		*	
		21	TC	3.3		*	
		24	TC	3.3		*	
		27	TC	3.4		*	
		30	TC	3.3		*	
		33	TC	3.3		*	

Radium Concentrations at Exterior Locations

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Loc No.	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
25	230290	36	TC	3.3		*	
		39	TC	3.3		*	
		42	TC	3.4		*	
		45	TC	3.3		*	
		48	TC	3.3		*	
		51	TC	3.3		*	
		54	TC	3.3		*	
		57	TC	3.2		*	
		60	TC	3.2		*	
		63	TC	3.1		*	
		66	TC	3.1		*	
		69	TC	3.1		*	
		72	TC	3.1		*	
		75	TC	3.1		*	
26	241281	00	DS	2.6		*	East side of primary
		03	TC	3.1		*	structure
		06	TC	3.4		*	Hit footing
		09	TC	3.6		*	
		12	TC	3.6		*	
		15	TC	3.5		*	
		18	TC	3.5		*	
		21	TC	3.5		*	
		24	TC	3.4		*	
		27	TC	3.4		*	
		30	TC	3.4		*	
		33	TC	3.4		*	
		36	TC	3.4		*	
		39	TC	3.4		*	
		42	TC	3.4		*	
		45	TC	3.4		*	
		48	TC	3.4		*	
		51	TC	3.4		*	DC = 0 inches
		54	TC	3.4		*	
		57	TC	3.3		*	
		60	TC	3.3		*	
		63	TC	3.3		*	
		66	TC	3.4		*	
		69	TC	3.4		*	
		72	TC	3.5		*	
		75	TC	3.4		*	
		78	TC	3.3		*	
		81	TC	3.2		*	

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Loc No.	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
27	258245	00	DS	2.6		*	Driveway by garage
		06	DS	<1.0		*	
		00-06	SS			8.4	Rocky sand
28	270240	00	DS	<1.0		*	Edge of concrete
		03	TC	2.8		*	West side of
		06	TC	3.2		*	garage
		09	TC	3.5		*	
		12	TC	3.6		*	
		15	TC	3.7		*	
		18	TC	3.6		*	DC = 0 inches
		21	TC	3.6		*	
		24	TC	3.6		*	
		27	TC	3.5		*	
		30	TC	3.6		*	
		33	TC	3.4		*	
		36	TC	3.4		*	
29	280225	00	DS	<1.0		*	South side of garage
		03	TC	3.0		*	
		06	TC	3.5		*	
		09	TC	3.6		*	
		12	TC	3.6		*	
		15	TC	3.7		*	
		18	TC	3.7		*	
		21	TC	3.7		*	DC = 0 inches
		24	TC	3.7		*	
		27	TC	3.7		*	
		30	TC	3.5		*	
		33	TC	3.5		*	
		36	TC	3.4		*	
30	290253	00	DS	<1.0		*	North side of garage
		03	TC	2.8		*	
		06	TC	3.3		*	
		09	TC	3.4		*	
		12	TC	3.5		*	DC = 0 inches
		15	TC	3.5		*	
		18	TC	3.5		*	
		21	TC	3.5		*	
		24	TC	3.4		*	
		27	TC	3.3		*	
		30	TC	3.3		*	
		33	TC	3.2		*	

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Loc No.	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
31	298245	00	DS	<1.0		*	Between garage and Shed
		03	TC	2.5		*	
		06	TC	2.9		*	
		09	TC	3.2		*	DC = 0 inches
		12	TC	3.3		*	
		15	TC	3.4		*	
		18	TC	3.4		*	
		21	TC	3.5		*	
		24	TC	3.6		*	
		27	TC	3.5		*	
		30	TC	3.5		*	
		33	TC	3.5		*	
32	318265	00	DS	<1.0		*	East side next to water pump and concrete settling tank
		03	TC	2.6		*	
		06	TC	2.8		*	
		09	TC	3.0		*	
		12	TC	2.9		*	
		15	TC	2.8		*	DC = 0 inches
		18	TC	2.8		*	
		21	TC	2.7		*	
		24	TC	2.7		*	
		27	TC	2.7		*	

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 = 04-19-85
 Team Leader = CRK

Radium Concentrations at Interior Locations

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Loc No.	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
1		00	DS	1.0		*	Basement 6.5 feet from door, concrete
2		00	DS	<1.0		*	Northeast corner of basement
3		00	DS	1.2		*	Center of 3 cracks in concrete
4		00	DS	1.2		*	Southwest corner
5		00	DS	<1.0		*	Center of basement
6		00	DS	1.4		*	In garage
7		00	DS	2.0		*	Middle of garage

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 = 04-19-85
Team Leader = CRK

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)
ROOM A	08	14-15	15	15	13-17	15
ROOM B	08	14-16	15	08	15-16	15
ROOM C	05	14-15	15	05	15-15	15
ROOM D	05	14-15	15	05	15-15	15
GARAGE	12	11-12	12	12	12-13	12
SHED	05	12-12	12	05	11-12	12

=====

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

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-11802-RS

Page 1 of 1

<u>AREA</u>	<u>CALCULATIONS(ft)</u>	<u>SF</u>	<u>DEPTH(ft)</u>	<u>CF</u>	<u>CUBIC YARDS</u>
<u>EXTERIOR</u>					
Contaminated Fill					
A	21 x 22 =	462			
	13 x 44 =	572			
	5 x 7 =	35			
	3 x 8 =	24			
	6 x 9 =	54			
	11 x 11 =	121			
	17 x 6 =	102			
	17 x 5 =	85			
	10 x 4 =	40			
		<hr/>			
		1,495	x	0.8	= 1,196
B	3 x 3 =	9	x	0.8	= 7
C	8 x 3 =	24	x	0.5	= 12
D	2 x 3 =	6	x	0.5	= 3
		<hr/>			
Volume of Fill				= 1,218	= 1,218/27 = 45
TOTAL VOLUME - EXTERIOR					= 45

See Appendix Figure 3.5 For Areas

=====

EXTERIOR

Remove identified residual radioactive materials	
44.4 cy @ \$14.50/cy (machine - open)	\$ 644
.7 cy @ \$44.00/cy (manual - open)	31
3 large trees @ \$100.00 each	300
(2 vines @ SW corner of building = 1 tree)	

Replace contaminated areas with:

Compacted road base	
.5 cy @ \$11.50/cy	6
Topsoil	
44.7 cy @ \$9.50	425

Replace sod

1,206 sf @ \$0.50/sf	603
----------------------	-----

Replace bush

1 - 5 gal @ \$20.00	20
---------------------	----

TOTAL EXTERIOR	\$ 2,029
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TOTAL INTERIOR	0
----------------	---

