

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-05609-RS
ADDRESS: 207 COUNTRY CLUB PARK

JULY 1985

FOR

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT OFFICE

ALBUQUERQUE OPERATIONS OFFICE

DEPARTMENT OF ENERGY

BY

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DATE

July 22, 1985

REA05609:REA-702

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-05609-RS, is a single-family residence located at 207 Country Club Park, 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, 92 cu. yd.; interior, 0 cu. yd.

Estimated cost to perform remedial action, including dislocation when applicable, is \$9,338. Remedial action on this property will take approximately 15 days to complete.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 207 Country Club Park, Grand Junction, Colorado

Zoning: Residential (R-2)

Lot Size: Approximately 27,900 sf (0.65 acre)

Legal Description: Lot 7, Replat of Block 2, Country Club Park Subdivision, Section 21, 1S 1W, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 3 miles west 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/Underground
Gas: Underground
Telephone: Overhead
Sewer: Underground
Water: Underground
Cable TV: Overhead

Bordering Properties:

North: Country Club Park
South: Single-family residence
East: Country Club Park
West: Single-family residence

2.2 Existing Facilities and Structures

Primary Structure:

Type: Single-story residence with attached carport
Size: Approximately 2,744 sf
Construction Date: 1962
Construction: Wood-frame
Foundation: Concrete stemwall on spread footing
Footing Depth: Approximately 30" to bottom of footing from grade
Basement: None
Crawl Space: Yes - under entire living area
Condition: Good

Other Structures:

Type:	Covered patio (screened-in)
Size:	Approximately 420 sf
Construction:	Wood-frame
Foundation:	Concrete slab-on-grade
Condition:	Good

Type:	Garage
Size:	Approximately 336 sf
Construction:	Wood-frame
Foundation:	Concrete slab-on-grade
Condition:	Good

Type:	Attached carport
Size:	Approximately 250 sf
Construction:	Wood-frame
Foundation:	Concrete pads
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 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-05609-RS on April 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 under the driveway, under the sidewalk, and in the southern part of the yard.

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 16 uR/h
Highest Outside Gamma Reading (HOG): 55 uR/h

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

3.2.2 Interior Findings

Background Readings: 12 to 17 uR/h
Highest Inside Gamma Reading (HIG): 19 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, 3.4a, and 3.4b. Data from these investigations are included in Appendix Tables 3.1a, 3.1b, and 3.2.

3.4 Radon/Radon Daughter Concentration (RDC)

Determined by CDH: 0.016 gross working level (WL). No additional RDC measurements were taken by Bendix.

3.5 Extent of Contamination

Appendix Figures 3.5a and 3.5b 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) Surface Material: Soil
 Direction From Primary Structure: North
 Other Directions: none
 Total Depth of Contamination: 12 inches
 Other (height or thickness): none
 Comments: Small, isolated deposit in juniper bushes
 Approximate Square Footage: 15
- (Area B) Surface Material: Soil
 Direction From Primary Structure: North
 Other Directions: Southwest of Area A
 Total Depth of Contamination: 9 inches
 Other (height or thickness): none
 Comments: Isolated deposit at base of tree
 Approximate Square Footage: 30
- (Area C) Surface Material: Concrete
 Direction From Primary Structure: Northeast
 Other Directions: Beyond east property boundary
 Total Depth of Contamination: 10 inches
 Other (height or thickness): 10-inch-thick concrete
 Comments: The concrete support holding a drain pipe is contaminated.
 Approximate Square Footage: 12
- (Area D) Surface Material: Asphalt
 Direction From Primary Structure: North
 Other Directions: Along north side of screened patio
 Total Depth of Contamination: 15 inches
 Other (height or thickness): 4-inch-thick asphalt
 Comments: none
 Approximate Square Footage: 76

- (Area E) Surface Material: Concrete
Direction From Primary Structure: East and north
Other Directions: Abuts primary structure
Total Depth of Contamination: 18 inches
Other (height or thickness): 4-inch-thick concrete
Comments: This area consists of the screened patio slab
and a portion of the sidewalk east of it.
Approximate Square Footage: 435
- (Area F) Surface Material: Flagstone
Direction From Primary Structure: East and north
Other Directions: East of screened patio
Total Depth of Contamination: estimated at 18 inches
Other (height or thickness): 3-inch-thick flagstone
Comments: The depth of contamination is based on
information collected in Area E.
Approximate Square Footage: 40
- (Area G) Surface Material: Soil
Direction From Primary Structure: East and north
Other Directions: East of screened patio
Total Depth of Contamination: 18 inches
Other (height or thickness): none
Comments: This area consists of two planters on the north
side of the flagstone patio. The depth of
contamination is based on information collected
in Area H.
Approximate Square Footage: 36
- (Area H) Surface Material: Soil
Direction From Primary Structure: East and north
Other Directions: East of screened patio
Total Depth of Contamination: 18 inches
Other (height or thickness): none
Comments: Soil in planter
Approximate Square Footage: 30
- (Area I) Surface Material: Concrete
Direction From Primary Structure: East
Other Directions: Near northeast corner of primary
structure
Total Depth of Contamination: Estimated at 9 inches
Other (height or thickness): 4-inch-thick concrete
Comments: The depth of contamination for these two deposits
is based on information collected in Area L.
Approximate Square Footage: 39

- (Area J) Surface Material: Soil
Direction From Primary Structure: East
Other Directions: none
Total Depth of Contamination: >15 inches
Other (height or thickness): none
Comments: Soil around a lamp post, beneath some juniper bushes
Approximate Square Footage: 12
- (Area K) Surface Material: Concrete
Direction From Primary Structure: West
Other Directions: none
Total Depth of Contamination: 12 inches
Other (height or thickness): 4-inch-thick concrete
Comments: The sidewalk extends from the west stoop, around the southwest corner of the primary structure, to the southeast corner.
Approximate Square Footage: 298
- (Area L) Surface Material: Soil
Direction From Primary Structure: East
Other Directions: Abuts the east side of primary structure
Total Depth of Contamination: 9 inches
Other (height or thickness): none
Comments: Soil in a planter
Approximate Square Footage: 116
- (Area M) Surface Material: Quartz rock
Direction From Primary Structure: West
Other Directions: West side of the sidewalk
Total Depth of Contamination: 15 inches
Other (height or thickness): 2-inch-thick quartz rock
Comments: none
Approximate Square Footage: 180
- (Area N) Surface Material: Quartz rock
Direction From Primary Structure: West
Other Directions: East side of the sidewalk
Total Depth of Contamination: 6 inches
Other (height or thickness): 2-inch-thick quartz rock
Comments: none
Approximate Square Footage: 124
- (Area O) Surface Material: Concrete
Direction From Primary Structure: East
Other Directions: South of Area L
Total Depth of Contamination: >8 inches
Other (height or thickness): 4-inch-thick concrete
Comments: The underlying soil is contaminated.
Approximate Square Footage: 66

- (Area P) Surface Material: Soil
Direction From Primary Structure: East
Other Directions: East of Area O
Total Depth of Contamination: 12 inches
Other (height or thickness): none
Comments: This area consists of two small deposits.
Approximate Square Footage: 120
- (Area Q) Surface Material: Quartz rock
Direction From Primary Structure: East
Other Directions: At the southeast corner of the primary structure
Total Depth of Contamination: 6 inches
Other (height or thickness): 2-inch-thick quartz rock
Comments: Rock garden
Approximate Square Footage: 98
- (Area R) Surface Material: Soil
Direction From Primary Structure: South
Other Directions: North of garage
Total Depth of Contamination: 12 inches
Other (height or thickness): none
Comments: Between sidewalk and garage
Approximate Square Footage: 28
- (Area S) Surface Material: Lawn
Direction From Primary Structure: South
Other Directions: East of the garage
Total Depth of Contamination: 9 inches
Other (height or thickness): none
Comments: none
Approximate Square Footage: 16
- (Area T) Surface Material: Lawn
Direction From Primary Structure: South
Other Directions: East of the garage
Total Depth of Contamination: 6 inches
Other (height or thickness): none
Comments: none
Approximate Square Footage: 165
- (Area U) Surface Material: Lawn
Direction From Primary Structure: South
Other Directions: East of garage
Total Depth of Contamination: 9 inches
Other (height or thickness): none
Comments: none
Approximate Square Footage: 164

- (Area V) Surface Material: Lawn
Direction From Primary Structure: South
Other Directions: East of the garage
Total Depth of Contamination: 6 inches
Other (height or thickness): none
Comments: none
Approximate Square Footage: 54
- (Area W) Surface Material: Lawn
Direction From Primary Structure: South
Other Directions: Southeast of the garage
Total Depth of Contamination: 12 inches
Other (height or thickness): none
Comments: none
Approximate Square Footage: 90
- (Area X) Surface Material: Lawn
Direction From Primary Structure: South
Other Directions: Southeast of the garage
Total Depth of Contamination: 6 inches
Other (height or thickness): none
Comments: This area consists of two deposits.
Approximate Square Footage: 150
- (Area Y) Surface Material: Soil
Direction From Primary Structure: Southeast
Other Directions: Southeast of the garage
Total Depth of Contamination: 18 inches
Other (height or thickness): none
Comments: none
Approximate Square Footage: 56
- (Area Z) Surface Material: Soil
Direction From Primary Structure: Southeast
Other Directions: Southeast of the garage
Total Depth of Contamination: 6 inches
Other (height or thickness): none
Comments: East of Area Y, on the hillside
Approximate Square Footage: 45

(Areas Requiring Further Investigation During Remedial Action)

The sidewalk running north from the west stoop to the parking area, and the planter east of Area H should be closely monitored during remedial action.

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-05609-RS, includes removal of all areas identified as containing radioactive material (as discussed in Section 3.5 and shown in Appendix Figures 3.5a and 3.5b) 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 \$9,338.

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

Appendix Figures:

Figure 2.1	Vicinity Map
Figure 2.2	Site Plan
Figure 3.1a	Exterior Grid-Point Exposure Rates
Figure 3.1b	Exterior Grid-Point Exposure Rates
Figure 3.2a	Exterior Gamma Scan
Figure 3.2b	Exterior Gamma Scan
Figure 3.3a	Interior Gamma Exposure Rates and Sample Locations
Figure 3.3b	Interior Gamma Exposure Rates
Figure 3.4a	Exterior Sample Locations
Figure 3.4b	Exterior Sample Locations
Figure 3.5a	Estimated Extent of Contamination
Figure 3.5b	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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207 Country Club Park

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
8	141243	00	DS	5.9		*	Near lamp post
		06	DS	4.9		*	
		12	DS	<1.0		*	
		00-06	SS			3.7	
9	160214	03	TC	9.6		*	West of the driveway DC = 9 inches Based on the deconvolution graph
		06	TC	7.8		*	
		09	TC	6.1		*	
		12	TC	5.4		*	
		15	TC	4.7		*	
		18	TC	4.5		*	
		21	TC	4.5		*	
		24	TC	4.6		*	
		27	TC	4.8		*	
		30	TC	5.0		*	
		33	TC	5.0		*	
		36	TC	5.0		*	
10	205273	00	DS	1.8		*	Drain pipe with concrete support Concrete chips
		06	DS	<1.0		*	
		00-00	SS			57.3	
		00-06	SS			3.1	
11	210230	00	DS	<1.0		*	North of the carport
12	211255	03	TC	3.3		*	Pump Northeast yard DC = 0 inches
		06	TC	3.6		*	
		09	TC	3.8		*	
		12	TC	3.9		*	
		15	TC	4.0		*	
		18	TC	4.0		*	
		21	TC	3.9		*	
		24	TC	3.8		*	
		27	TC	4.0		*	
		30	TC	4.0		*	
		33	TC	4.2		*	
		36	TC	4.4		*	
		39	TC	4.5		*	
		42	TC	4.5		*	
		45	TC	4.6		*	
		48	TC	4.7		*	
		51	TC	4.6		*	
		54	TC	4.7		*	
		57	TC	4.7		*	

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.		
12	211255	60	TC	4.7		*	
		63	TC	4.7		*	
		66	TC	4.6		*	
13	218245	03	TC	10.6		*	Water line by the patio DC = 15 inches Based on all available data
		06	TC	15.4		*	
		09	TC	17.1		*	
		12	BH	12.5	9.1	*	
		15	TC	8.3		*	
		18	TC	6.3		*	
		21	TC	5.4		*	
		24	TC	5.0		*	
		27	TC	5.0		*	
		30	TC	5.0		*	
		33	TC	5.0		*	
		36	TC	5.0		*	
		39	TC	5.0		*	
		42	TC	4.9		*	
		45	TC	4.9		*	
		48	BH	5.0	3.1	*	
		51	TC	5.3		*	
		54	TC	5.5		*	
		57	TC	5.9		*	
		60	TC	6.1		*	
		63	TC	6.0		*	
		66	TC	5.7		*	
		69	TC	5.6		*	
		72	TC	5.5		*	
		75	TC	5.6		*	
		78	TC	5.6		*	
		81	TC	5.8		*	
		84	BH	5.8	2.3	*	
		87	TC	5.9		*	
		90	TC	6.1		*	
		93	TC	6.1		*	
		96	TC	6.2		*	
		99	TC	6.2		*	
14	219228	03	TC	4.6		*	Electrical line North of the primary structure DC = 0 inches
		06	TC	5.5		*	
		09	TC	5.7		*	
		12	BH	5.9	3.2	*	
		15	TC	6.1		*	
		18	TC	6.0		*	

Radium Concentrations at Exterior Locations

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
14	219228	21	TC	5.8		*	
		24	TC	5.7		*	
		27	TC	5.7		*	
		30	TC	5.7		*	
		33	TC	5.8		*	
		36	TC	5.9		*	
		39	TC	6.1		*	
		42	BH	6.2	3.4	*	
		45	TC	6.4		*	
		48	TC	6.4		*	
		51	TC	6.5		*	
		54	TC	6.6		*	
		57	TC	6.6		*	
		60	TC	6.6		*	
		63	TC	6.6		*	
		66	TC	6.7		*	
		69	TC	6.8		*	
		72	BH	7.0	3.7	*	
		75	TC	7.1		*	
		78	TC	7.0		*	
		81	TC	6.9		*	
		84	TC	6.7		*	
		87	TC	6.6		*	
		90	TC	6.5		*	
		93	TC	6.4		*	
		96	TC	6.6		*	
		99	TC	6.7		*	
		102	BH	6.8	3.4	*	
		105	TC	7.4		*	
		108	TC	8.1		*	
15	219229	04-10	SS			12.4	
		42-48	SS			3.1	
		68-74	SS			2.9	
		03	TC	6.5		*	
		06	BH	8.9	8.4	*	
		09	TC	8.8		*	
		12	TC	7.3		*	
		15	TC	6.2		*	
		18	TC	5.8		*	
		21	TC	5.4		*	
		24	TC	5.2		*	
		27	TC	5.1		*	
		30	BH	5.3	3.1	*	
							DC = 15 inches Based on all available data