ACCESS CONTROL	250
----------------	-----

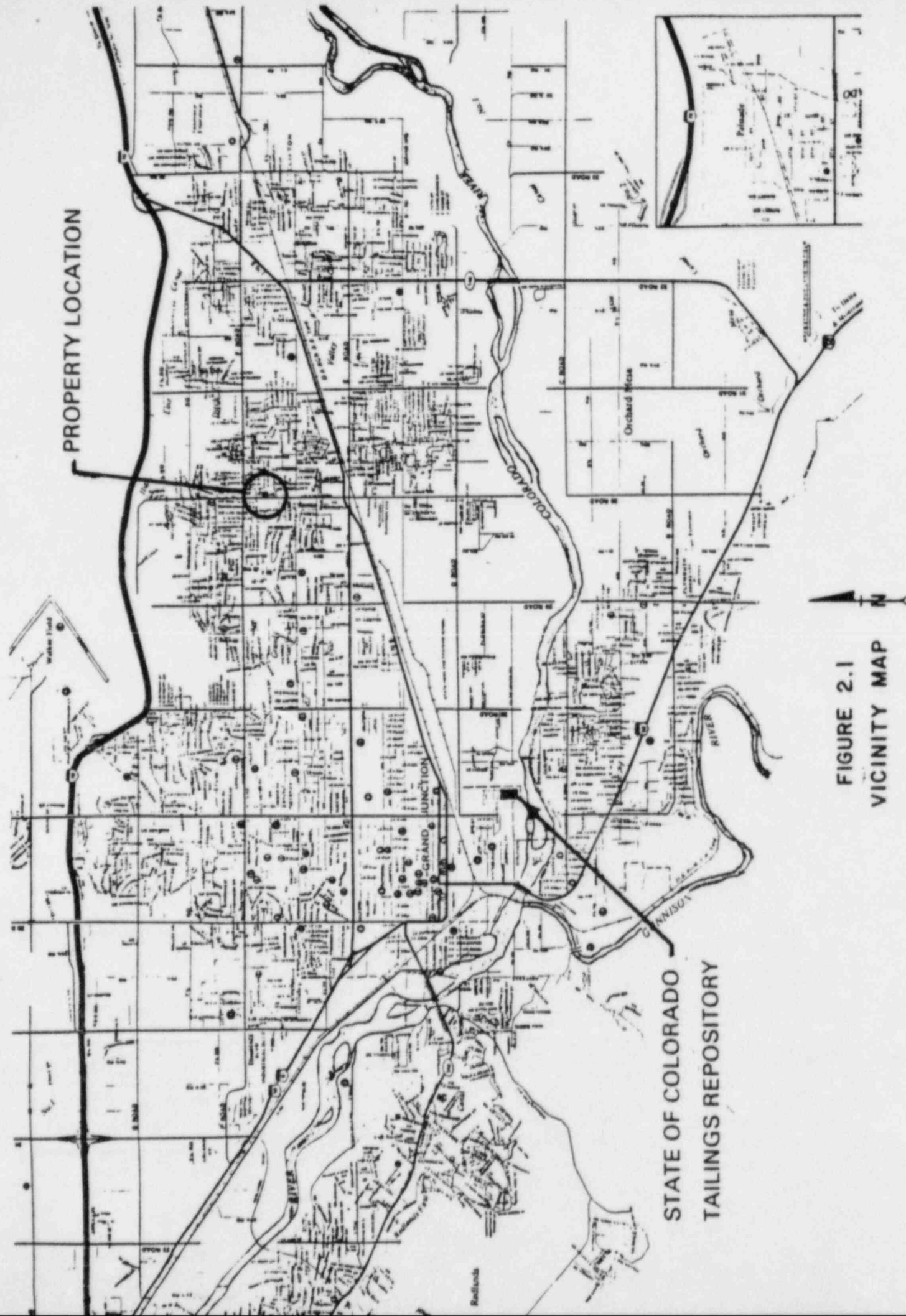
SUBTOTAL	\$ 2,279
----------	----------

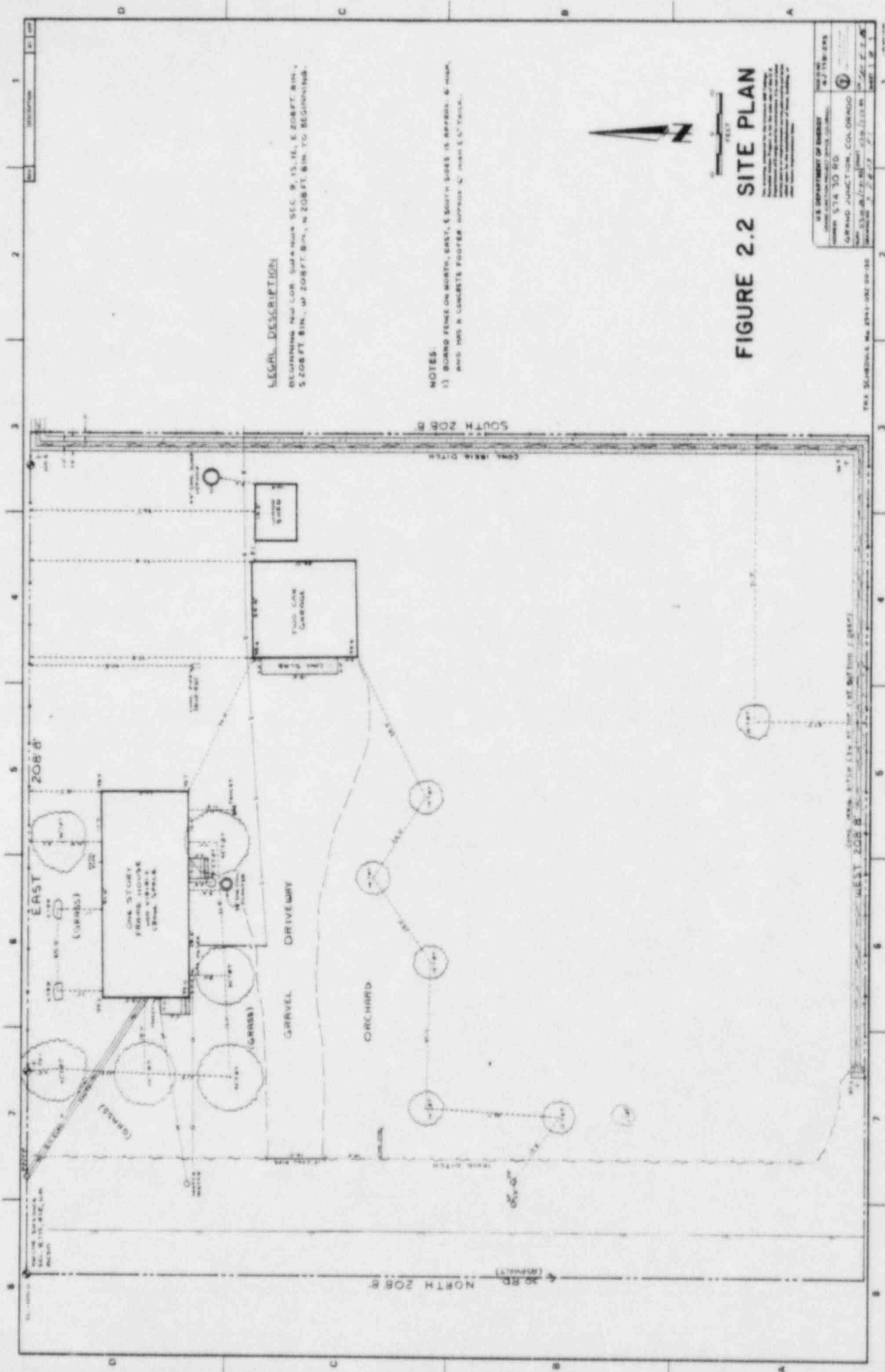
CONTINGENCY @ 5%	114
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SUBTOTAL	\$ 2,393
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CONTRACTOR OVERHEAD & PROFIT @ 40%	957
------------------------------------	-----

GRAND TOTAL	\$ 3,350
-------------	----------





LEGAL DESCRIPTION

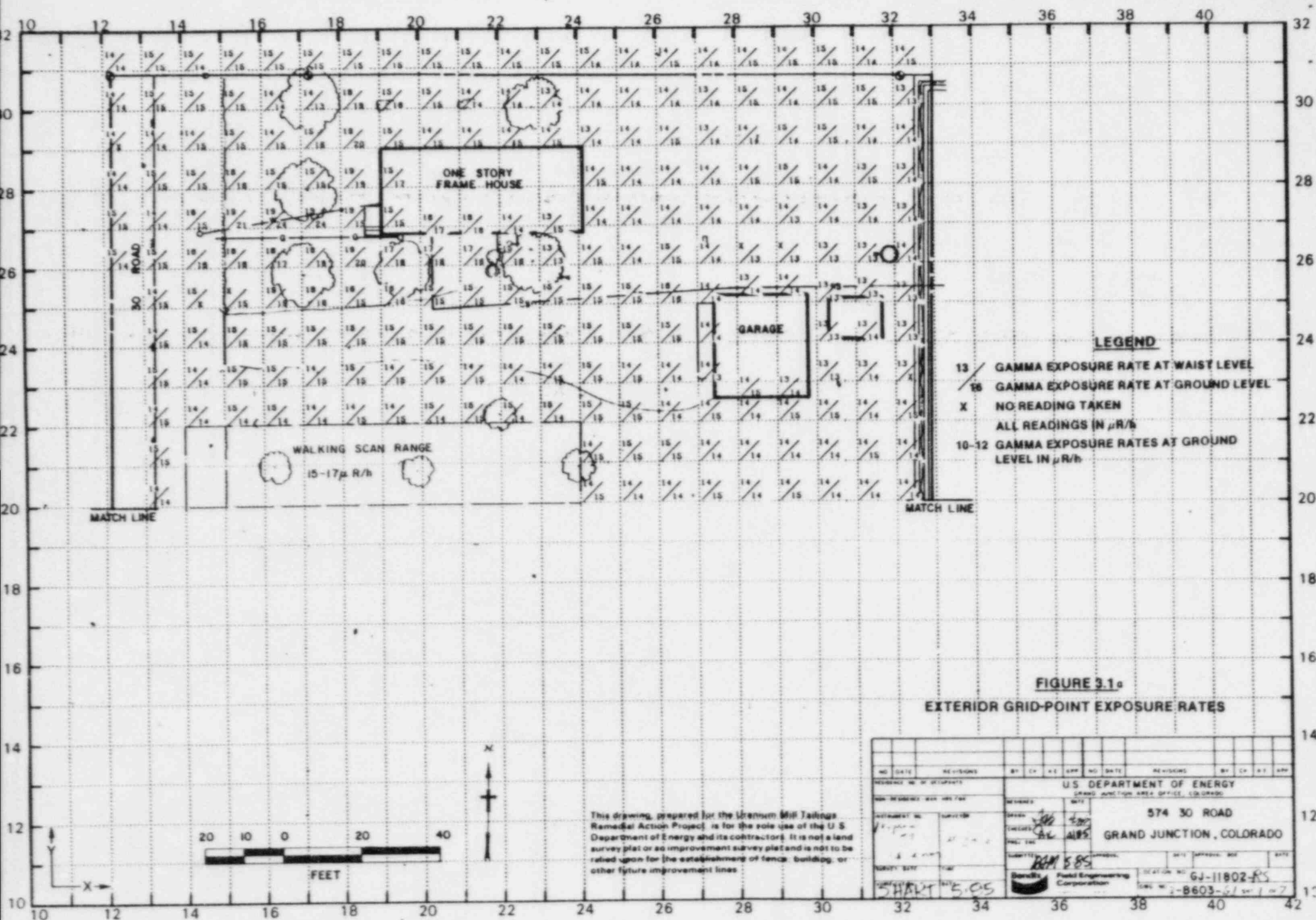
BEGINNING NW COR. SEC. 9, T. 15. N., E. 208 FT. B.M., S. 208 FT. B.M., W. 208 FT. B.M., N. 208 FT. B.M. TO BEGINNING.

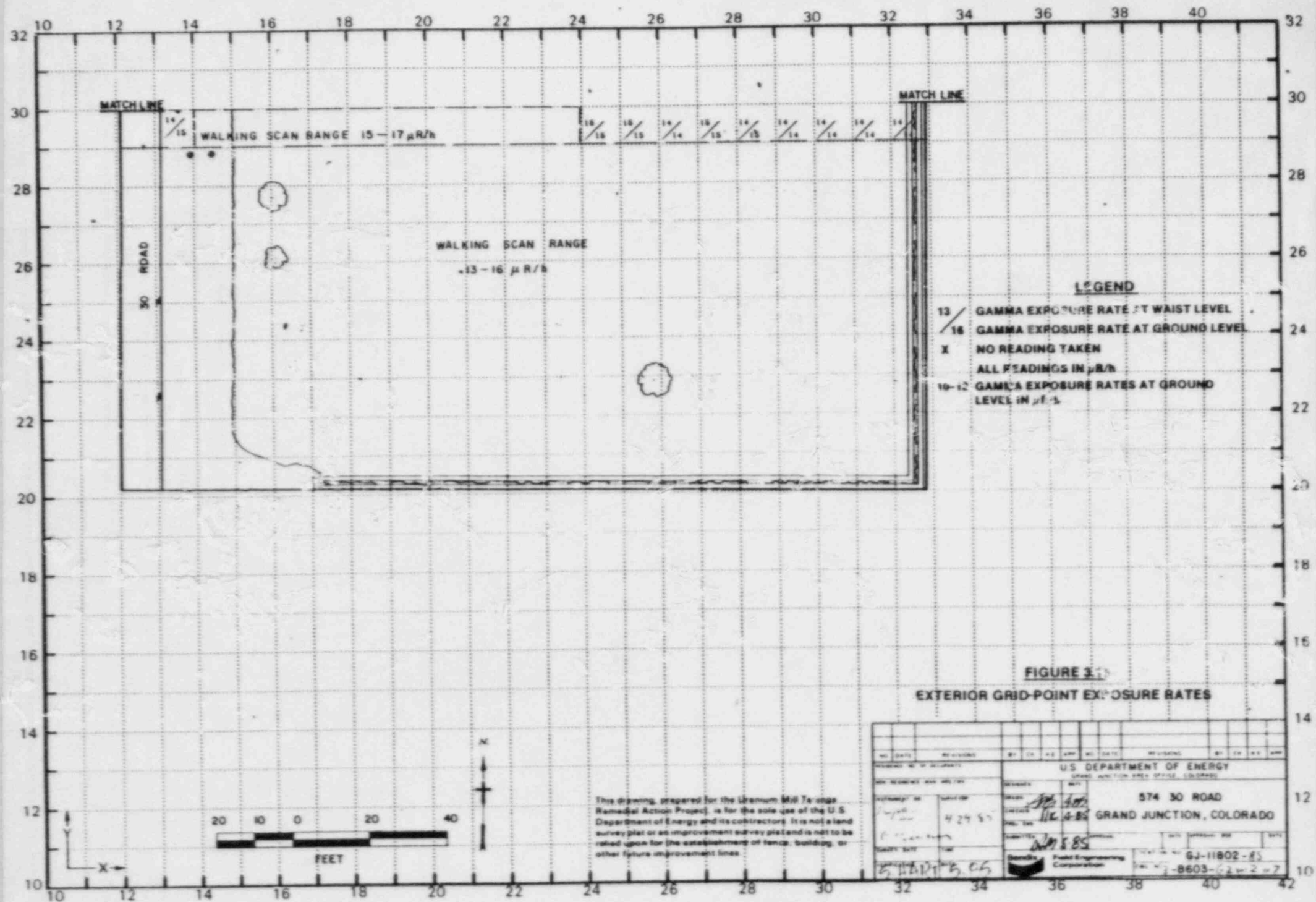
NOTES:

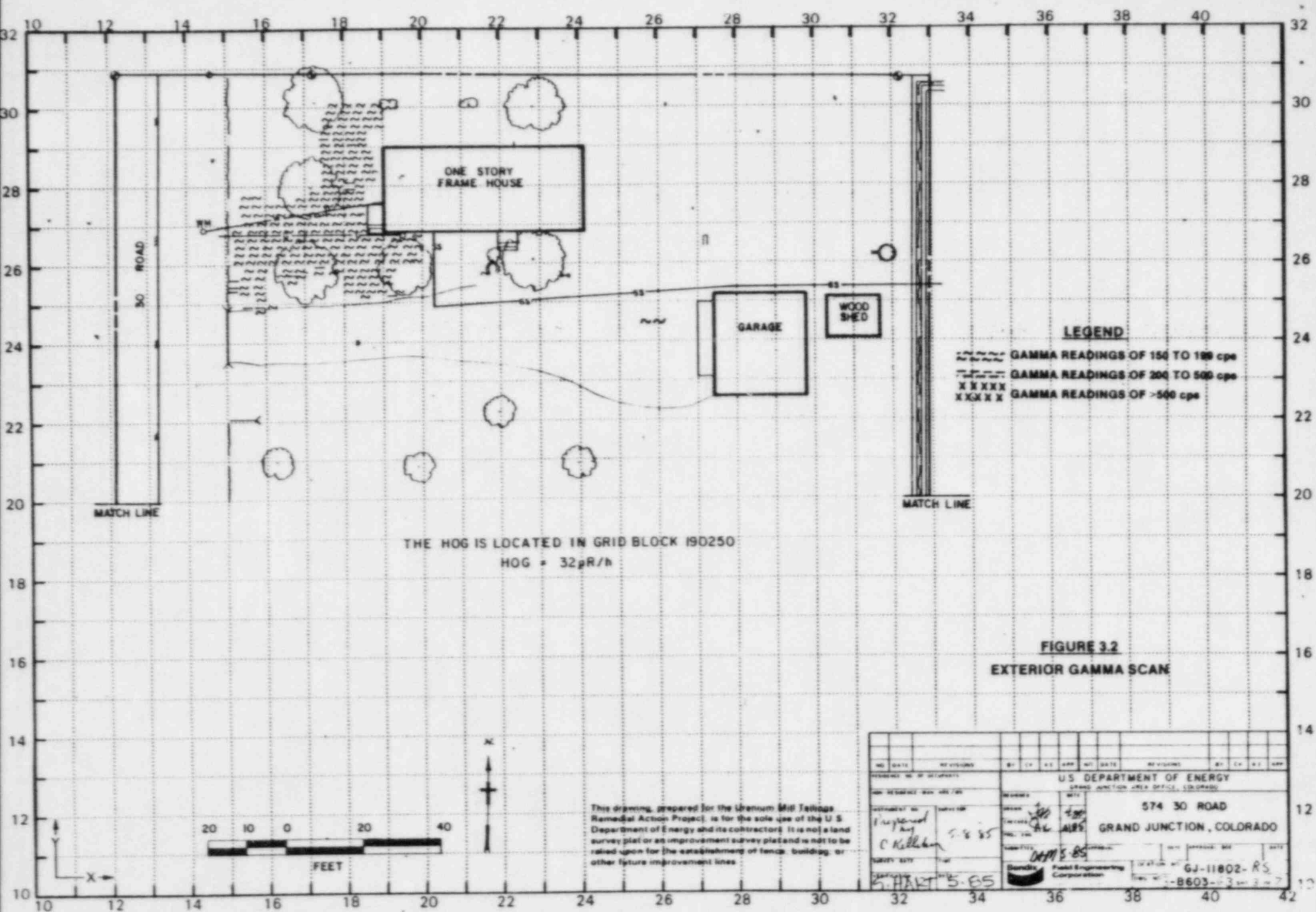
- 1) BOUND FENCE ON NORTH, EAST, & SOUTH SIDES IS APPROX. 6" HIGH, AND HAS A CONCRETE FOOTER APPROX. 12" HIGH 6" THICK.

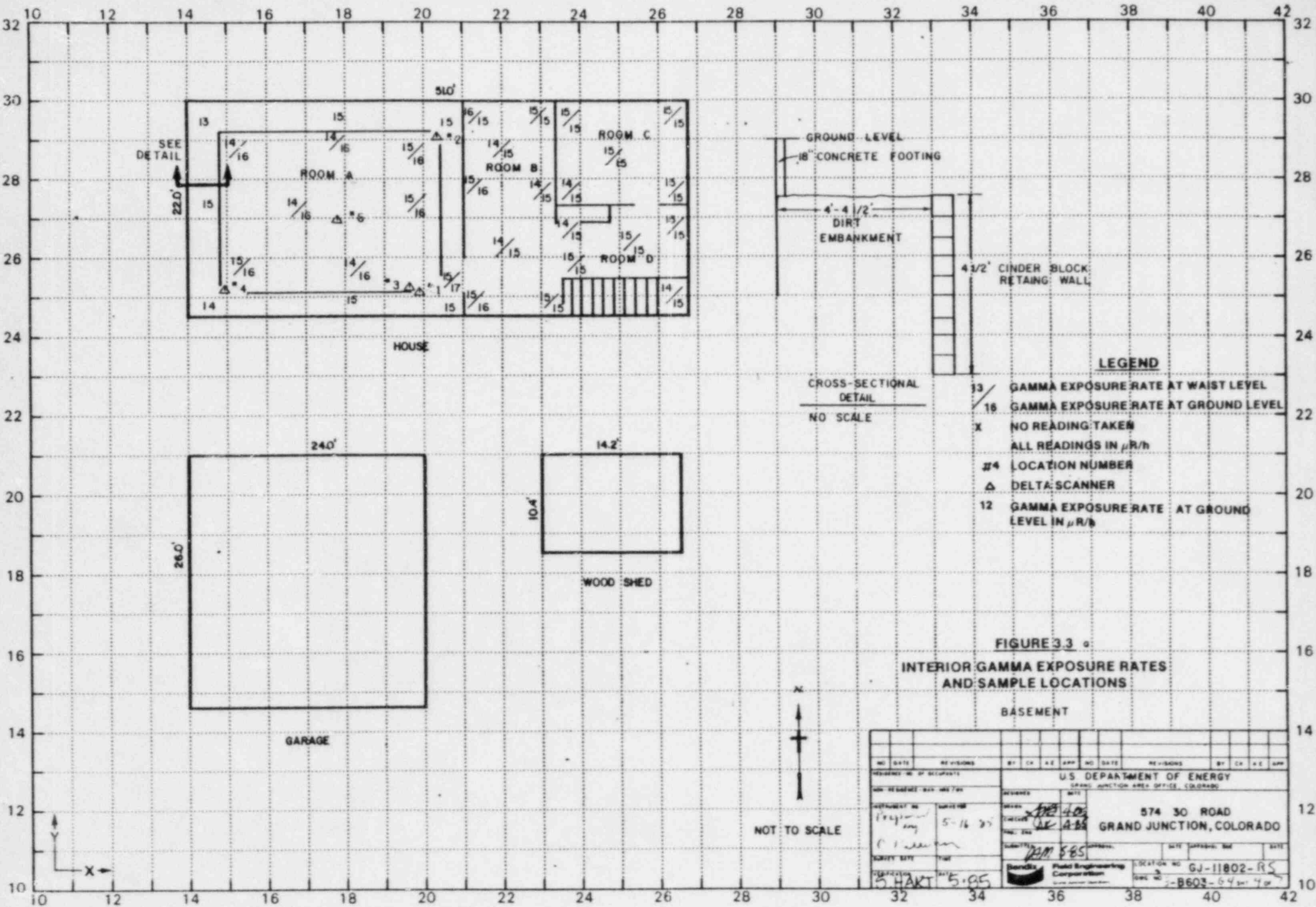
FIGURE 2.2 SITE PLAN

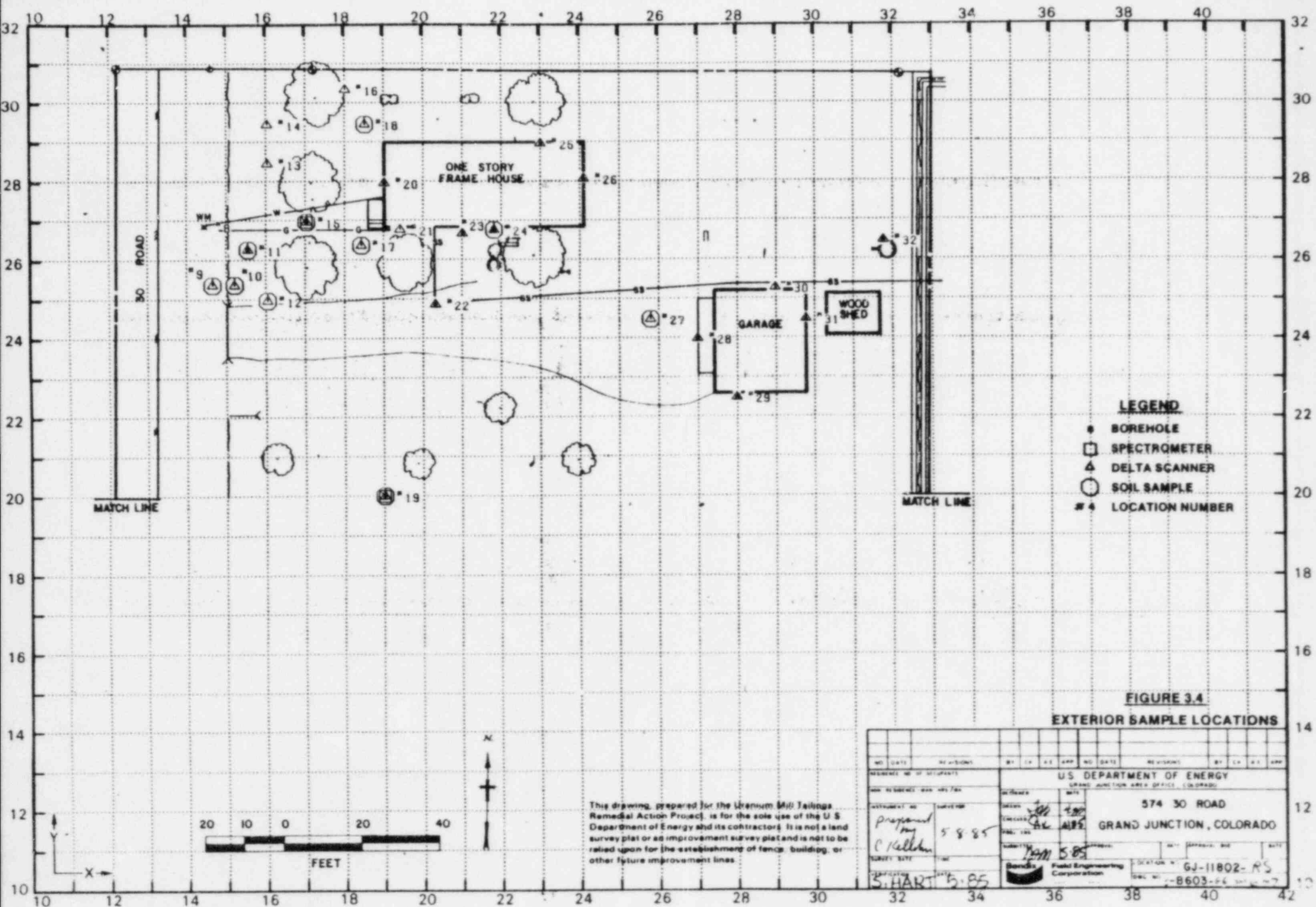
U.S. DEPARTMENT OF ENERGY		PROJECT NO. 100-100-100	
CONTRACT NO. 574 TO RD.		CONTRACT NO. 574 TO RD.	
SPRINKLER JUNCTION, CALIFORNIA		SPRINKLER JUNCTION, CALIFORNIA	
DATE: 10/10/10		DATE: 10/10/10	
DRAWN BY: J. J. J.		DRAWN BY: J. J. J.	
CHECKED BY: J. J. J.		CHECKED BY: J. J. J.	
APPROVED BY: J. J. J.		APPROVED BY: J. J. J.	
SCALE: 1" = 100'		SCALE: 1" = 100'	