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.		
15	219229	33	TC	5.4		*	
		36	TC	5.7		*	
		39	TC	5.7		*	
		42	TC	5.9		*	
		45	TC	5.9		*	
		48	TC	6.0		*	
		51	TC	6.0		*	
		54	TC	6.0		*	
		57	TC	6.0		*	
		60	BH	6.0	3.0	*	
		63	TC	6.0		*	
		66	TC	6.1		*	
		69	TC	6.3		*	
		72	TC	6.3		*	
		75	TC	6.6		*	
		78	TC	6.5		*	
		81	TC	6.5		*	
		84	TC	6.4		*	
		87	BH	6.3	4.8	*	
		90	TC	6.2		*	
		93	TC	6.3		*	
		96	TC	6.4		*	
		99	TC	6.7		*	
		102	TC	6.6		*	
16	224241	00	DS	31.6		*	Enclosed patio Core
		00-04	SS			3.8	
		04-10	SS			163.7	
		03	TC	36.3		*	
		06	TC	49.2		*	
		09	TC	39.5		*	
		12	BH	25.8	19.0	*	DC = 18 inches Based on all available data
		15	TC	16.6		*	
		18	TC	11.4		*	
		21	TC	9.3		*	
		24	TC	8.5		*	
		27	TC	7.9		*	
		30	TC	7.5		*	
		33	TC	7.2		*	
		36	TC	6.9		*	
		39	TC	6.7		*	
		42	BH	6.4	4.4	*	
		45	TC	6.5		*	
		48	TC	6.7		*	

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
16	224241	51	TC	6.9		*	
		54	TC	7.3		*	
		57	TC	7.5		*	
		60	TC	7.3		*	
		63	TC	7.2		*	
		66	TC	7.3		*	
		69	TC	7.2		*	
17	230245	00	DS	22.8		*	Flagstone patio
		04-10	SS			57.1	DC = >15 inches
		03	TC	14.0		*	
		06	TC	26.3		*	
		09	TC	28.4		*	
		12	TC	18.6		*	
		15	TC	12.4		*	Auger refusal
18	231255	00	DS	7.0		*	Northeast of the
		06	DS	7.2		*	primary structure
		12	DS	6.5		*	Planter
		15	DS	4.7		*	
		18	DS	1.2		*	
		00-06	SS			13.1	
		06-12	SS			8.3	
19	237232	00	DS	3.6		*	Inside patio
20	243244	03	TC	17.1		*	Planter
		06	TC	13.4		*	
		09	TC	10.1		*	
		12	TC	8.0		*	
		15	TC	6.8		*	DC = 18 inches
		18	TC	6.0		*	Based on the
		21	TC	5.5		*	deconvolution graph
		24	TC	5.2		*	
		27	TC	5.2		*	
		30	TC	5.4		*	
21	243256	00	DS	1.3		*	
22	245259	00	DS	6.5		*	East sidewalk
23	246247	00	DS	10.3		*	North sidewalk
		00-05	SS			2.0	Core
		05-11	SS			22.5	

Radium Concentrations at Exterior Locations

DOE ID #GJ-05609-RS

207 Country Club Park

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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.		
23	246247	03	TC	19.4		*	DC = 18 inches Based on the deconvolution graph
		06	TC	13.9		*	
		09	TC	10.1		*	
		12	TC	7.9		*	
		15	TC	6.9		*	
		18	TC	6.2		*	
		21	TC	5.9		*	
		24	TC	5.5		*	
		27	TC	5.3		*	
		30	TC	5.3		*	
		33	TC	5.3		*	
24	248236	00	DS	3.4		*	In patio
25	250270	00	DS	11.1		*	Lamp post
		06	DS	10.7		*	
		12	DS	9.4		*	
		15	DS	3.5		*	
		15-21	SS			4.4	
26	260215	00-05	SS			2.9	Core Soil
		05-11	SS			45.3	
		03	TC	20.8		*	DC = 12 inches Based on the deconvolution graph
		06	TC	26.1		*	
		09	TC	18.7		*	
		12	TC	12.3		*	
		15	TC	8.6		*	
		18	TC	7.0		*	
		21	TC	6.2		*	
		24	TC	6.0		*	
		27	TC	5.7		*	
		30	TC	5.6		*	
		33	TC	5.5		*	
		36	TC	5.4		*	
		39	TC	5.3		*	
27	260256	03	TC	5.9		*	East of the primary structure DC = 9 inches Based on the deconvolution graph
		06	TC	6.3		*	
		09	TC	5.3		*	
		12	TC	4.9		*	
		15	TC	4.7		*	
		18	TC	4.6		*	
		21	TC	4.5		*	
		24	TC	4.5		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-05609-RS

207 Country Club Park

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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.		
27	260256	27	TC	4.4		*	
		30	TC	4.5		*	
28	260260	00	DS	3.2		*	
29	270256	03	TC	8.5		*	East of the primary structure DC = 9 inches Based on the deconvolution graph
		06	TC	7.9		*	
		09	TC	7.0		*	
		12	TC	5.9		*	
		15	TC	5.0		*	
		18	TC	4.8		*	
		21	TC	4.4		*	
		24	TC	4.5		*	
30	281216	03	TC	9.9		*	West of the sidewalk DC = 15 inches Based on all available data
		06	TC	11.8		*	
		09	TC	10.3		*	
		12	TC	8.3		*	
		15	TC	7.0		*	
		18	TC	6.3		*	
		21	TC	5.8		*	
		24	TC	5.7		*	
		27	TC	5.5		*	
		30	TC	5.6		*	
		33	TC	5.7		*	
		36	TC	6.0		*	
31	283219	00	DS	7.8		*	Water and sewer lines
		06	DS	2.9		*	
		21	DS	1.2		*	
32	290256	03	TC	4.0		*	East of the primary structure DC = 0 inches
		06	TC	4.4		*	
		09	TC	4.4		*	
		12	TC	4.3		*	
		15	TC	3.9		*	
		18	TC	3.8		*	
		21	TC	3.7		*	
		24	TC	3.7		*	
		27	TC	3.7		*	
		30	TC	3.7		*	
		33	TC	4.0		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-05609-RS

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Loc #	Grid	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
33	291259	00	DS	4.0		*	On the sidewalk
		04-08	SS			13.9	Under the sidewalk
34	291260	00	DS	<1.0		*	East of the
		06	DS	1.8		*	primary structure
		00-06	SS			3.1	
35	293273	00	DS	3.4		*	East hillside
		06	DS	17.4		*	
		12	DS	1.8		*	
36	296253	00	DS	2.4		*	South of the porch
		06	DS	1.9		*	
		00-06	SS			3.5	
37	319253	00	DS	3.7		*	Southeast corner
		06	DS	1.8		*	of the primary
		00-06	SS			5.5	structure
38	320273	00	DS	5.4		*	Lamp post
		12	DS	1.4		*	

Measurement Types: GB = GAD-6 Borehole
 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 = 04-03-85
 Team Leader = TC

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.		
39	132247	00	DS	3.9		*	Gas and sewer line
40	132250	00	DS	3.2		*	Gas meter
		06	DS	1.8		*	
		16	DS	1.8		*	
41	133218	00	DS	16.0		*	Sidewalk
42	135226	03	TC	7.2		*	North of the
		06	TC	7.1		*	garage
		09	TC	6.6		*	DC = 12 inches
		12	TC	6.1		*	Based on all
		15	TC	5.8		*	available data
		18	TC	5.9		*	
		21	TC	5.8		*	
		24	TC	5.8		*	
		27	TC	5.9		*	
		30	TC	5.8		*	
		33	TC	5.6		*	
		36	TC	5.3		*	
		39	TC	5.2		*	
43	137237	00	DS	5.6		*	Northeast corner
		00-06	SS			7.0	of the garage
		03	TC	5.7		*	Water line
		06	TC	5.4		*	DC = 9 inches
		09	TC	4.8		*	Based on all
		12	BH	4.5	2.1	*	available data
		15	TC	4.3		*	
		18	TC	4.1		*	
		21	TC	4.0		*	
		24	TC	4.1		*	
		27	TC	4.2		*	
		30	TC	4.3		*	
		33	TC	4.5		*	
		36	BH	4.7	2.1	*	
		39	TC	4.8		*	
		42	TC	5.0		*	
		45	TC	5.2		*	
		48	TC	5.5		*	
		51	TC	5.8		*	
		54	TC	6.2		*	
		57	TC	6.9		*	
		60	BH	7.4	2.5	*	

Radium Concentrations at Exterior Locations

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Page 2 of 5

Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
43	137237	63	TC	7.1		*	
		66	TC	6.8		*	
		69	TC	5.9		*	
		72	TC	5.1		*	
		75	TC	4.6		*	
		78	TC	4.2		*	
44	140250	00	DS	2.9		*	South yard
		06	DS	1.0		*	
		00-06	SS			9.0	
45	150252	03	TC	10.9		*	Backyard
		06	TC	10.3		*	DC = 9 inches
		09	TC	7.1		*	Based on the
		12	TC	5.1		*	deconvolution graph
		15	TC	4.1		*	
		18	TC	3.8		*	
		21	TC	3.6		*	
		24	TC	3.8		*	
		27	TC	3.8		*	
		30	TC	3.9		*	
		33	TC	4.2		*	
		36	TC	4.4		*	
46	152260	00	DS	2.0		*	South yard
		06	DS	1.8		*	
		00-06	SS			9.9	
47	153245	03	TC	19.2		*	East of the garage
		06	TC	15.4		*	
		09	TC	10.2		*	
		12	TC	7.3		*	Based on the deconvolution graph
		15	TC	5.8		*	
		18	TC	5.1		*	
		21	TC	4.7		*	
		24	TC	4.7		*	
		27	TC	4.8		*	
		30	TC	4.8		*	
		33	TC	4.8		*	
		36	TC	4.9		*	
		39	TC	4.8		*	
		42	TC	4.7		*	
		45	TC	4.6		*	
		48	TC	4.5		*	

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.		
47	153245	51	TC	4.5		*	
		54	TC	4.9		*	
		57	TC	5.1		*	
		60	TC	5.4		*	
		63	TC	5.7		*	
		66	TC	6.0		*	
48	154273	03	TC	3.2		*	Backyard DC = 0 inches
		06	TC	3.4		*	
		09	TC	3.6		*	
		12	TC	3.8		*	
		15	TC	3.8		*	
		18	TC	3.9		*	
		21	TC	3.9		*	
		24	TC	3.9		*	
		27	TC	3.8		*	
		30	TC	3.6		*	
		33	TC	3.5		*	
49	160250	03	TC	4.5		*	Backyard DC = 0 inches
		06	TC	3.8		*	
		09	TC	3.6		*	
		12	TC	3.3		*	
		15	TC	3.3		*	
		18	TC	3.4		*	
		21	TC	3.5		*	
		24	TC	3.6		*	
		27	TC	3.8		*	
		30	TC	3.9		*	
		33	TC	4.0		*	
50	161232	03	TC	3.1		*	South of the garage DC = 0 inches
		06	TC	3.3		*	
		09	TC	3.4		*	
		12	TC	3.5		*	
		15	TC	3.7		*	
		18	TC	3.9		*	
		21	TC	4.0		*	
		24	TC	4.2		*	
		27	TC	4.3		*	
		30	TC	4.4		*	

Radium Concentrations at Exterior Locations

DOE ID #GJ-05609-RS

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
51	163244	00	DS	7.2		*	South of the primary structure
		06	DS	1.7		*	
		00-06	SS			12.4	
52	169235	00	DS	3.3		*	
		06	DS	<1.0		*	
53	169265	03	TC	17.1		*	Backyard DC = 18 inches Based on all available data
		06	TC	23.6		*	
		09	TC	24.9		*	
		12	TC	22.8		*	
		15	TC	18.2		*	
		18	TC	12.6		*	
		21	TC	9.2		*	
		24	TC	7.0		*	
		27	TC	5.5		*	
54	170275	00	DS	6.4		*	East of the garage
		06	DS	1.1		*	
55	172258	03	TC	2.7		*	South yard DC = 0 inches
		06	TC	2.8		*	
		09	TC	2.7		*	
		12	TC	2.9		*	
		15	TC	3.1		*	
		18	TC	3.4		*	
		21	TC	3.4		*	
		24	TC	3.5		*	
		27	TC	3.7		*	
		30	TC	3.4		*	
56	180220	00	DS	<1.0		*	South of the primary structure Background DC = 0 inches
		00-06	SS			2.4	
		03	TC	2.7		*	
		06	TC	3.0		*	
		09	TC	3.3		*	
		12	BH	3.6	1.9	*	
		15	TC	3.7		*	
		18	TC	3.8		*	

Radium Concentrations at Exterior Locations

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Loc #	Grid Location	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
56	180220	21	TC	4.0		*	
		24	TC	4.1		*	
		27	TC	4.4		*	

Measurement GB = GAD-6 Borehole
Types: 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 = 04-03-85
Team Leader = TC

Radium Concentrations at Interior Locations

DOE ID #GJ-05609-RS

207 Country Club Park

Page 1 of 1

Loc #	Grid	Depth (in.)	Meas. Type	In Situ Ra-226 (pCi/g)		Chem Ra-226 (pCi/g)	Comments
				Tot. Ct	Spectr.		
1		00	DS	1.4		*	Water line
2		00	DS	1.4		*	
3		00	DS	2.7		*	
4		00	DS	1.4		*	
5		00	DS	2.9		*	
		06	DS	2.7		*	
		12	DS	2.0		*	
		00-06	SS			3.6	
		06-12	SS			2.8	
6		00	DS	<1.0		*	Sewer line
7		00	DS	1.0		*	Gas line

Measurement GB = GAD-6 Borehole
Types: 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 = 04-03-85
Team Leader = TC

Table 3.3
Summary of Interior Gamma Exposure Rates
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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)
CRAWL SPACE	32	16-19	18	32	17-19	19
ROOM A	16	13-16	14	15	14-17	14
ROOM B	10	12-14	13	09	13-16	14
ROOM C	11	13-15	14	11	14-15	14
ROOM D	08	12-17	15	09	12-16	15
ROOM E	05	12-14	13	05	14-15	14
ROOM F	04	14-15	15	04	14-15	15
ROOM G	02	14-16	15	02	15-16	16
ROOM H	07	13-18	15	07	15-19	16
ROOM I	07	13-16	14	07	11-15	14
ROOM J	05	14-17	15	05	14-18	16
ROOM K	07	12-16	14	07	11-17	15
ROOM L	09	11-14	13	08	12-15	14
GARAGE	11	12-15	14	11	13-14	14

=====

*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-05609-RS

Page 1 of 3

<u>AREA</u>	<u>CALCULATIONS(ft)</u>	<u>SF</u>	<u>DEPTH(ft)</u>	<u>CF</u>	<u>CUBIC YARDS</u>
EXTERIOR					
	Concrete				
E	30 x 14 =	420			
	3 x 5 =	15			
		<hr/>			
		435	x 0.3 =	131	
I	17 x 3 =	51			
	16 x 3 =	48			
		<hr/>			
		99	x 0.3 =	30	
K	59 x 3 =	177			
	4 x 7 =	28			
	31 x 3 =	93			
		<hr/>			
		298	x 0.3 =	89	
O	22 x 3 =	66	x 0.3 =	20	
				<hr/>	
	Total Volume of Concrete			270 =	270/27 = 10
Contaminated Fill					
A	5 x 3 =	15	x 1.0 =	15	
B	6 x 5 =	30	x 0.8 =	24	
C	4 x 3 =	12	x 0.8 =	10	
D	4 x 19 =	76	x 1.3 =	99	
E	30 x 14 =	420			
	3 x 5 =	15			
		<hr/>			
		435	x 1.2 =	522	
F	10 x 4 =	40	x 1.5 =	60	
G	9 x 4 =	36	x 1.5 =	54	