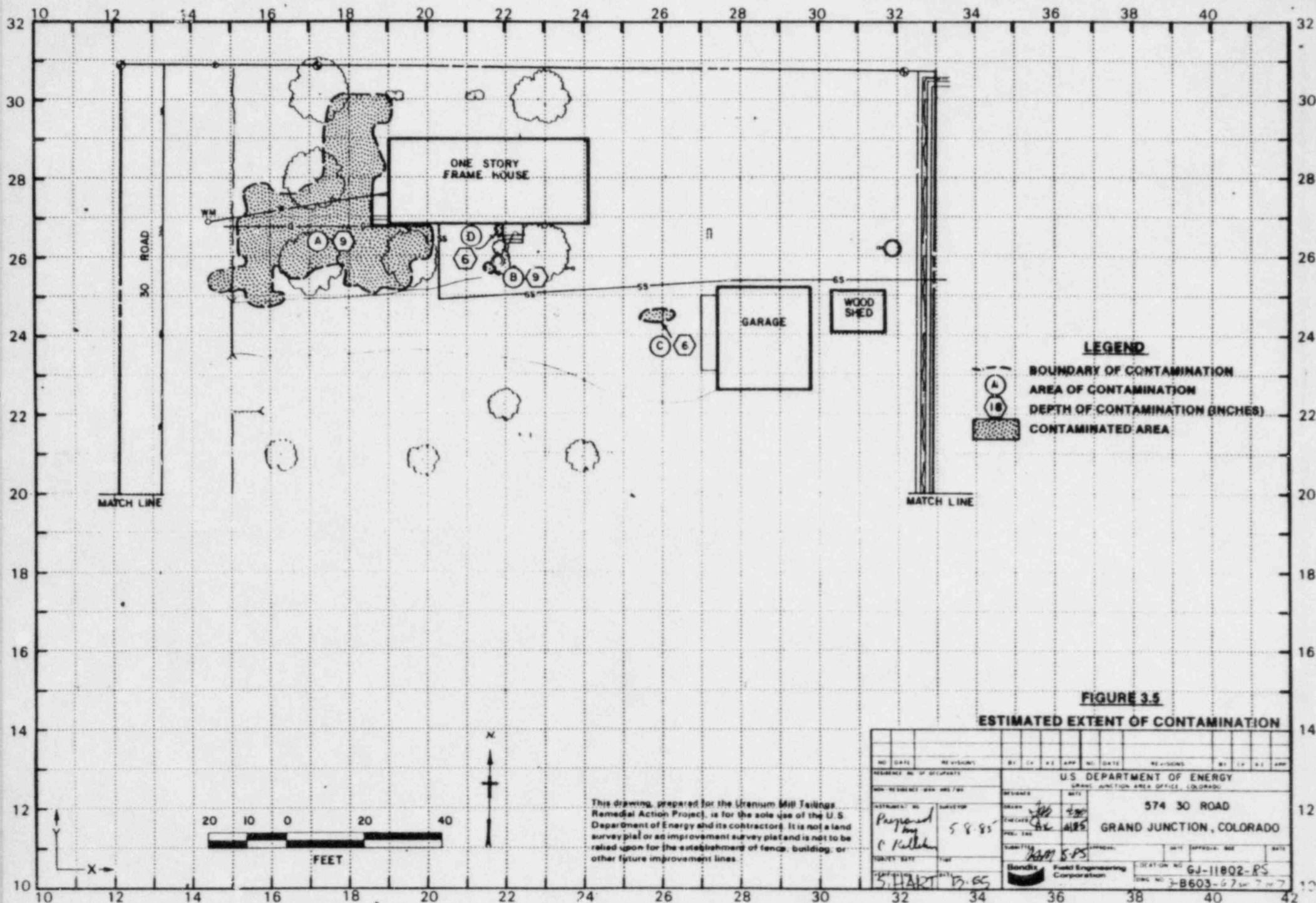












3/85

DOE ID NO. GJ-11802-RS Date May 8, 1985

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

Official Survey Report

Property Address 574 30 Road
Property Owner J. A. Brown
Address of Owner (if different from above) same
Report Prepared By Catherine R. Kelleher

I. PRESENCE/ABSENCE OF RESIDUAL RADIOACTIVE MATERIALS

☐ No evidence of residual radioactive material on surveyed property.

☒ Residual radioactive materials found at the following locations:

☒ In open areas.

☐ Under or around exterior improvements.

☐ Under or around a typically nonoccupied structure.

☒ Under or around a typically occupied structure.

II. RESULTS OF RADIOLOGIC ASSESSMENT

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

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

cc:

G. A. Franz, III, GJ/CDH
J. Themelis, Mgr. UMTRA Proj. Off.

HIG = 17 uR/h
HOG = 32 uR/h

Sandix
Aerospace

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

May 7, 1985

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

ATTN: Chuck Thornberg

SUBJECT: GJ-11802-RS

Dear Chuck:

Following our Technical Review concerning Department of Energy (DOE) Identification (ID) number GJ-11802-RS conducted 6 May 1985, it is my understanding the following follow-up investigation will be performed:

1. The water line in Area 'A' will be further investigated during remedial action.

Thank you for your time and cooperation. If you should have additional questions or comments regarding this property please contact me at 242-8621, extension 432.

Sincerely,

Cathy Kelleher
RSD Survey Team

CK:pr

ALLIED Bendix
Aerospace

Bendix Field Engineering Corporation
Grand Junction Operations
Grand Junction, Colorado

Date: April 19, 1985
To: Files
From: Cathy Kelleher
Subject: Team Leader Notes - GJ-11802-RS

Address: 574 30 Road

Owner: Jack A. Brown

Weather: Rainy in morning - partly cloudy in afternoon

Occupancy: Two

Telephone: (303) 434-8093

Team Members

C. Kelleher (Team Leader)
D. Dow
L. Kula
M. Dexter
N. Wallace
M. Duran

S. Larsen
H. Mattison
P. Tuhey
A. Quintana
C. Adams

Instruments

See equipment summary sheet.

Oak Ridge National Laboratory (ORNL) and Colorado Department of Health (CDH) records indicate contamination in the yard west and south of the house. The Bendix survey confirmed this. A box of rocks with elevated readings was found at the southeast corner of the house. It was removed prior to gamma scanning of the area and then returned to it's original location.

Utilities:

Gas - A shovel hole adjacent to the house was dug and the gas line was located. A delta was taken at the bottom which showed negative results.

Electric and telephone - Electric and telephone lines to the house were located overhead. However, between the irrigation ditch and 30 Road, two major telephone lines were buried. These are not shown on the facility map. No drilling was performed in this area.

Sewer lines - The sewer line was accurately located adjacent to a sewer clean-out hole.

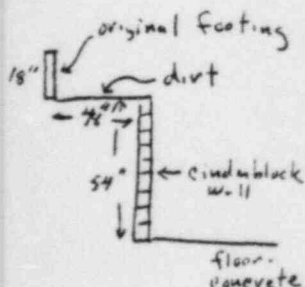
Water lines - The water line into the house was checked by logging the water meter pit. It showed only background levels.

A walking scan was performed on the south side of the property. This area is located south of the gravel driveway and includes the garden and orchard. No elevated readings were found.

The property line as shown on the map is running through the center of 30 Road, so this area was not scanned and no grid point readings were taken.

Interior:

The house consists of an addition located on the east side of the house and the original structure on the west. There is a full basement under the addition with 80-inch high concrete walls. All gamma readings in this area were background. Under the original house, a dug-out full basement has been roughed in. Concrete cinderblock walls were built some 4 to 4-1/2-feet in from the original footing. These concrete cinderblock walls are 4-1/2-feet high with the original foundation 18-inches above that (see sketch).



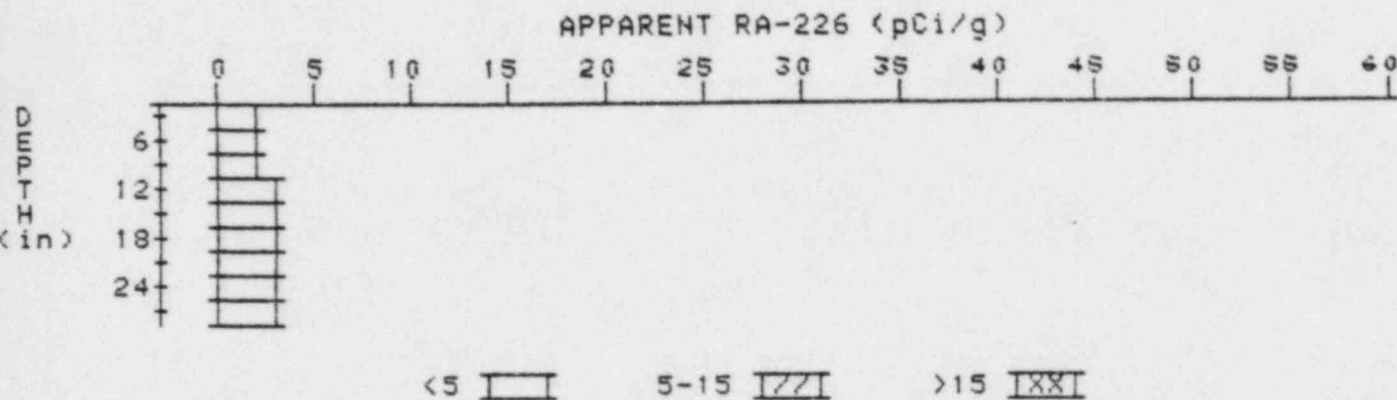
There was a patch of different appearing concrete connecting the floors of the two basements.

Team Leader Notes
Cathy Kelleher
GJ-11802-RS
April 19, 1985
Page 3

Readings in the dug-out basement were as high as 150 cps. These areas were checked out with an array of delta readings. All delta readings showed background. The elevated gamma level in this area is probably due to natural radon from the large amount of exposed dirt and the poor air circulation in this area compared with the rest of the basement.

APPARENT RADIUM-226 CONCENTRATION 8 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-11802-RS
 HOLE NUMBER: 8
 LOCATION: 144269

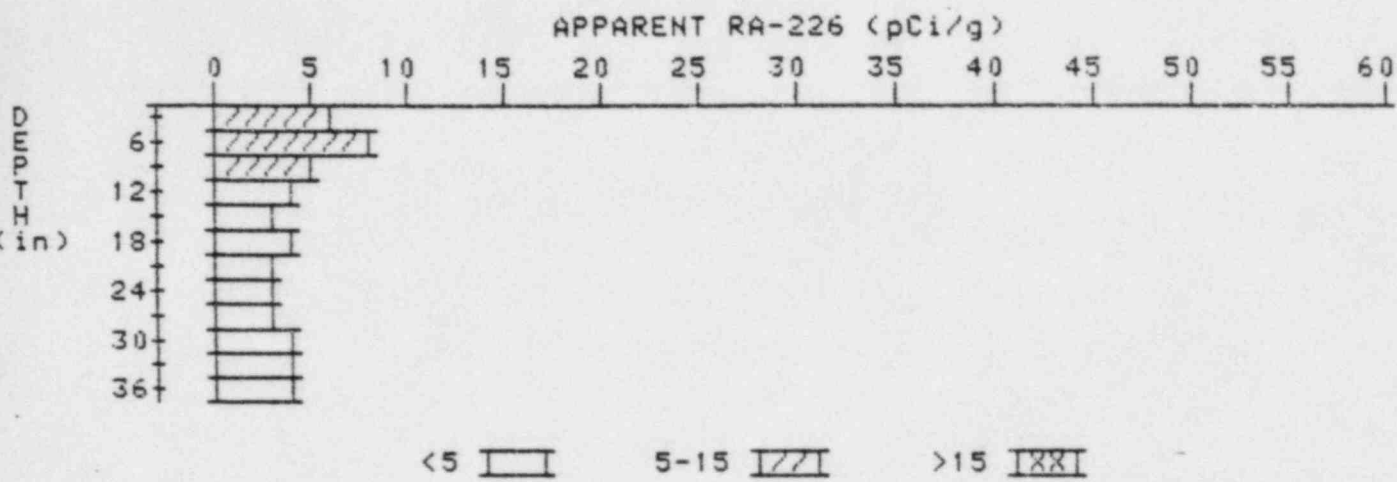


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	1.9	1.9
6	2.1	1.9
9	2.4	2.4
12	2.7	2.9
15	2.9	3.1
18	3.0	3.0
21	3.1	3.1
24	3.2	3.2
27	3.3	3.3

APPARENT RADIUM-226 CONCENTRATION 11

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-11802-RS
HOLE NUMBER: 11
LOCATION: 155263



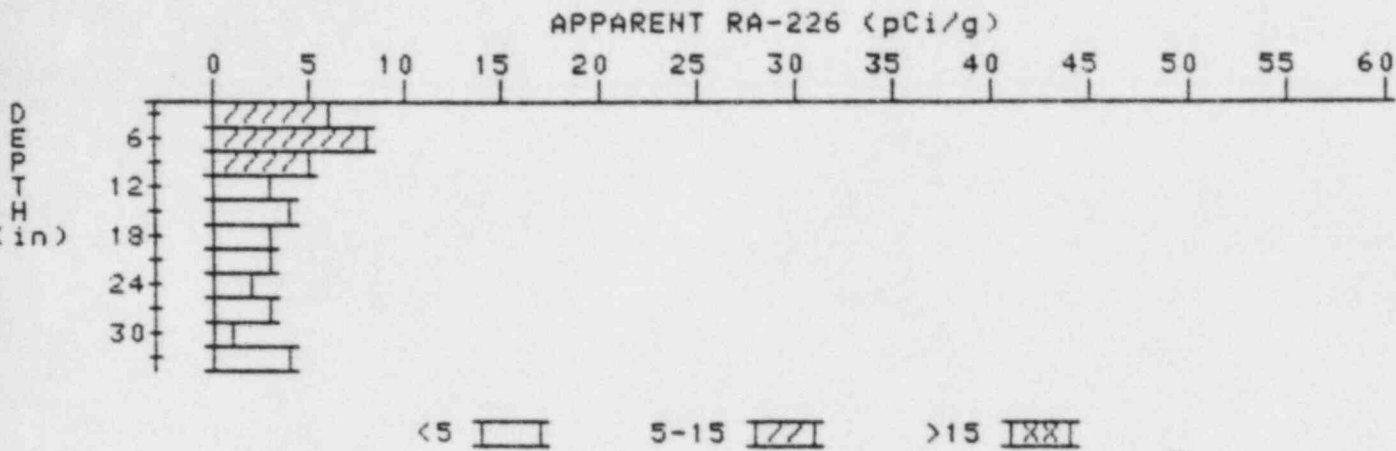
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.9	5.9
6	6.1	7.9
9	5.3	5.5
12	4.4	3.7
15	3.9	3.4
18	3.7	3.7
21	3.5	3.3
24	3.4	3.2
27	3.4	3.0
30	3.6	4.0
33	3.6	3.6
36	3.6	3.6

APPARENT RADIUM-226 CONCENTRATION

DECONVOLUTION GRAPH

15

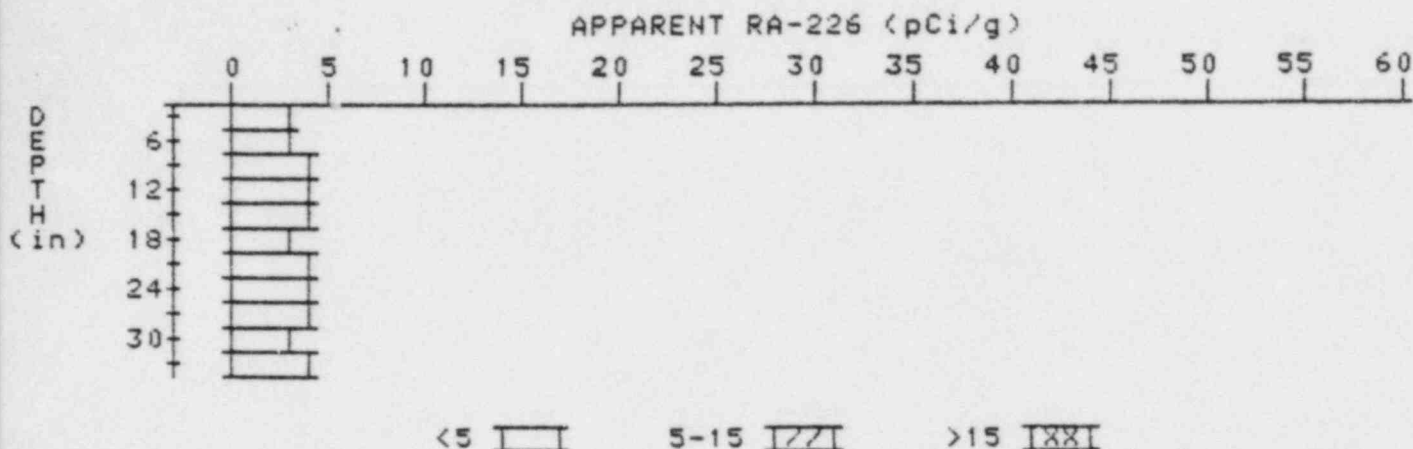
PROPERTY NUMBER: GJ-11802-RS
HOLE NUMBER: 15
LOCATION: 170270



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.6	5.6
6	5.8	7.6
9	5.0	5.0
12	4.2	3.5
15	3.8	3.6
18	3.5	3.3
21	3.3	3.3
24	3.0	2.5
27	3.0	3.0
30	3.0	1.2
33	4.0	4.0

APPARENT RADIUM-226 CONCENTRATION 19 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-11302-RS
HOLE NUMBER: 19
LOCATION: 190200

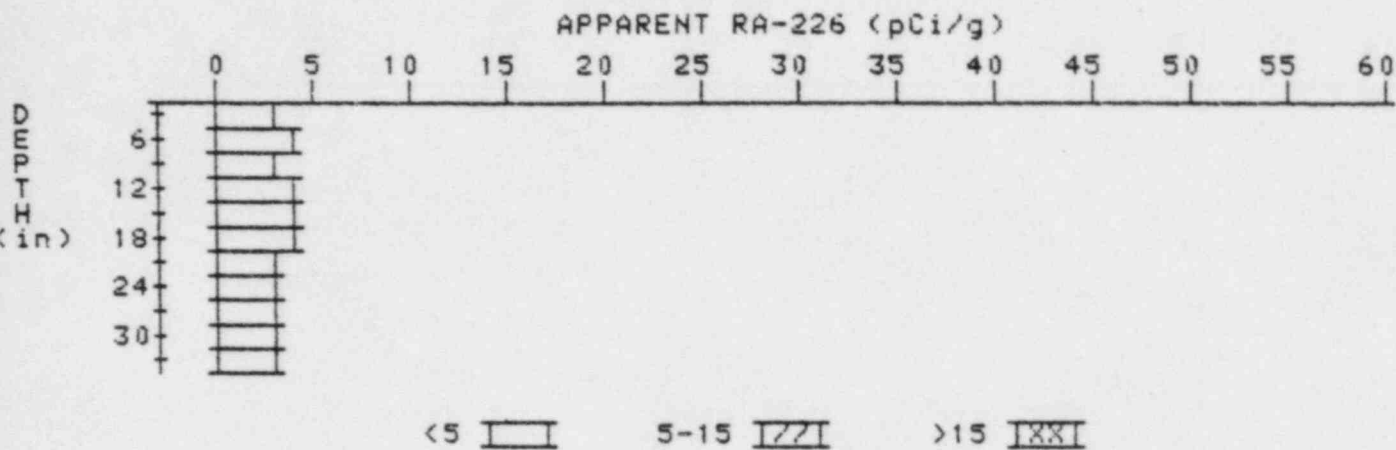


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.0	3.0
6	3.2	2.8
9	3.6	4.0
12	3.8	4.3
15	3.7	3.7
18	3.6	3.4
21	3.6	3.6
24	3.6	3.8
27	3.5	3.5
30	3.4	3.0
33	3.5	3.5