Table 4.1
Area and Volume Calculations
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H	6 x 5	=	30	x	1.5	=	45
I	6 x 3	=	18				
	7 x 3	=	21				
			39	x	0.5	=	20
J	6 x 2	=	12	x	1.3	=	16
K	59 x 3	=	177				
	4 x 7	=	28				
	31 x 3	=	93				
			298	x	0.7	=	209
L	29 x 4	=	116	x	0.8	=	93
M	60 x 3	=	180	x	1.3	=	234
N	62 x 2	=	124	x	0.5	=	62
O	22 x 3	=	66	x	0.4	=	26
P	3 x 4	=	12				
	6 x 3	=	18				
	9 x 10	=	90				
			120	x	1.0	=	120
Q	5 x 4	=	20				
	2 x 39	=	78				
			98	x	0.5	=	49
R	2 x 14	=	28	x	1.0	=	28
S	4 x 4	=	16	x	0.8	=	13
T	11 x 15	=	165	x	0.5	=	83
U	5 x 16	=	80				
	14 x 6	=	84				
			164	x	0.8	=	131

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-05609-RS

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V	9 x 6	=	54	x	0.5	=	27
W	9 x 10	=	90	x	1.0	=	90
X	10 x 15	=	150	x	0.5	=	75
Y	8 x 7	=	56	x	1.5	=	84
Z	9 x 5	=	45	x	0.5	=	23
Volume of Fill						2,212 = 2,212/27 =	82
TOTAL VOLUME - EXTERIOR						=	92

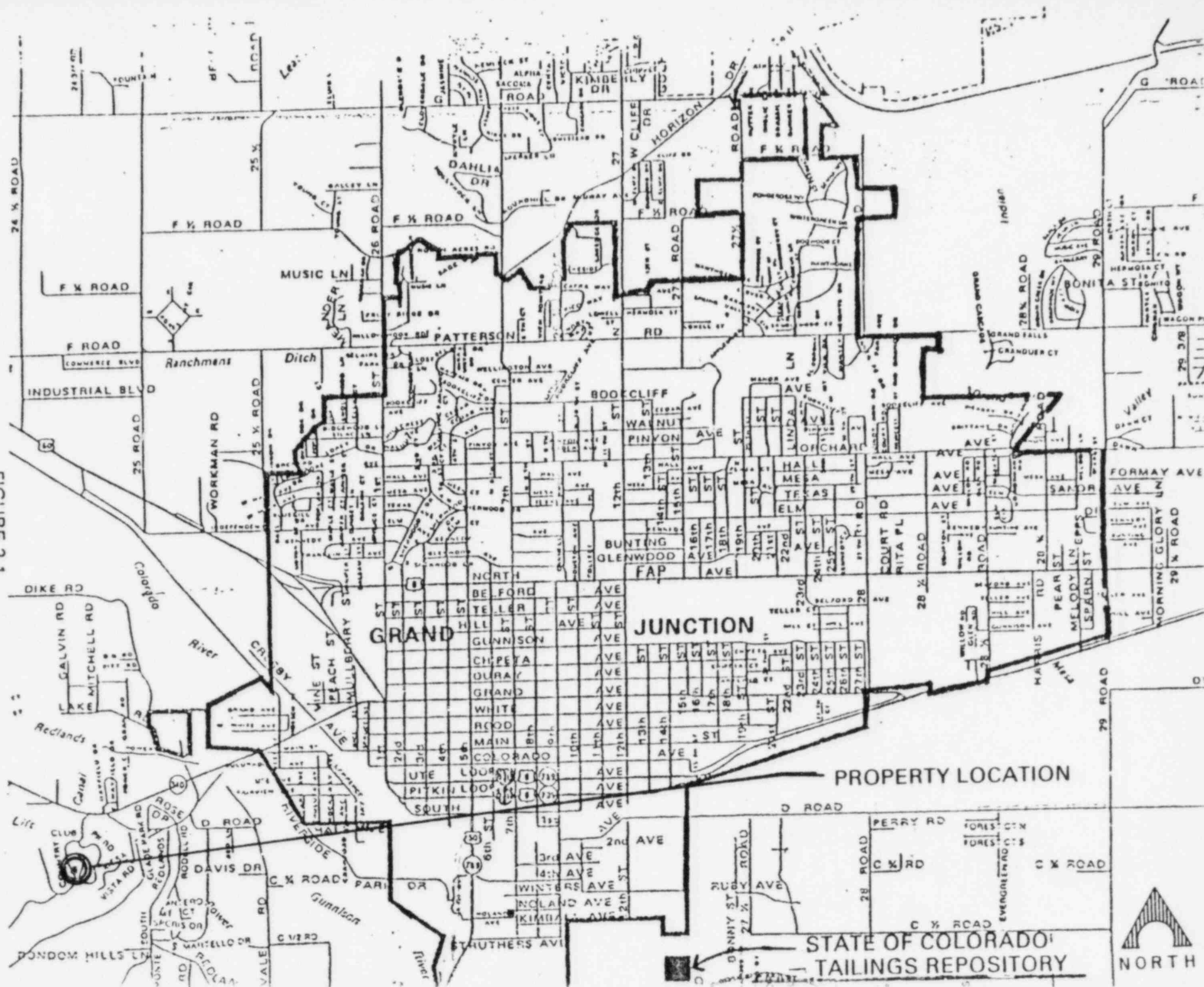
See Appendix Figures 3.5a and 3.5b For Areas

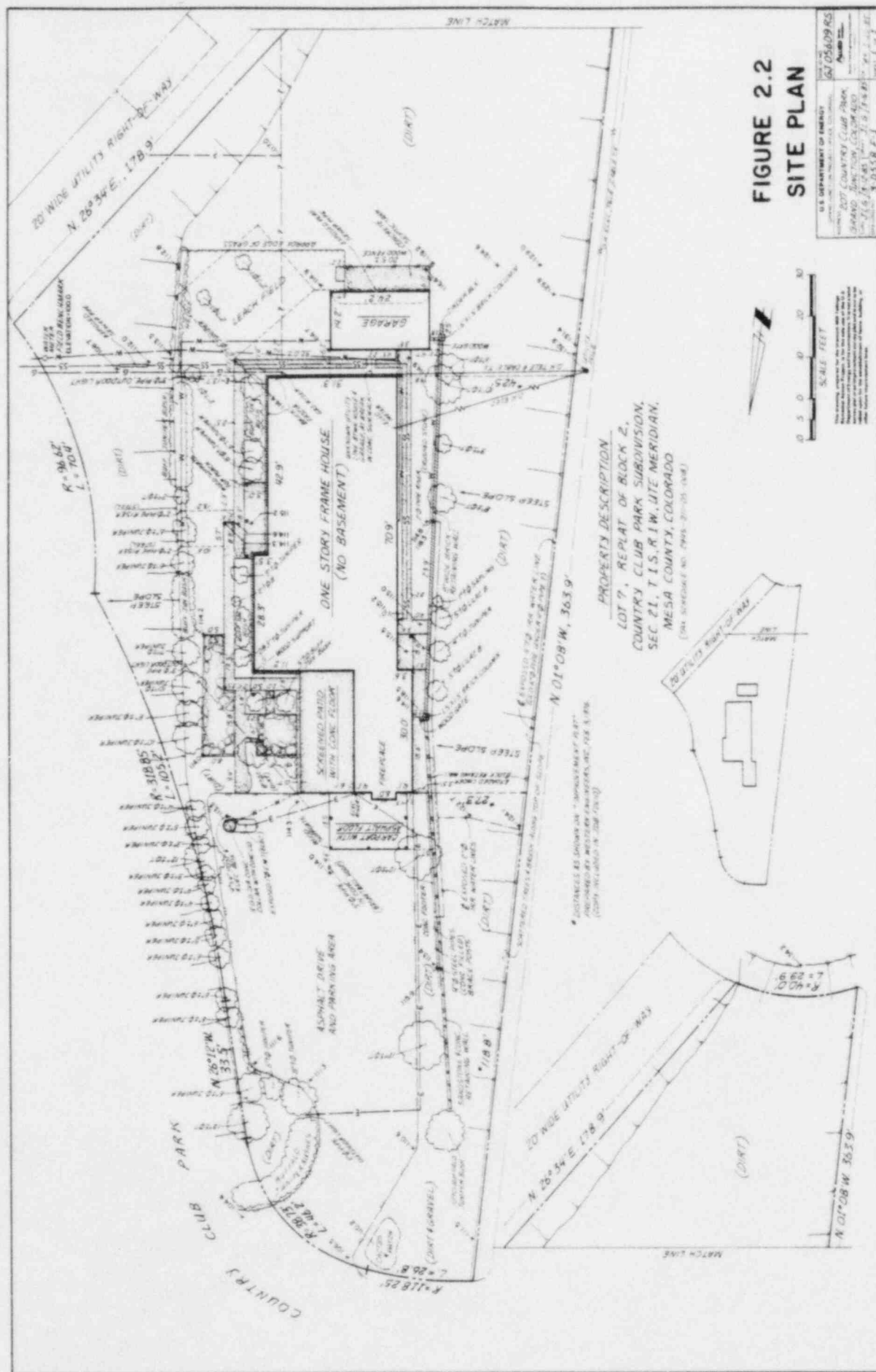
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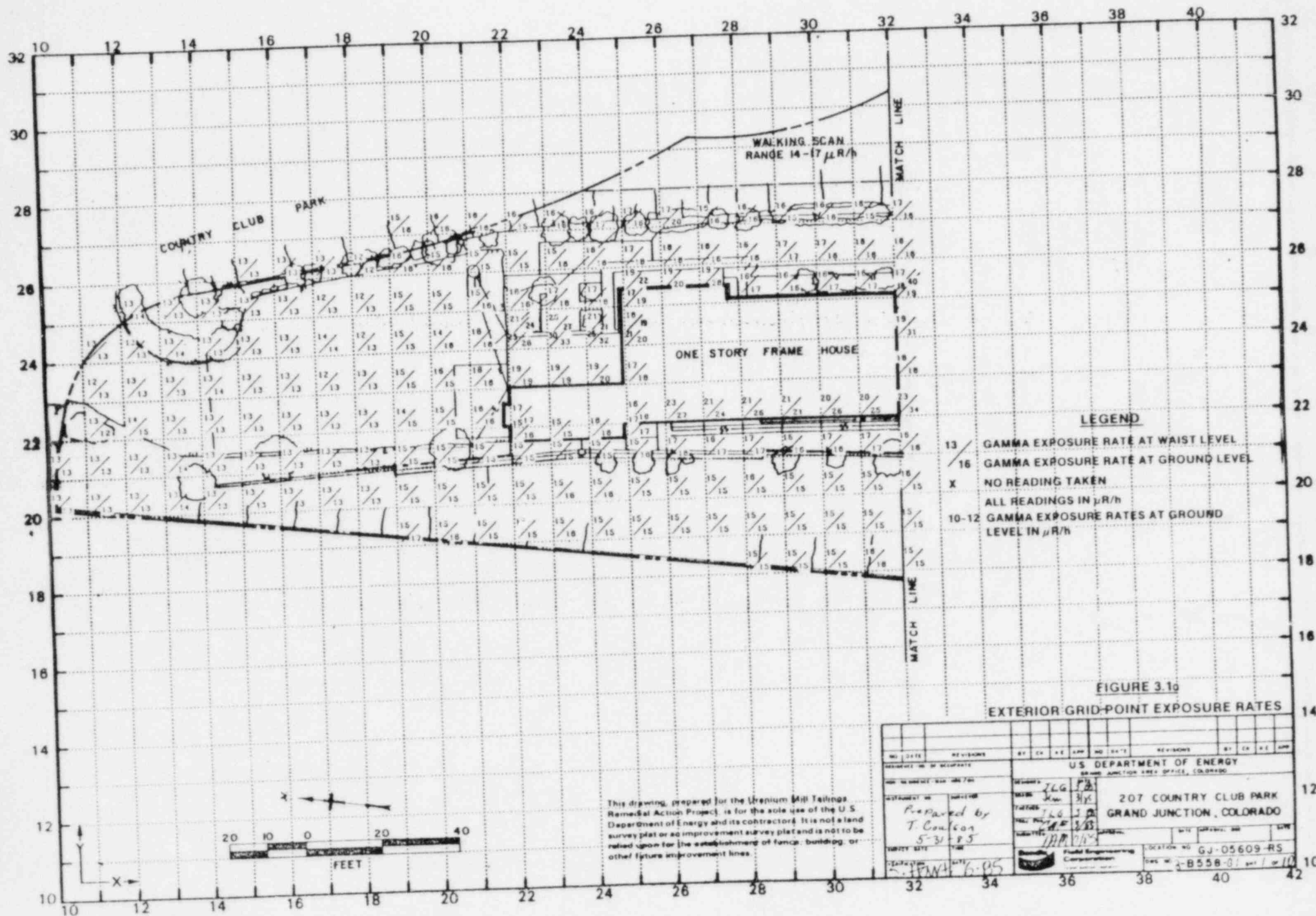
EXTERIOR

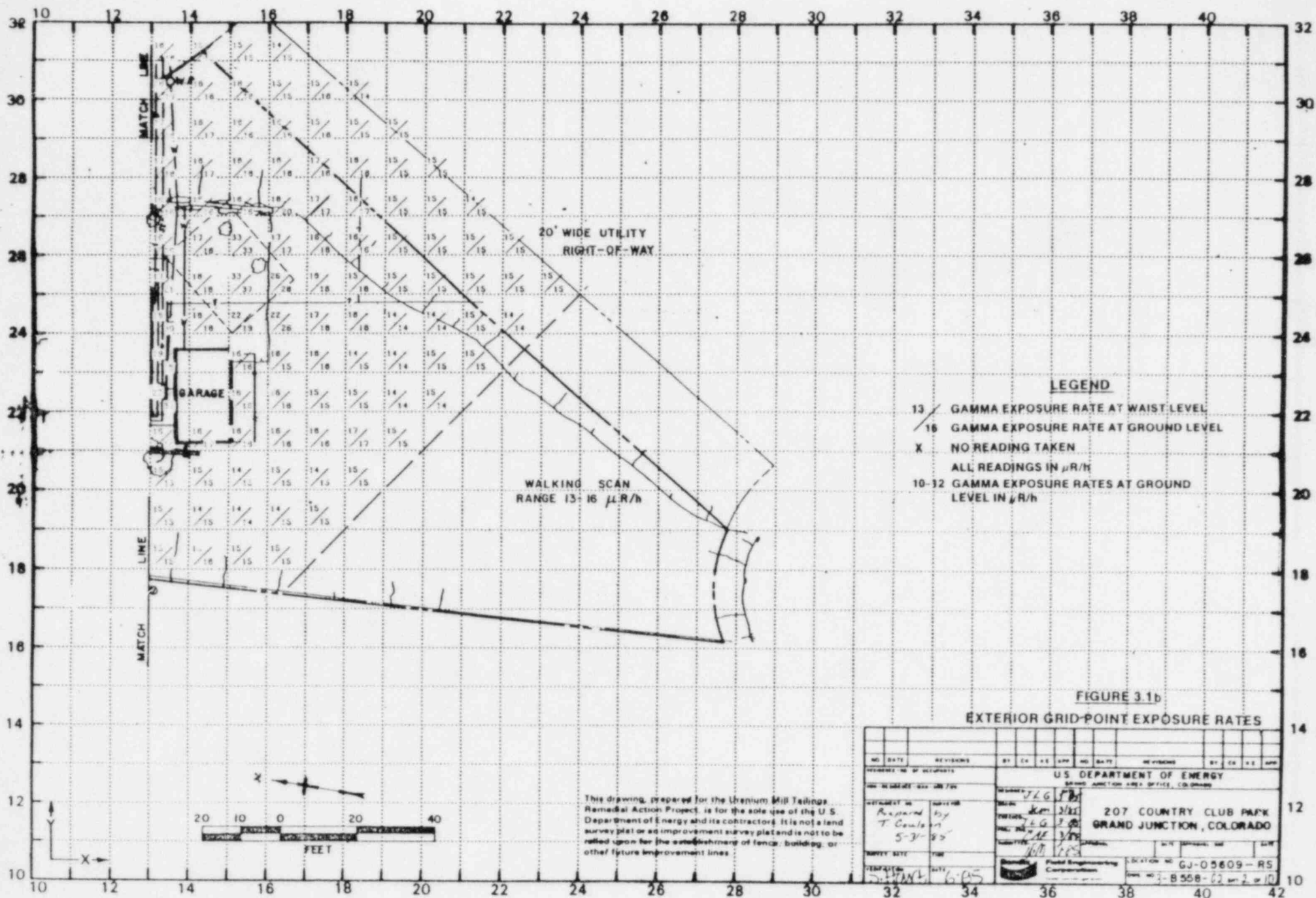
Remove identified residual radioactive material	
52 cy @ \$14.50/cy (machine-open)	\$ 754
30 cy @ \$44/cy (manual-open)	1,320
Remove/replace concrete	
898 sf @ \$3/sf	2,694
Shore-up patio wood-frame	
38 lf @ \$3/lf	114
Remove/replace asphalt	
105 sf @ \$2.60/sf	273
Replace areas with compacted roadbase	
31 cy @ \$14.50/cy	450
Replace areas with topsoil	
51 cy @ \$9.50/cy	485
Replace areas with sod	
860 sf @ \$.35/sf	301
Replace bushes, trees	
Lump sum	200
	<hr/>
TOTAL EXTERIOR	\$ 6,591
TOTAL INTERIOR	0
ACCESS CONTROL	200
	<hr/>
SUBTOTAL	\$ 6,791
CONTINGENCY @ 10%	679
	<hr/>
SUBTOTAL	\$ 7,470
CONTRACTOR OVERHEAD & PROFIT @ 25%	1,868
	<hr/>
GRAND TOTAL	\$ 9,338

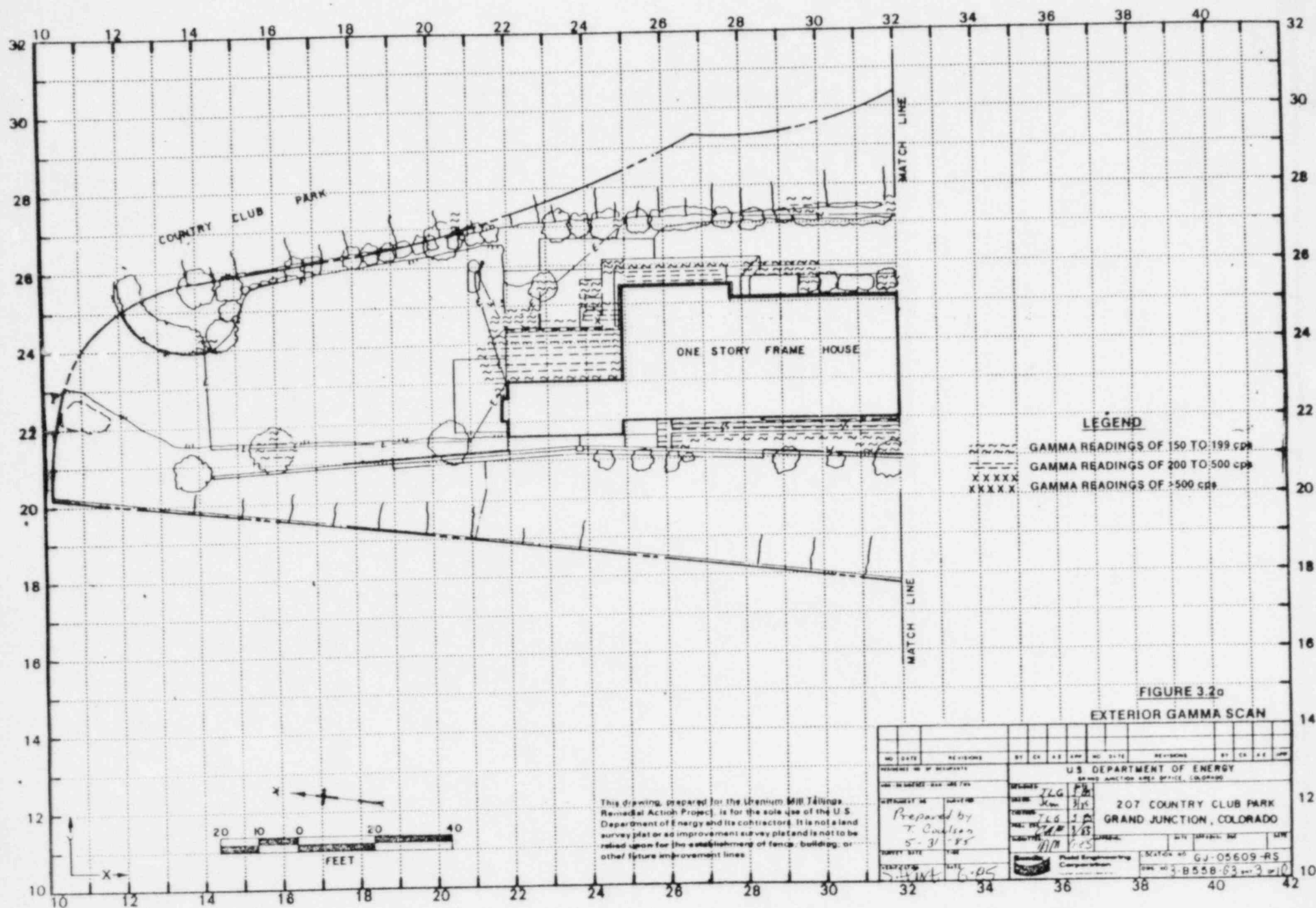
FIGURE 2.1
VICINITY MAP

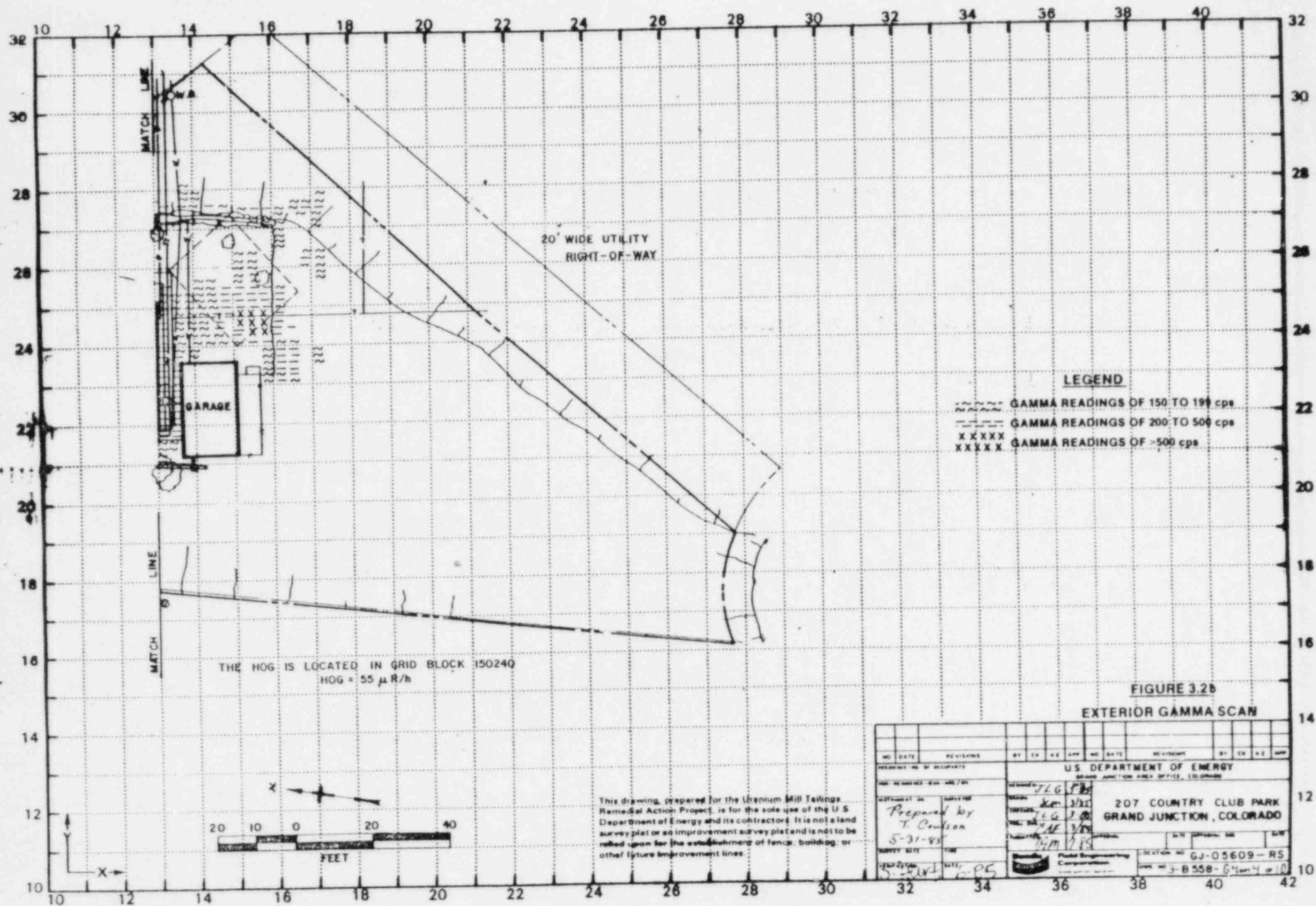


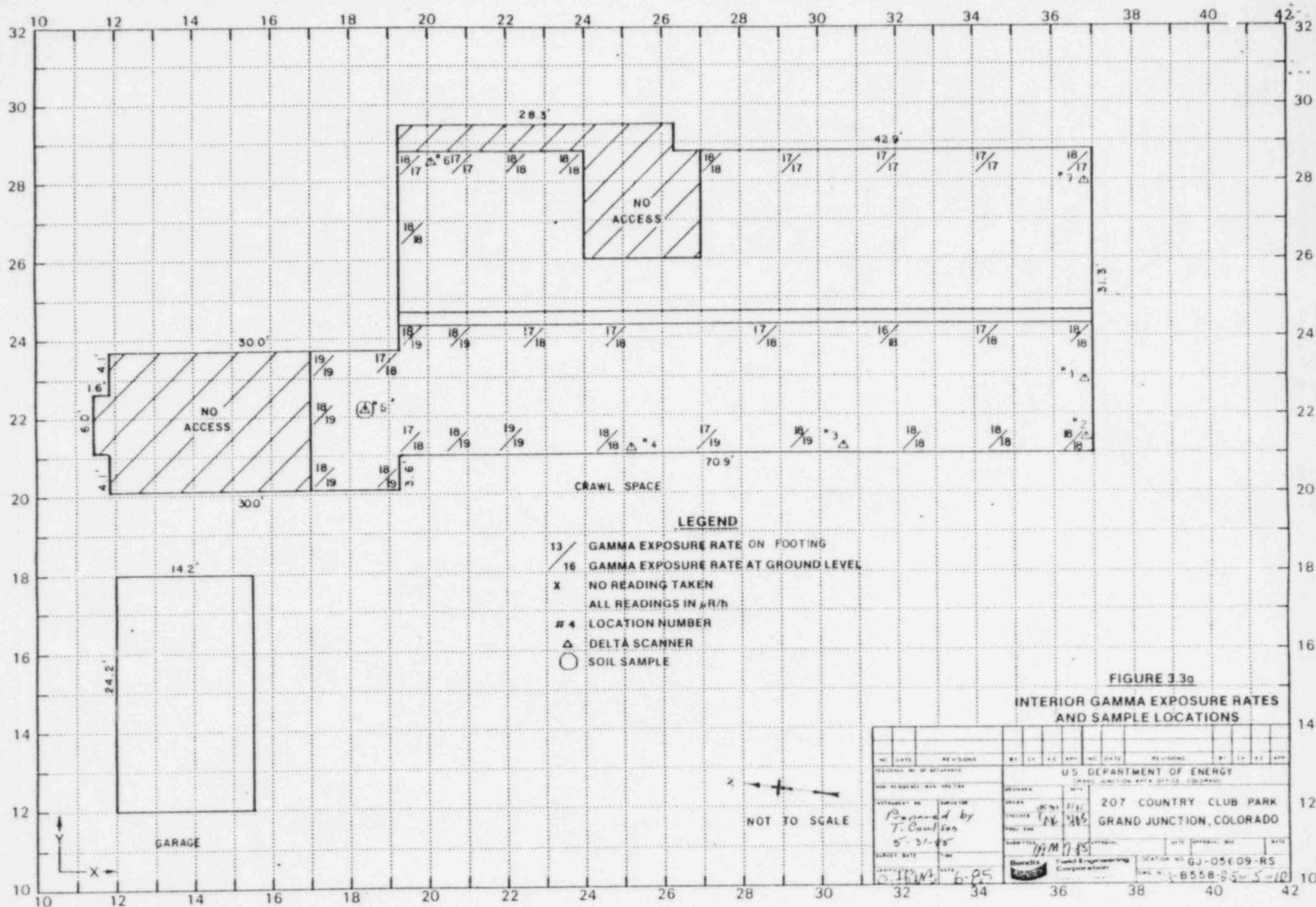


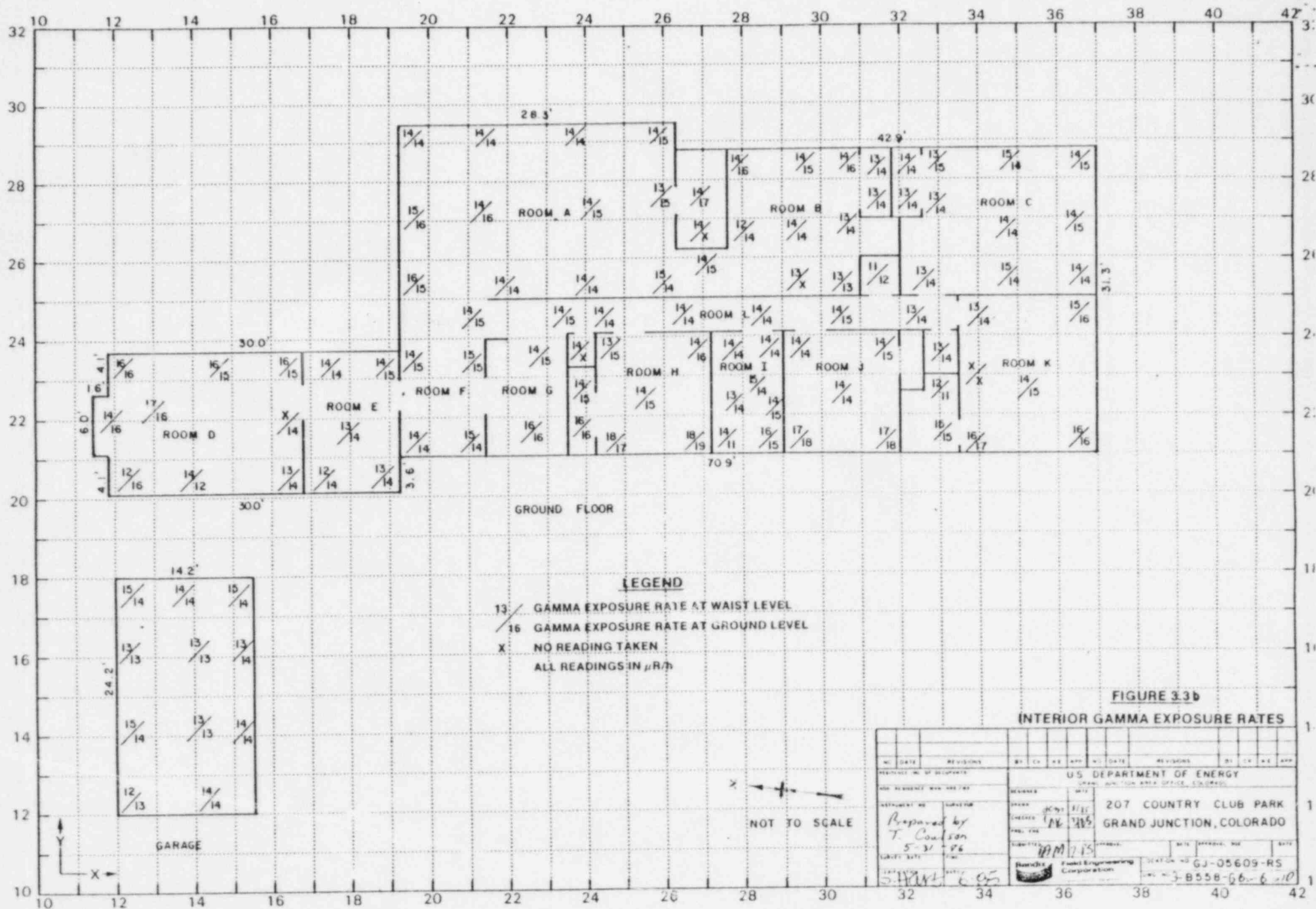


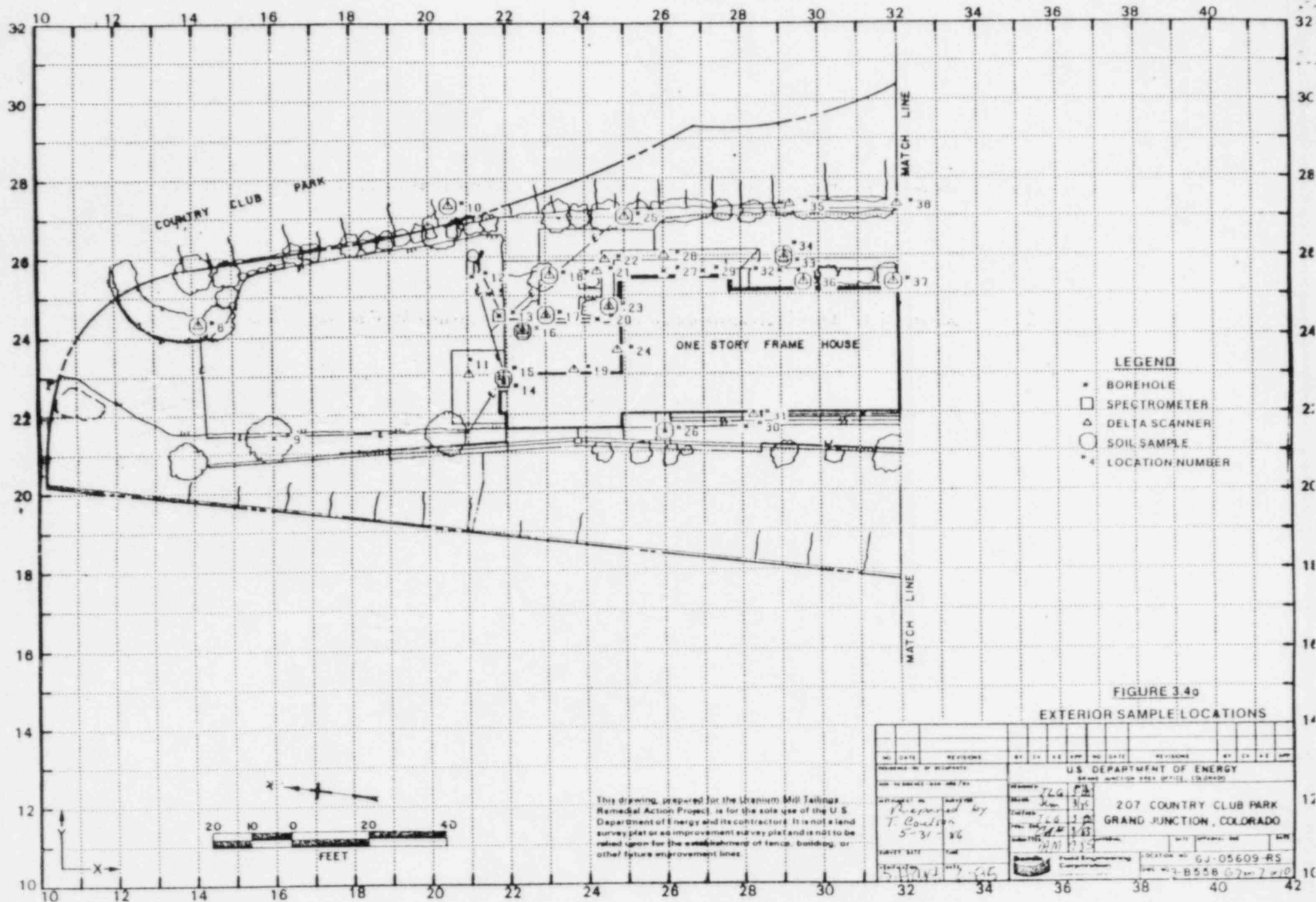


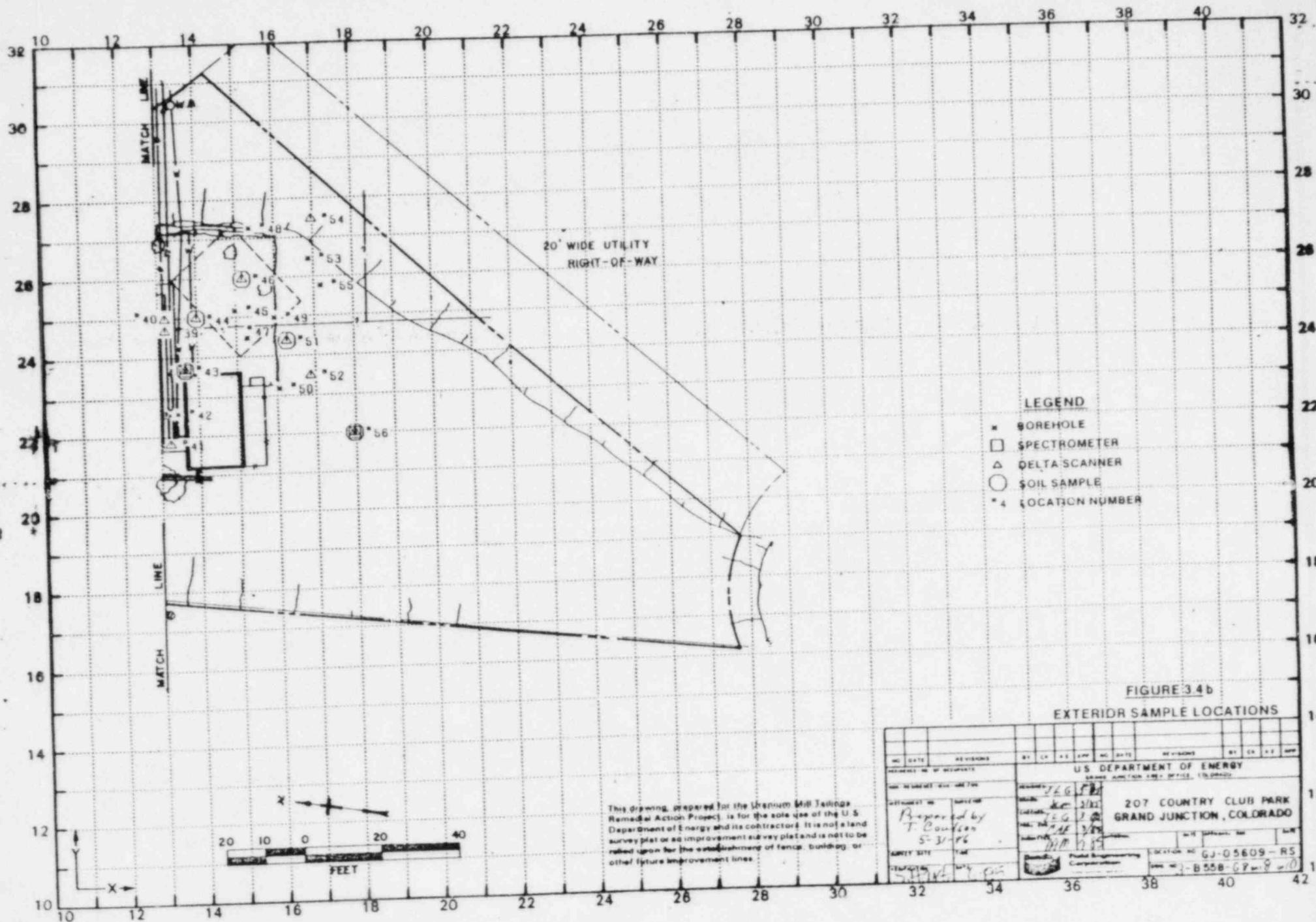


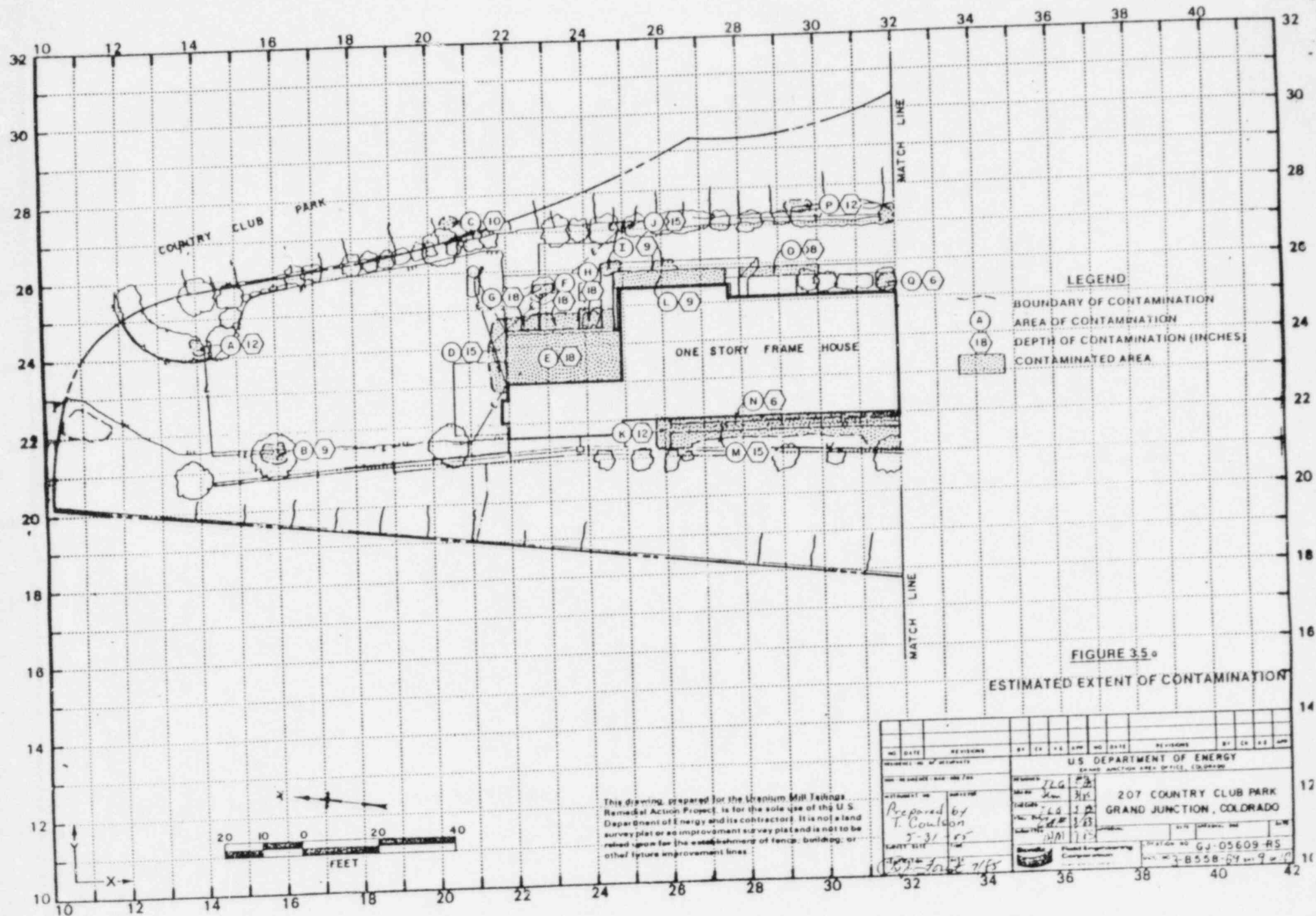


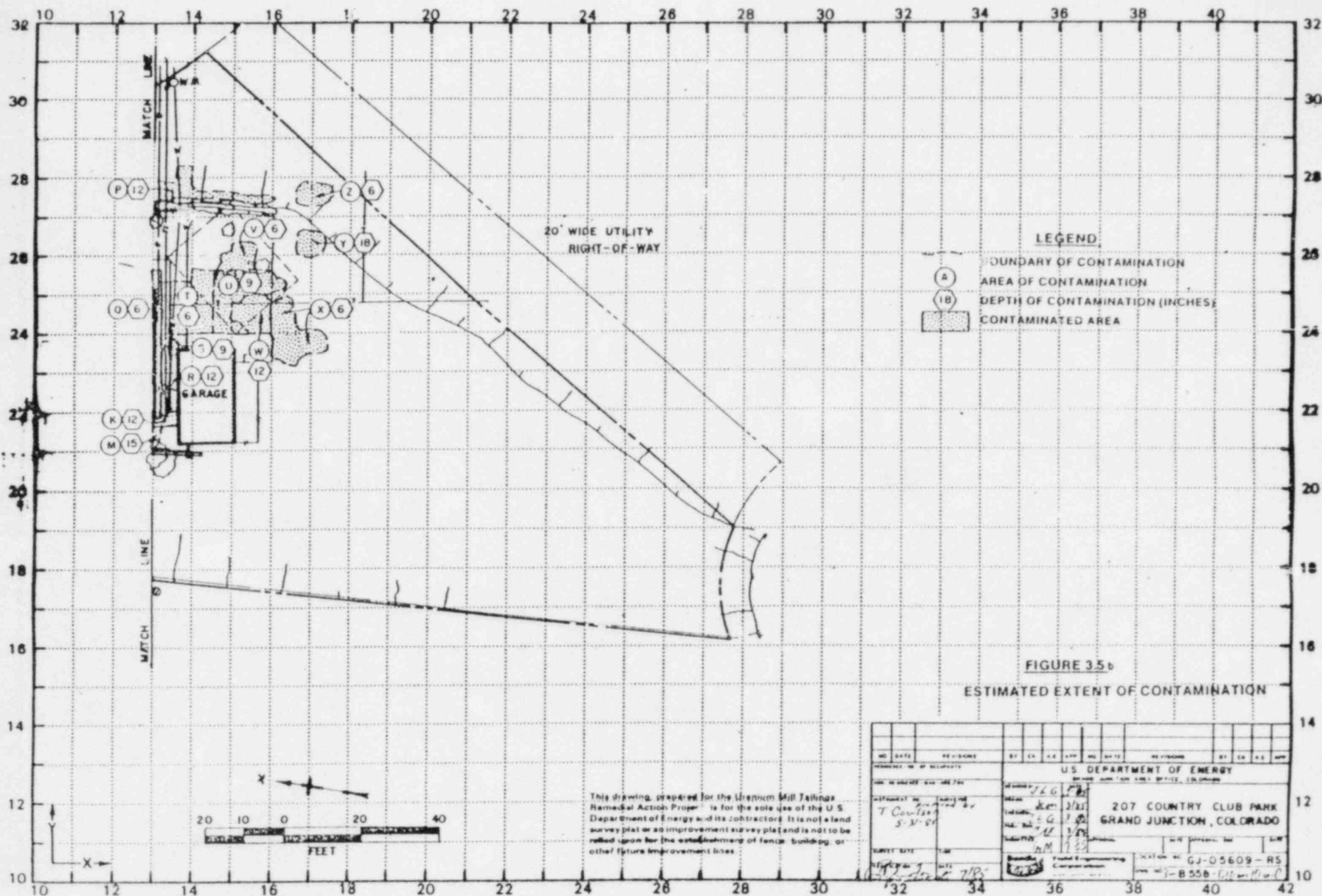












3/85

DOE ID NO. GJ-05609-RS Date 5/31/85

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

Official Survey Report

Property Address 207 Country Club Park

Property Owner James Golden

Address of Owner (if different from above) _____

Report Prepared By Terry Coulson

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 xx 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 = 19 uR/h
HOG = 55 uR/h



Bendix
Aerospace

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

July 2, 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-05609-RS (207 Country Club Park), conducted on 3 and 4 April 1985.