APPARENT RADIUM-226 CONCENTRATION 20

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-11802-RS
HOLE NUMBER: 20
LOCATION: 190280



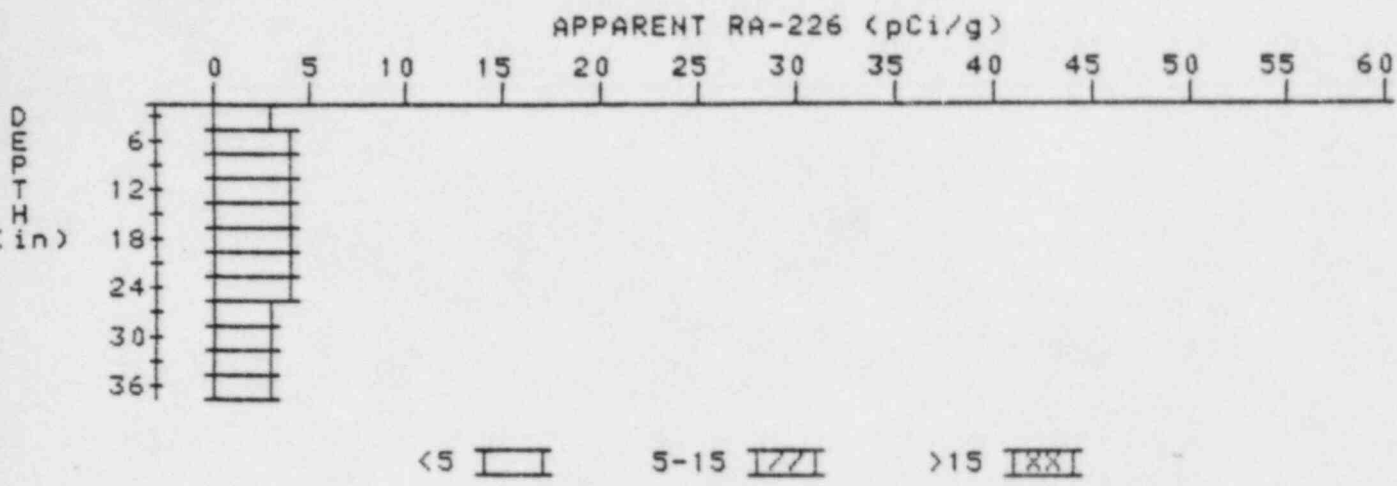
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.3	3.3
6	3.4	3.6
9	3.4	3.2
12	3.5	3.7
15	3.5	3.5
18	3.5	3.7
21	3.4	3.4
24	3.3	3.1
27	3.3	3.5
30	3.2	3.4
33	3.0	3.0

APPARENT RADIUM-226 CONCENTRATION

DECONVOLUTION GRAPH

22

PROPERTY NUMBER: GJ-11802-RS
HOLE NUMBER: 22
LOCATION: 203249

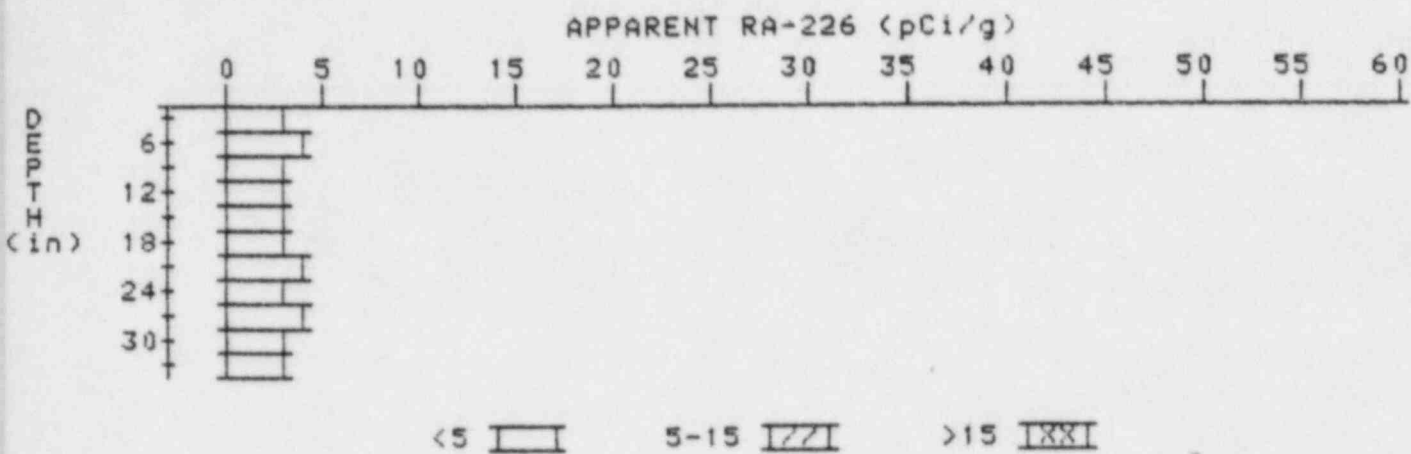


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.9	2.9
6	3.3	3.7
9	3.5	3.7
12	3.6	3.8
15	3.6	3.6
18	3.6	3.6
21	3.6	3.6
24	3.6	4.0
27	3.4	3.2
30	3.3	3.3
33	3.2	3.2
36	3.1	3.1

APPARENT RADIUM-226 CONCENTRATION 23

DECONVOLUTION GRAPH

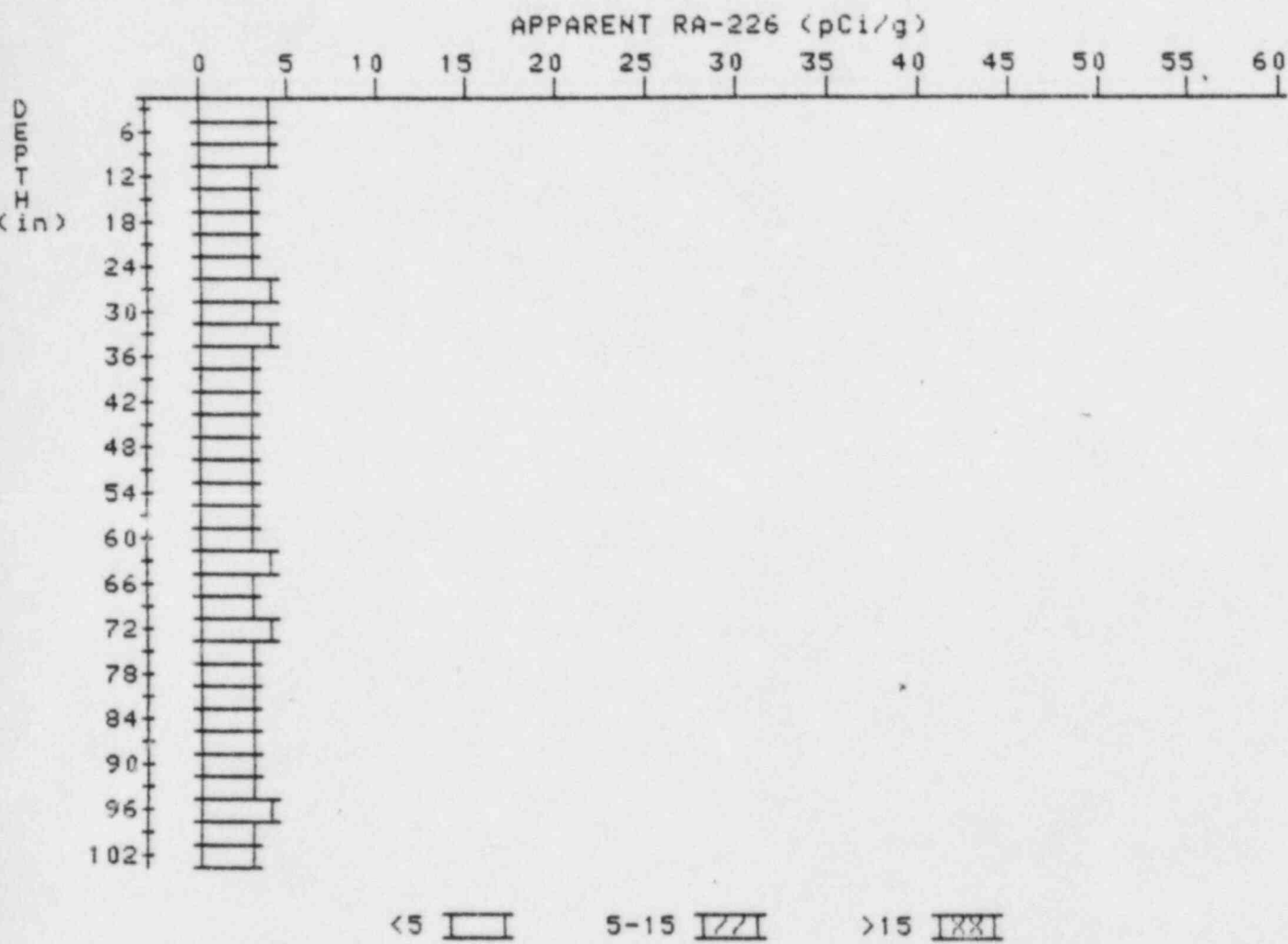
PROPERTY NUMBER: GJ-11802-RS
HOLE NUMBER: 23
LOCATION: 210267



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.7	2.7
6	3.1	3.6
9	3.2	3.4
12	3.2	3.0
15	3.3	3.5
18	3.3	3.1
21	3.4	3.6
24	3.4	3.4
27	3.4	3.6
30	3.3	3.3
33	3.2	3.2

APPARENT RADIUM-226 CONCENTRATION 24 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-11802-RS
 HOLE NUMBER: 24
 LOCATION: 218268

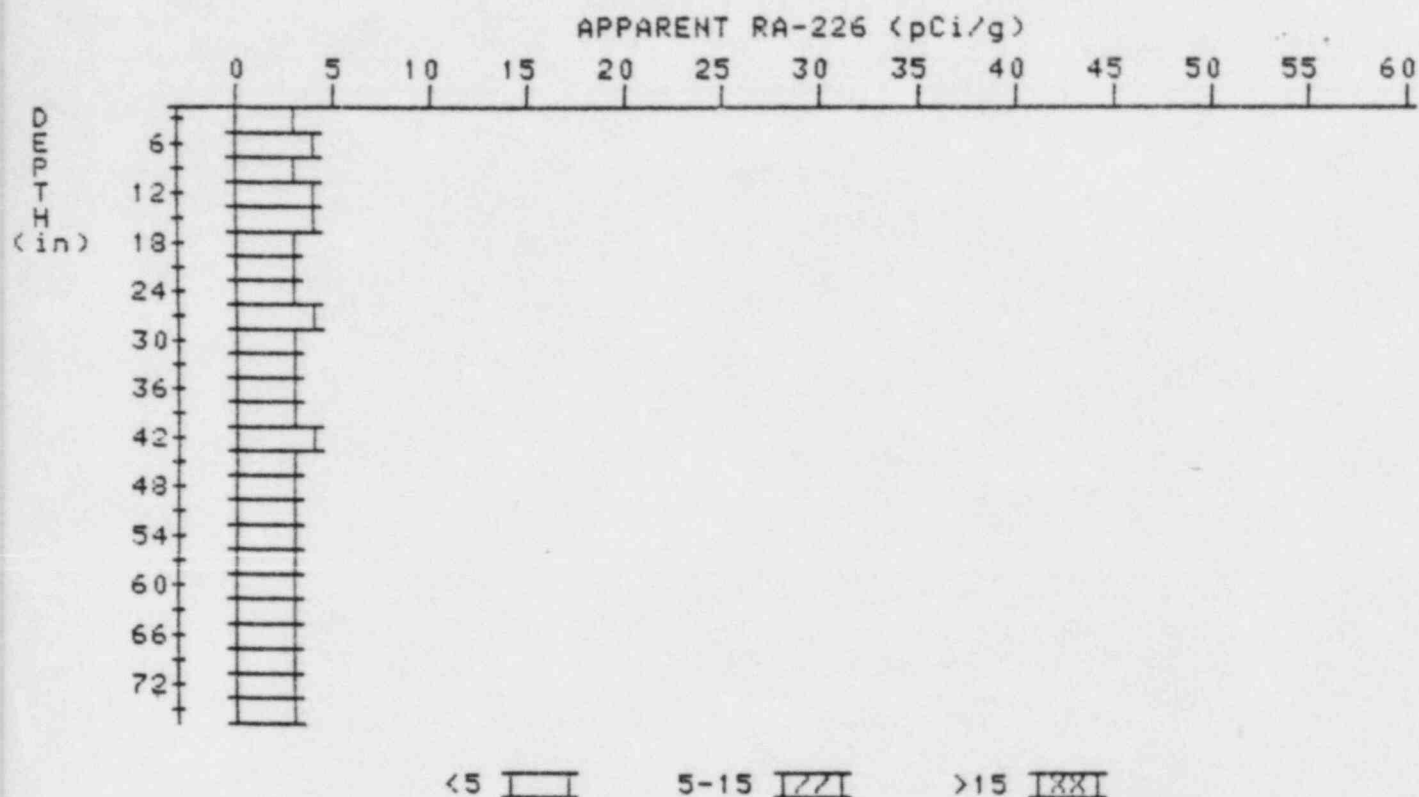


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.6	3.6
6	3.7	4.1
9	3.6	4.0
12	3.3	2.8
15	3.3	3.3
18	3.3	3.5
21	3.2	2.8

24	3.3	3.3
27	3.4	3.8
30	3.3	3.1
33	3.3	3.8
36	3.0	2.6
39	2.9	2.5
42	3.0	3.0
45	3.1	3.3
48	3.1	2.9
51	3.2	3.2
54	3.3	3.5
57	3.3	3.3
60	3.3	3.1
63	3.4	3.8
66	3.3	3.1
69	3.3	3.1
72	3.4	3.9
75	3.2	2.8
78	3.2	3.4
81	3.1	2.9
84	3.1	3.3
87	3.0	2.8
90	3.0	2.6
93	3.2	3.2
96	3.4	3.9
99	3.3	2.9
102	3.4	3.4

APPARENT RADIUM-226 CONCENTRATION 25 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-11802-RS
HOLE NUMBER: 25
LOCATION: 230290



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
=====	=====	=====
3	2.6	2.6
6	3.1	3.6
9	3.3	3.5
12	3.4	3.6
15	3.4	3.6
18	3.3	3.1
21	3.3	3.3
24	3.3	3.1
27	3.4	3.8
30	3.3	3.1
33	3.3	3.3
36	3.3	3.3
39	3.3	3.1
42	3.4	3.8

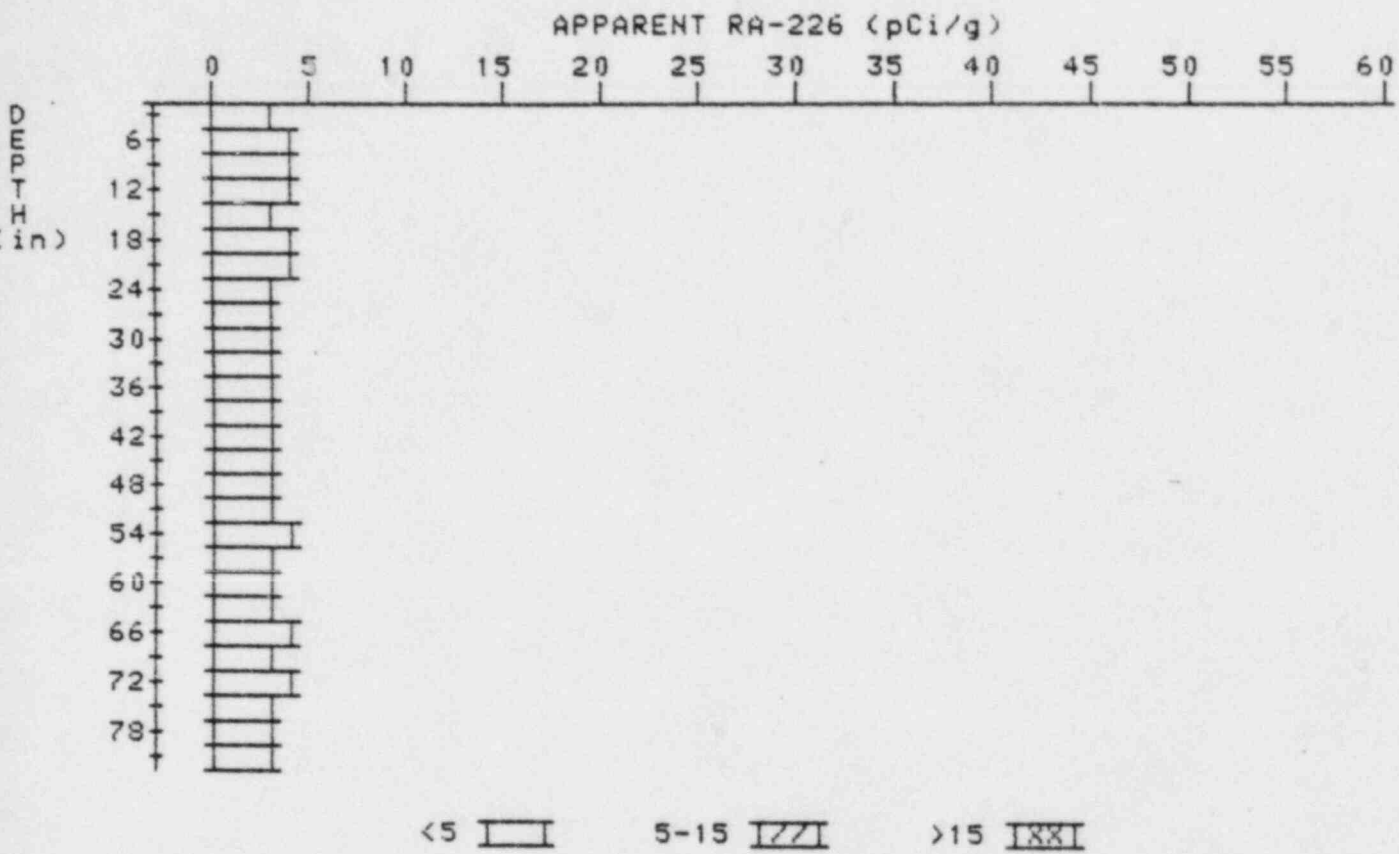
45	3.3	3.1
48	3.3	3.3
51	3.3	3.3
54	3.3	3.5
57	3.2	3.0
60	3.2	3.4
63	3.1	2.9
66	3.1	3.1
69	3.1	3.1
72	3.1	3.1
75	3.1	3.1

APPARENT RADIUM-226 CONCENTRATION

DECONVOLUTION GRAPH

26

PROPERTY NUMBER: GJ-11802-RS
HOLE NUMBER: 26
LOCATION: 241281



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	3.8
15	3.5	3.3
18	3.5	3.5
21	3.5	3.7
24	3.4	3.2
27	3.4	3.4
30	3.4	3.4
33	3.4	3.4
36	3.4	3.4

39
42
45
48
51
54
57
60
63
66
69
72
75
78
81

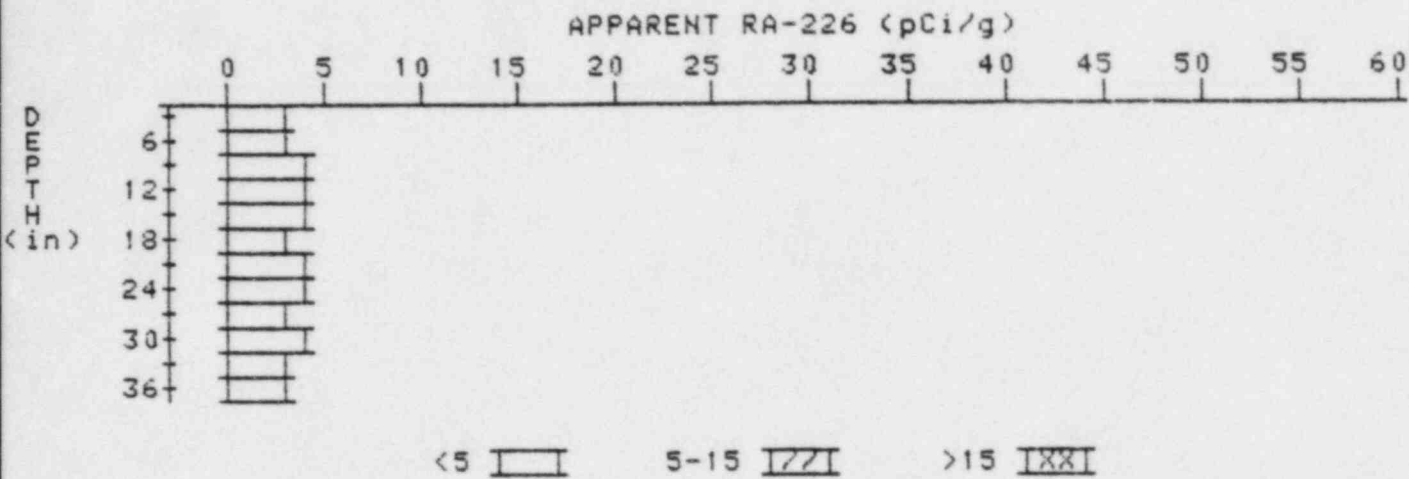
3.4
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3.3
3.2