The areas that require additional work or comments are as follows:

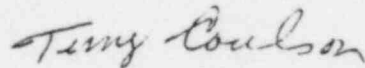
1. The measurements at the south end of the parking area range from 100 to 120 counts per second (cps).
2. The areas of the uncontaminated sidewalk, west and north of the original house, can be investigated during remedial action.
3. The water meter was checked, unusual readings were not noted. The possibility of the gas, water, and sewer lines having contamination extending to the road will be verified during remedial action.
4. Efforts to locate the septic tank through the Mesa County Department of Environmental Health and the home owner were unsuccessful. If the septic tank can be located, it will be investigated during remedial action.
5. N/A
6. The labels for Locations 46 and 47, page 3, Table 3.1b, have been corrected.
7. The depth of the delta at Location 44 has been changed to 6 inches.
8. The spelling of 'enclosed' has been corrected.

Coleen Campbell
Colorado Department of Health
GJ-05609-RS
July 2, 1985
Page 2

9. The planter at Location 240255 will be closely monitored. The result of a surface delta in the planter was negative.

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

Yours truly,



Terry Coulson
RSD Survey Team Leader

TC:pr

CDH.LETTER:05609.COULSON

ALLIED Bendix
Aerospace

Bendix Field Engineering Corporation
Grand Junction Operations
Grand Junction, Colorado

Date: May 5, 1985

To: Files

From: Terry Coulson

Subject: Team Leader Notes - GJ-05609-RS

Address: 207 Country Club Park

Owner: Mr. and Mrs. Golden

Team Members

T. Coulson (Team Leader)
C. Adams
D. Dow
R. Schouten
R. Herman

M. Heronema
C. Holmes
M. Gilfillan
P. Hardy

Instruments

Total Count - C-3956

Delta Scintillometer - C-3943, C-3935

Crutch Scintillometer - C-1208, C-1149, C-1196, C-1127

Date: April 2, 1985

The primary lines were established for the grid on Tuesday afternoon. Mr. and Mrs. Golden are very cooperative.

Date: April 3, 1985

The property was completely gridded and scanned. Several locations were finished on the south side of the property.

Terry Coulson
Team Leader Notes
GJ-05609-RS
May 5, 1985
Page 2

Date: April 4, 1985

A core was drilled in the interior patio, exterior flagstone patio (auger refusal) and sidewalk in front and back. In reviewing the data a revisit will be made to re-evaluate the crawl space.

Revisit

Date: April 25, 1985

Jay Johnson and Mike Heronema assisted on this revisit. They found the area (Location 5) in question and decided to dig a deeper hole for a delta and a 6-to 12-inch soil sample.

Revisit

Date: May 5, 1985

Because of unusually high readings continuously down the boreholes, a revisit was made to check the data. A 105-inch deep hole was drilled a foot from 219228. Readings similar to 219228 were taken from that location.

Soil samples were taken at 4- to 10-inches, 42- to 48-inches, and 68-to 74-inches. The topsoil sample showed tailings, the two lower samples did not, despite the elevated readings all the way down the hole. The 42- to 48-inch soil sample was taken with the T-handle soil sample shovel, and the 68- to 74-inch soil sample was brought up with the auger. This was done after all other soil was cleared away.

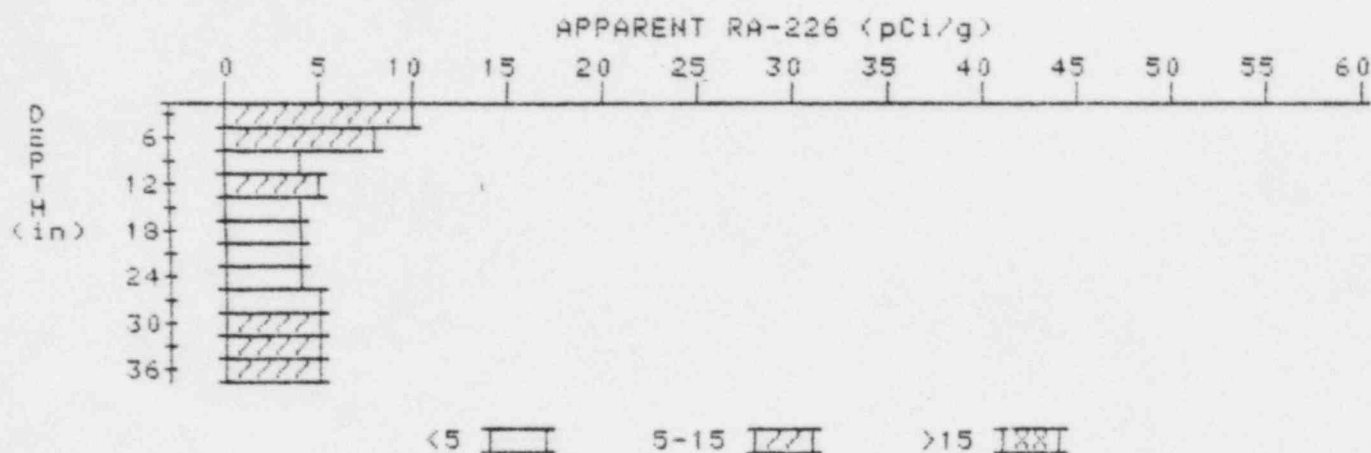
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

9

PROPERTY NUMBER: GJ-05609-RS

HOLE NUMBER: 9

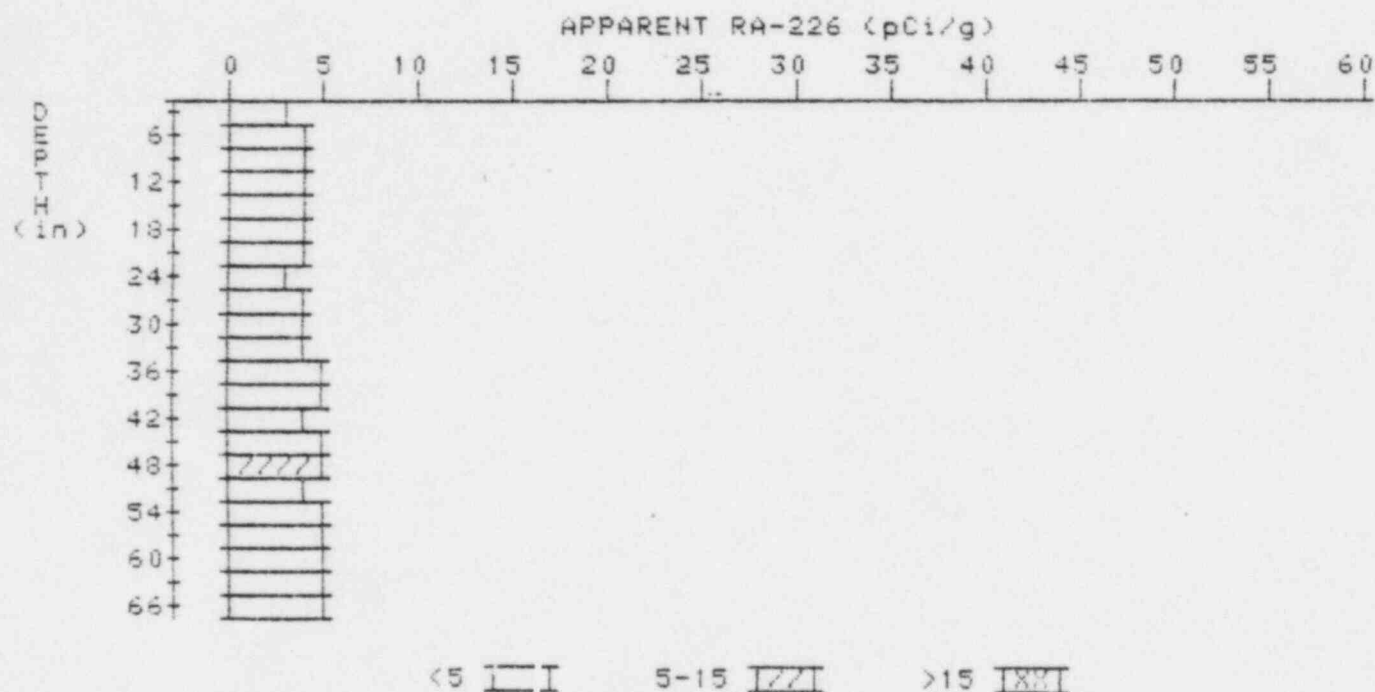
LOCATION: 160214



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	9.6	9.6
6	7.8	7.6
9	6.1	4.3
12	5.4	5.4
15	4.7	3.8
18	4.5	4.1
21	4.5	4.3
24	4.6	4.4
27	4.8	4.8
30	5.0	5.4
33	5.0	5.0
36	5.0	5.0

APPARENT RADIUM-226 CONCENTRATION 12 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-05609-RS
HOLE NUMBER: 12
LOCATION: 211255



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.3	3.3
6	3.6	3.8
9	3.8	4.0
12	3.9	3.9
15	4.0	4.2
18	4.0	4.2
21	3.9	3.9
24	3.8	3.3
27	4.0	4.4
30	4.0	3.6
33	4.2	4.2
36	4.4	4.6
39	4.5	4.7
42	4.5	4.3
45	4.6	4.6
48	4.7	5.1

51
54
57
60
63
66

4.6
4.7
4.7
4.7
4.7
4.6

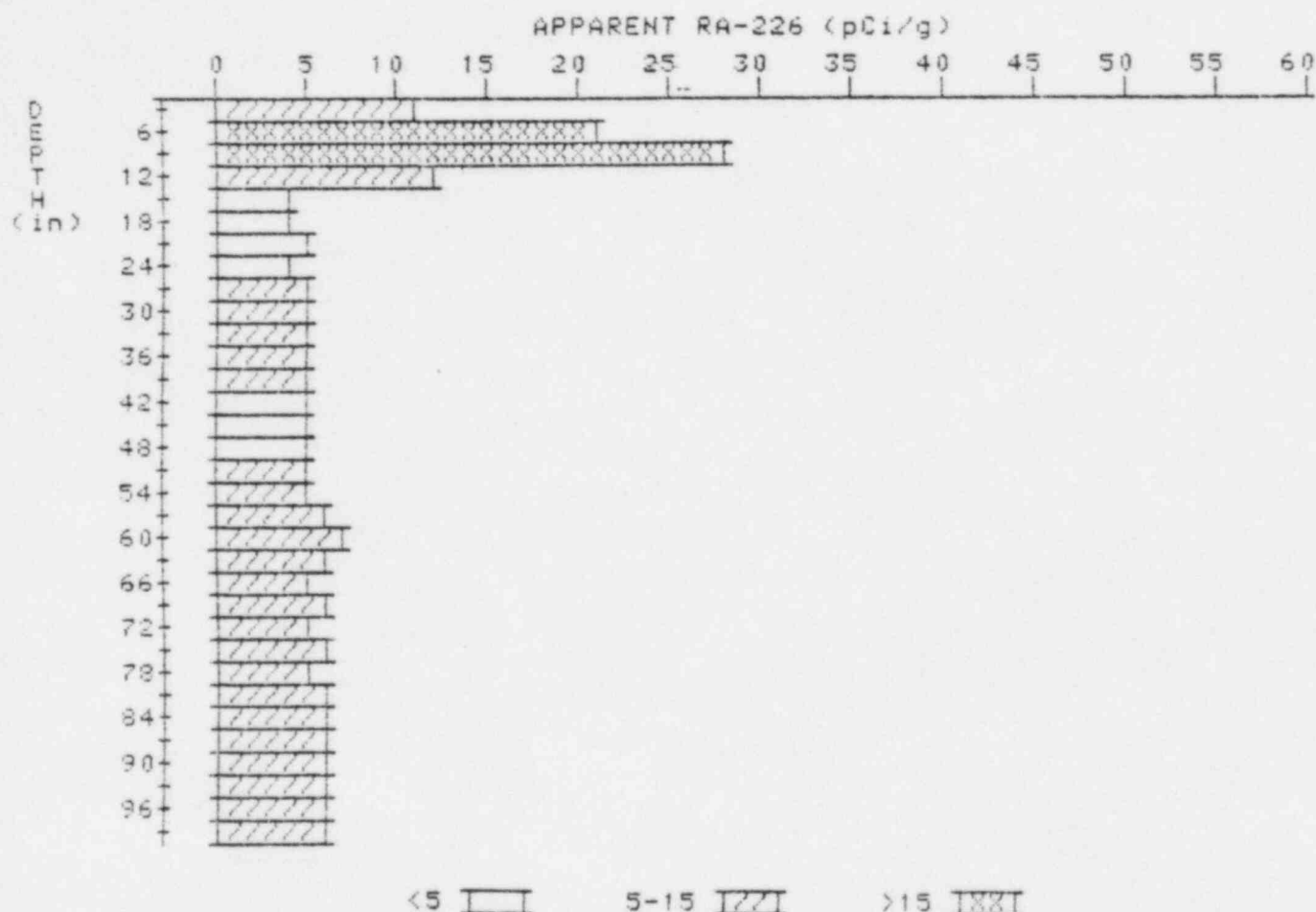
4.2
4.9
4.7
4.7
4.9
4.6

APPARENT RADIUM-226 CONCENTRATION 13 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-05609-RS

HOLE NUMBER: 13

LOCATION: 218245



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	10.6	10.6
6	15.4	20.9
9	17.1	28.3
12	12.5	11.8
15	8.3	4.4
18	6.3	4.3
21	5.4	4.5
24	5.0	4.3