3.4
3.4
3.4
3.4
3.4
3.6
3.1
3.3
3.1
3.6
3.2
3.9
3.4
3.3
3.2

APPARENT RADIUM-226 CONCENTRATION 28

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-11802-RS
HOLE NUMBER: 28
LOCATION: 270240

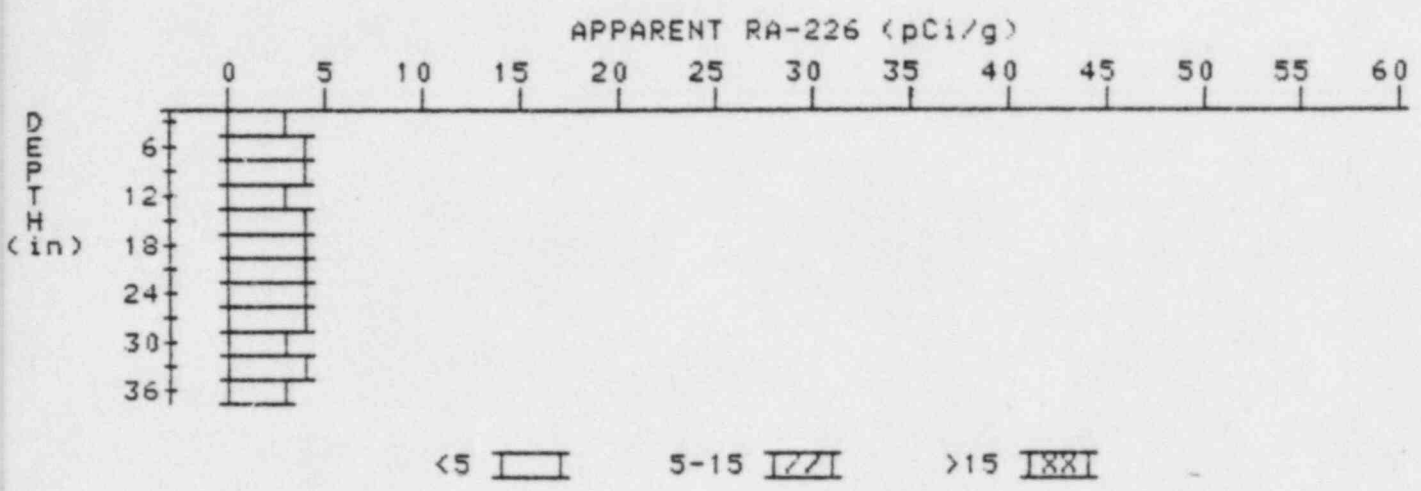


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.8	2.8
6	3.2	3.4
9	3.5	3.9
12	3.6	3.6
15	3.7	4.1
18	3.6	3.4
21	3.6	3.6
24	3.6	3.8
27	3.5	3.1
30	3.6	4.1
33	3.4	3.0
36	3.4	3.4

APPARENT RADIUM-226 CONCENTRATION 29

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-11302-RS
HOLE NUMBER: 29
LOCATION: 280225

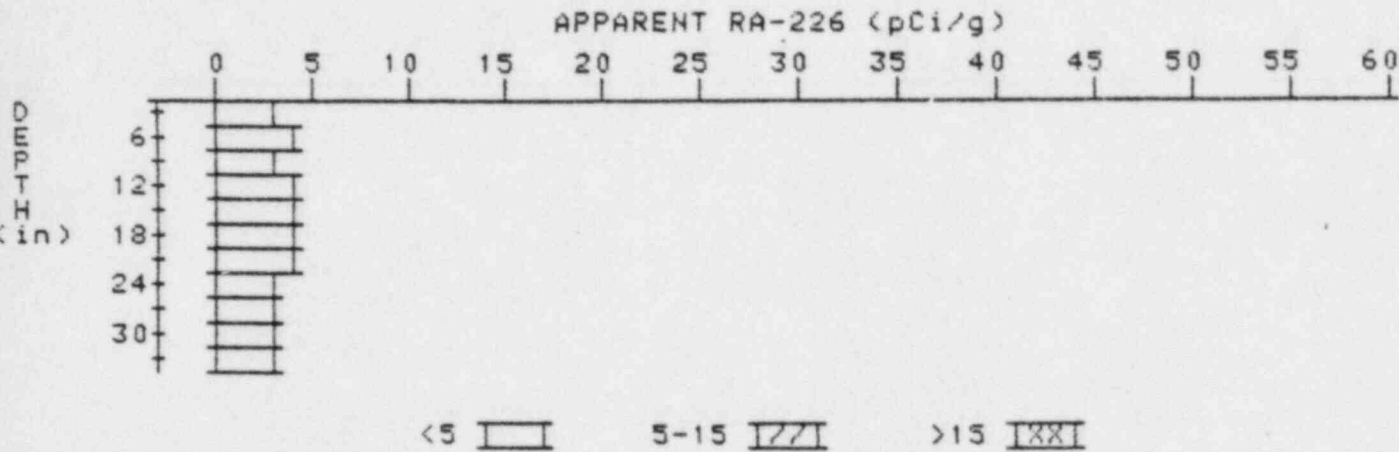


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.0	3.0
6	3.5	4.2
9	3.6	3.8
12	3.6	3.4
15	3.7	3.9
18	3.7	3.7
21	3.7	3.7
24	3.7	3.7
27	3.7	4.1
30	3.5	3.1
33	3.5	3.7
36	3.4	3.4

APPARENT RADIUM-226 CONCENTRATION 30

DECONVOLUTION GRAPH

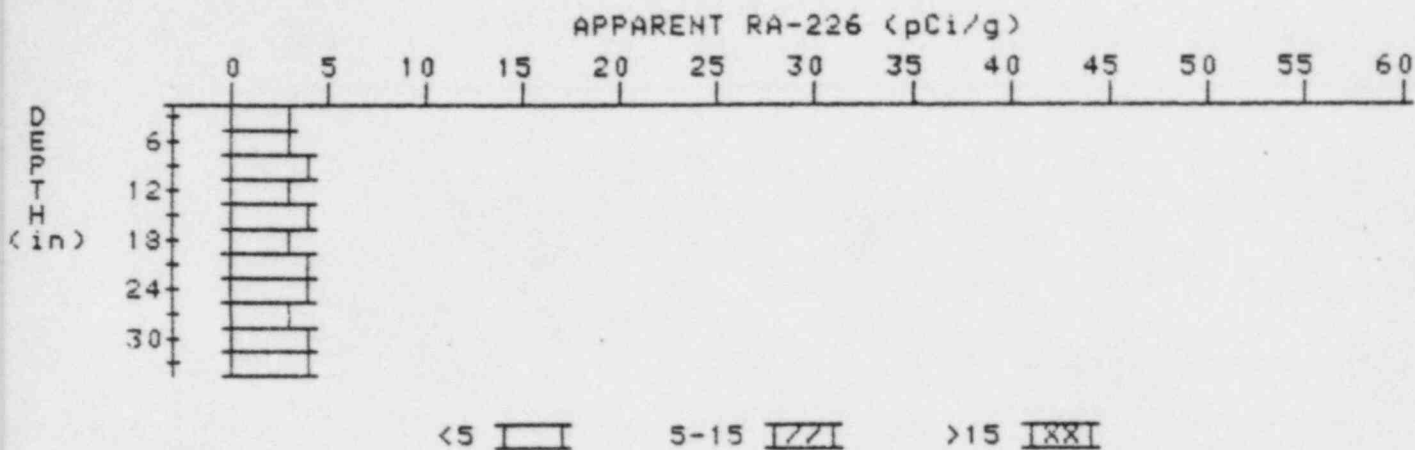
PROPERTY NUMBER: GJ-11802-RS
HOLE NUMBER: 30
LOCATION: 290253



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	3.4
12	3.5	3.7
15	3.5	3.5
18	3.5	3.5
21	3.5	3.7
24	3.4	3.4
27	3.3	3.1
30	3.3	3.5
33	3.2	3.2

APPARENT RADIUM-226 CONCENTRATION 31 DECONVOLUTION GRAPH

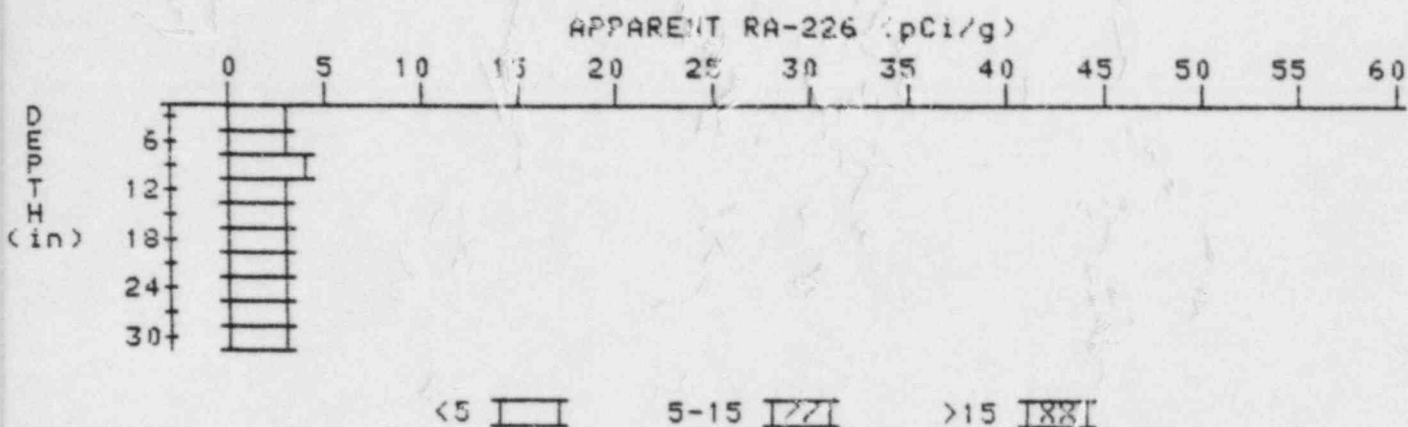
PROPERTY NUMBER: GJ-11302-R3
HOLE NUMBER: 31
LOCATION: 298245



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.5	2.5
6	2.9	3.1
9	3.2	3.6
12	3.3	3.3
15	3.4	3.6
18	3.4	3.2
21	3.5	3.5
24	3.6	4.0
27	3.5	3.3
30	3.5	3.5
33	3.5	3.5

APPARENT RADIUM-226 CONCENTRATION 32 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-11802-RS
HOLE NUMBER: 32
LOCATION: 318265



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.6	2.6
6	2.8	2.8
9	3.0	3.5
12	2.9	2.9
15	2.8	2.6
18	2.8	3.0
21	2.7	2.5
24	2.7	2.7
27	2.7	2.7
30	2.7	2.7