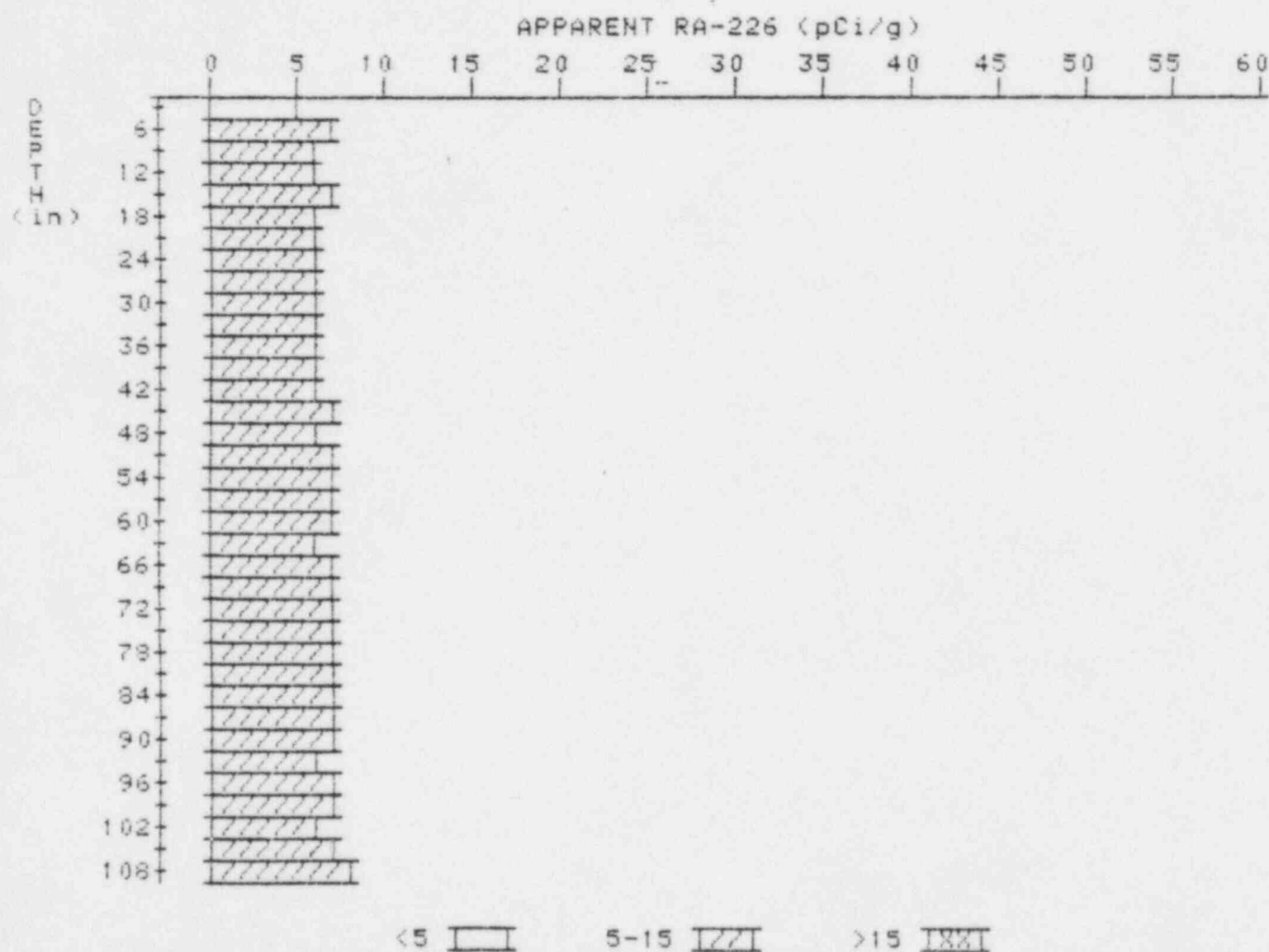
27	5.0	5.0
30	5.0	5.0
33	5.0	5.0
36	5.0	5.0
39	5.0	5.2
42	4.9	4.7
45	4.9	4.7
48	5.0	4.6
51	5.3	5.5
54	5.5	5.1
57	5.9	6.3
60	6.1	6.6
63	6.0	6.4
66	5.7	5.3
69	5.6	5.6
72	5.5	5.1
75	5.6	5.6
78	5.6	5.2
81	5.8	6.2
84	5.8	5.6
87	5.9	5.7
90	6.1	6.5
93	6.1	5.9
96	6.2	6.4
99	6.2	6.2

APPARENT RADIUM-226 CONCENTRATION 14 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-05609-R3

HOLE NUMBER: 14

LOCATION: 219228

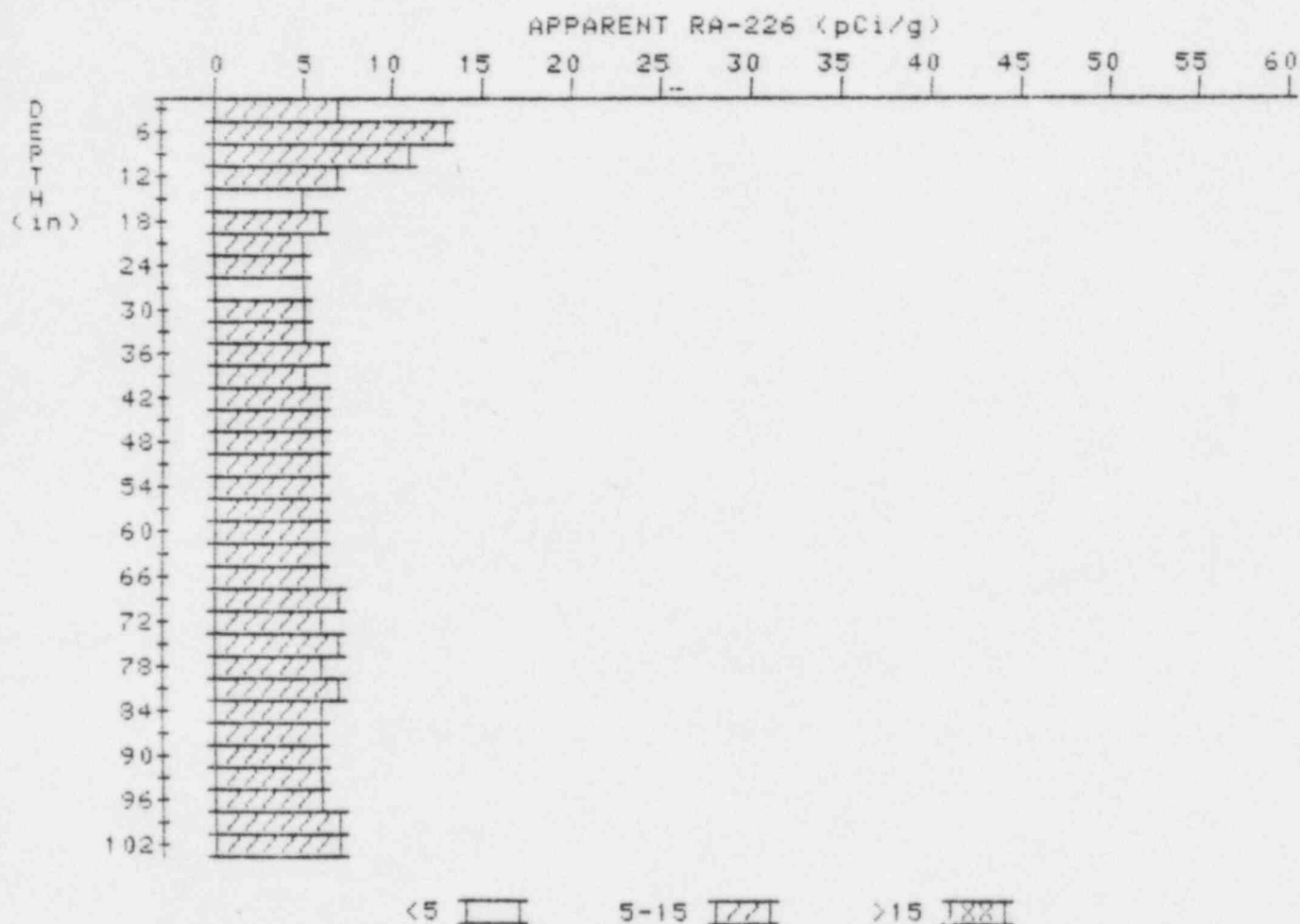


Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.6	4.6
6	5.5	6.7
9	5.7	5.7
12	5.9	5.9
15	6.1	6.6
18	6.0	6.2

21	5.8	5.6
24	5.7	5.5
27	5.7	5.7
30	5.7	5.5
33	5.8	5.8
36	5.9	5.7
39	6.1	6.3
42	6.2	6.0
45	6.4	6.8
48	6.4	6.2
51	6.5	6.5
54	6.6	6.8
57	6.6	6.6
60	6.6	6.6
63	6.6	6.4
66	6.7	6.7
69	6.8	6.6
72	7.0	7.2
75	7.1	7.5
78	7.0	7.0
81	6.9	7.1
84	6.7	6.5
87	6.6	6.6
90	6.5	6.5
93	6.4	5.9
96	6.6	6.8
99	6.7	6.7
102	6.8	5.9
105	7.4	7.2
108	8.1	8.1

APPARENT RADIUM-226 CONCENTRATION 15 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-05609-RS
HOLE NUMBER: 15
LOCATION: 219229



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	6.5	6.5
6	8.9	13.3
9	8.8	11.3
12	7.3	6.6
15	6.2	5.0
18	5.8	5.8
21	5.4	5.0

24	5.2	5.0
27	5.1	4.6
30	5.3	5.5
33	5.4	5.0
36	5.7	6.2
39	5.7	5.3
42	5.9	6.3
45	5.9	5.7
48	6.0	6.2
51	6.0	6.0
54	6.0	6.0
57	6.0	6.0
60	6.0	6.0
63	6.0	5.8
66	6.1	5.9
69	6.3	6.7
72	6.3	5.8
75	6.6	7.3
78	6.5	6.3
81	6.5	6.7
84	6.4	6.4
87	6.3	6.3
90	6.2	5.8
93	6.3	6.3
96	6.4	6.0
99	6.7	7.4
102	6.6	6.6

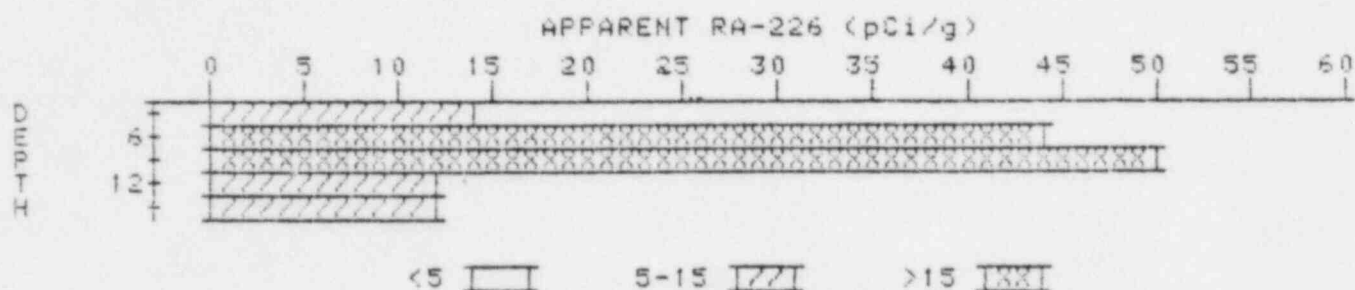
48
51
54
57
60
63
66
69

6.7
6.9
7.3
7.5
7.3
7.2
7.3
7.2

6.7
6.5
7.7
8.2
7.1
6.8
7.7
7.2

APPARENT RADIUM-226 CONCENTRATION 17 DECONVOLUTION GRAPH

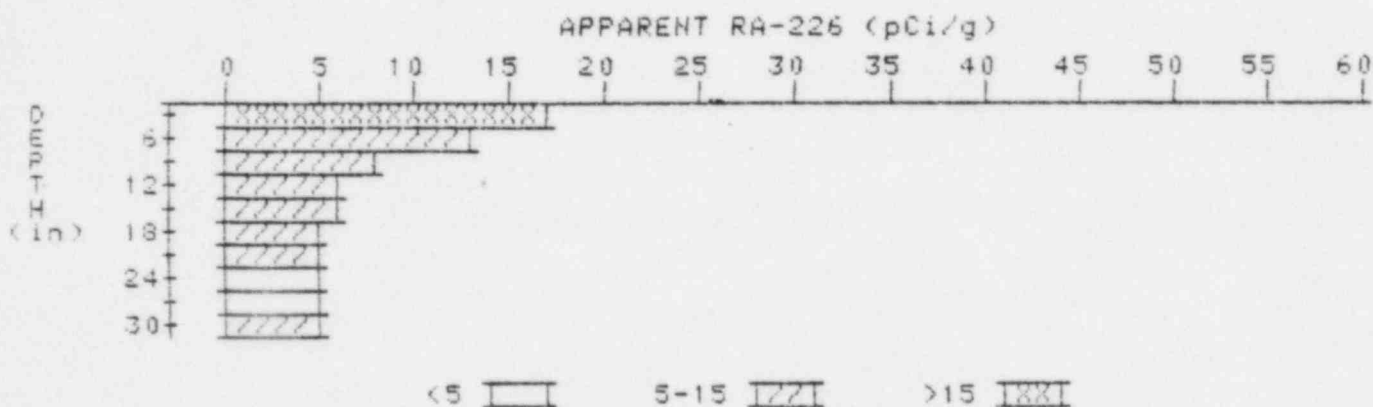
PROPERTY NUMBER: GJ-05609-RS
HOLE NUMBER: 17
LOCATION: 230245



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	14.0	14.0
6	26.3	44.4
9	28.4	49.6
12	18.6	12.2
15	12.4	12.4

APPARENT RADIUM-226 CONCENTRATION 20 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-05609-RS
HOLE NUMBER: 20
LOCATION: 243244



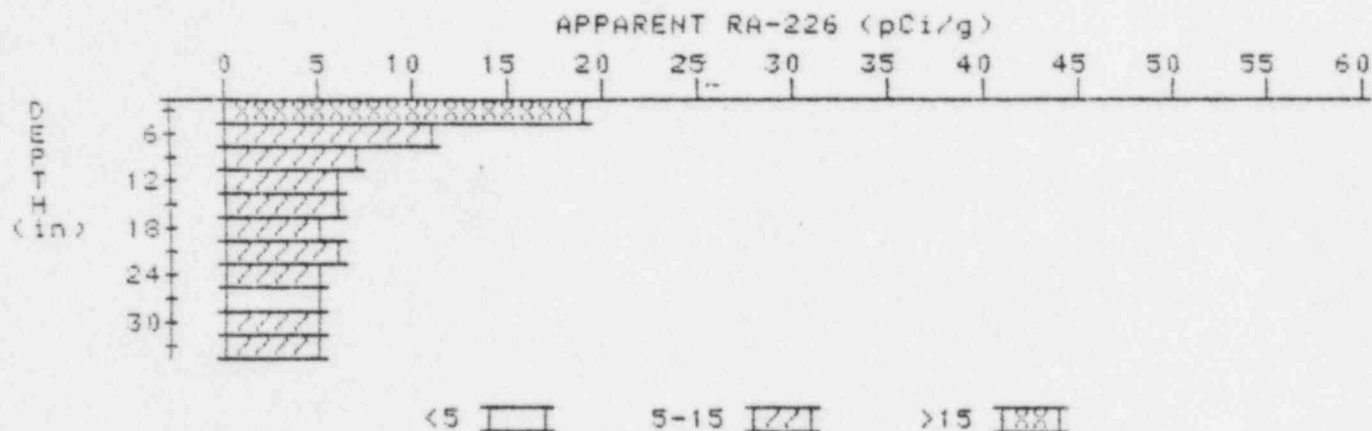
Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	17.1	17.1
6	13.4	12.7
9	10.1	8.0
12	8.0	6.4
15	6.8	6.1
18	6.0	5.5
21	5.5	5.1
24	5.2	4.7
27	5.2	4.8
30	5.4	5.4

APPARENT RADIUM-226 CONCENTRATION 23 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-05609-RS

HOLE NUMBER: 23

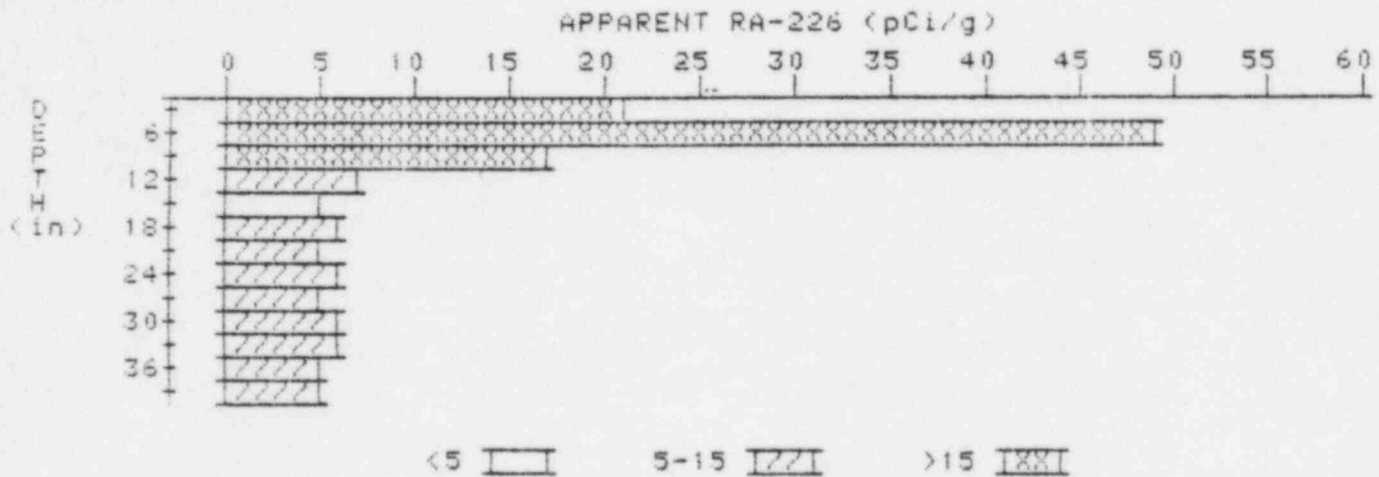
LOCATION: 246247



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	19.4	19.4
6	13.9	10.9
9	10.1	7.3
12	7.9	5.8
15	6.9	6.4
18	6.2	5.5
21	5.0	6.1
24	5.5	5.1
27	5.3	4.9
30	5.3	5.3
33	5.3	5.3

APPARENT RADIUM-226 CONCENTRATION 26 DECONVOLUTION GRAPH

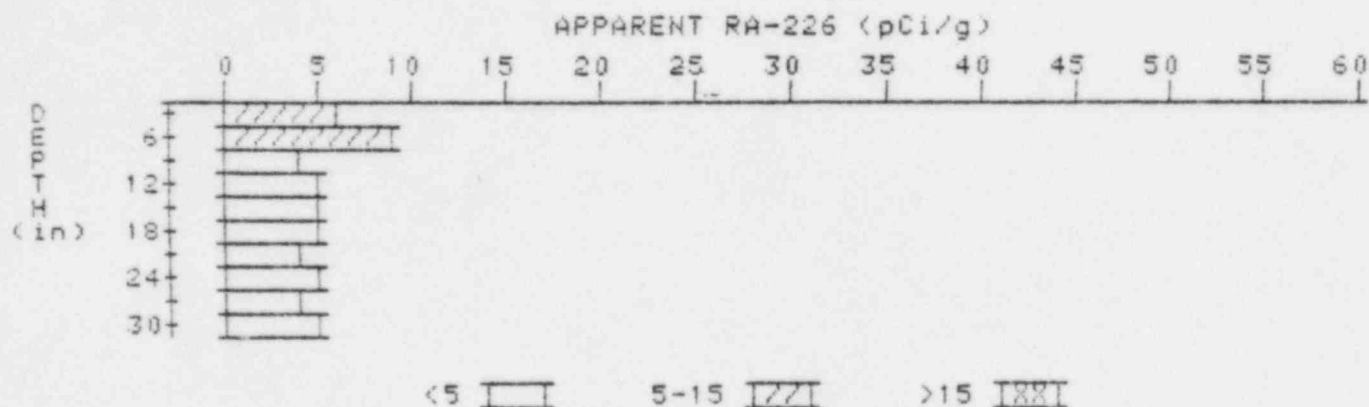
PROPERTY NUMBER: GJ-05609-RS
HOLE NUMBER: 26
LOCATION: 260215



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	20.8	20.8
6	26.1	48.7
9	18.7	16.9
12	12.3	7.5
15	8.6	4.9
18	7.0	5.6
21	6.2	5.1
24	6.0	6.2
27	5.7	5.3
30	5.6	5.6
33	5.5	5.5
36	5.4	5.4
39	5.3	5.3

APPARENT RADIUM-226 CONCENTRATION 27 DECONVOLUTION GRAPH

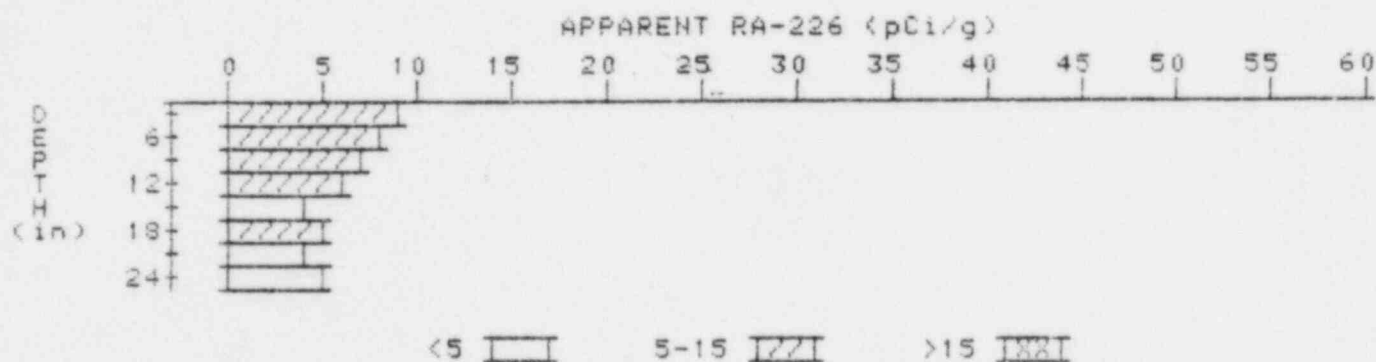
PROPERTY NUMBER: GJ-05609-R3
HOLE NUMBER: 27
LOCATION: 260256



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	5.9	5.9
6	6.3	6.3
9	5.3	4.2
12	4.9	4.5
15	4.7	4.5
18	4.6	4.6
21	4.5	4.5
24	4.5	4.7
27	4.4	4.0
30	4.5	4.5

APPARENT RADIUM-226 CONCENTRATION 29 DECONVOLUTION GRAPH

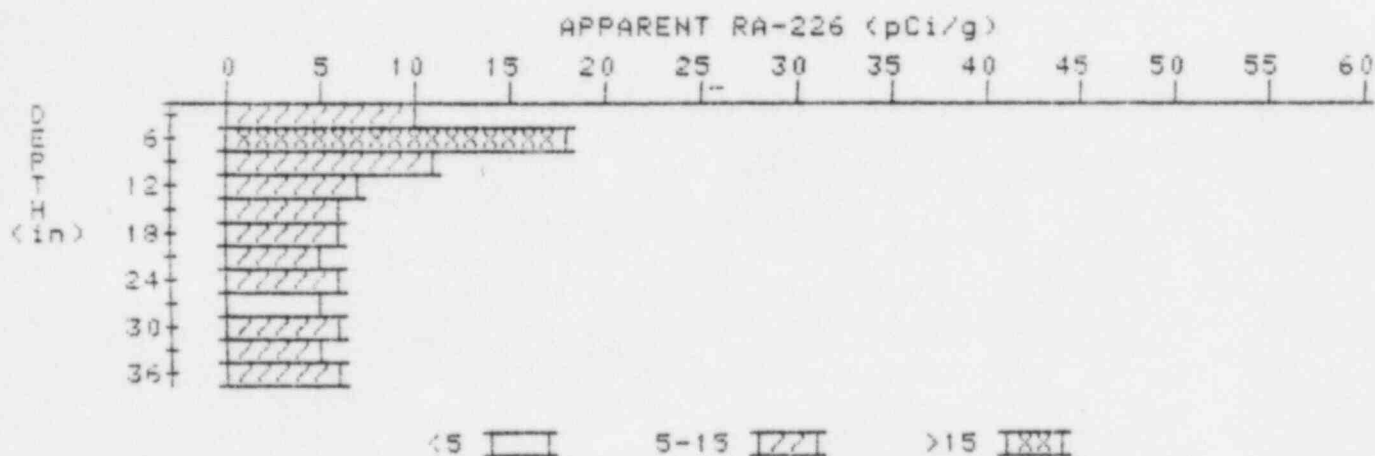
PROPERTY NUMBER: GJ-05609-RS
HOLE NUMBER: 29
LOCATION: 270256



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	8.5	8.5
6	7.9	8.4
9	7.0	7.4
12	5.9	5.5
15	5.0	3.8
18	4.8	5.2
21	4.4	3.5
24	4.5	4.5

APPARENT RADIUM-226 CONCENTRATION 30 DECONVOLUTION GRAPH

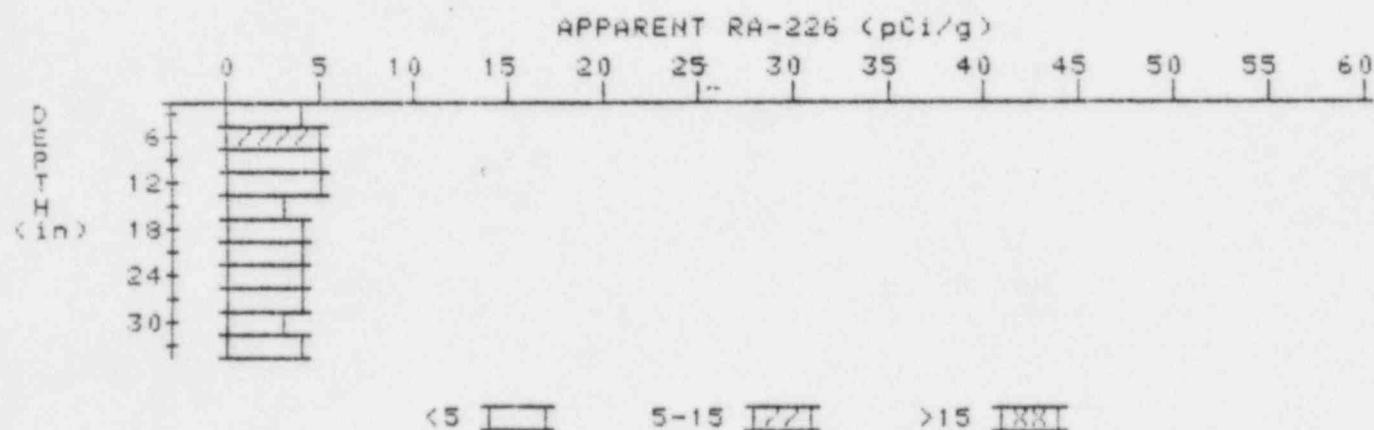
PROPERTY NUMBER: GJ-05609-RS
HOLE NUMBER: 30
LOCATION: 281216



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	9.9	9.9
6	11.8	17.8
9	10.3	11.2
12	8.3	7.1
15	7.0	5.9
18	6.3	5.9
21	5.8	5.1
24	5.7	5.9
27	5.5	5.0
30	5.6	5.6
33	5.7	5.3
36	6.0	6.0

APPARENT RADIUM-226 CONCENTRATION 32 DECONVOLUTION GRAPH

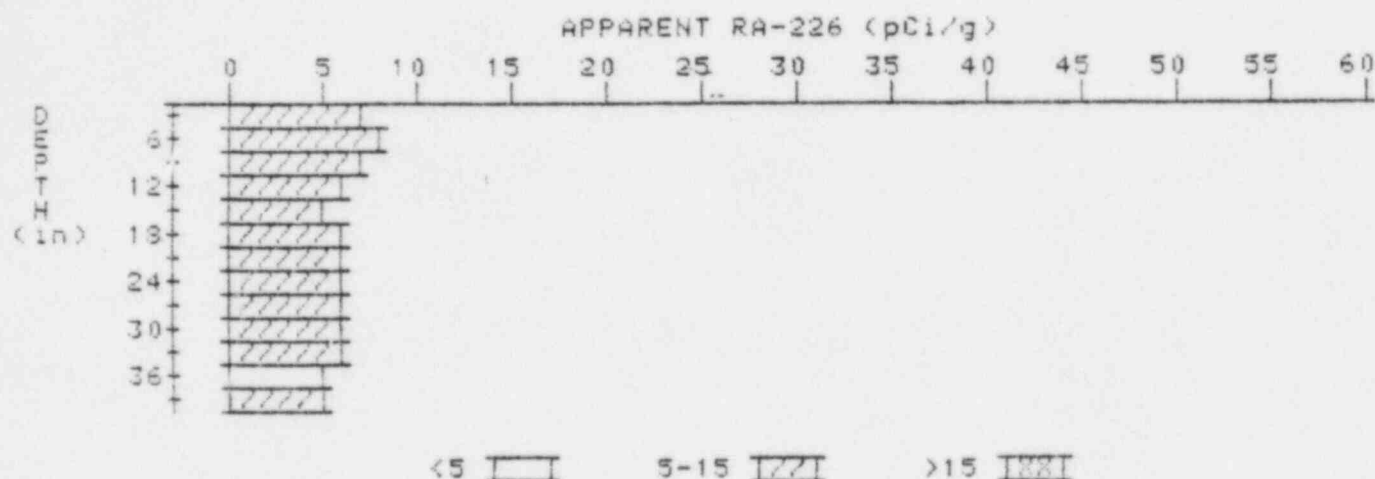
PROPERTY NUMBER: GJ-05609-RS
HOLE NUMBER: 32
LOCATION: 290256



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.0	4.0
6	4.4	5.1
9	4.4	4.6
12	4.3	4.3
15	3.9	3.4
18	3.8	3.3
21	3.7	3.5
24	3.7	3.7
27	3.7	3.7
30	3.7	3.2
33	4.0	4.0

APPARENT RADIUM-226 CONCENTRATION 42 DECONVOLUTION GRAPH

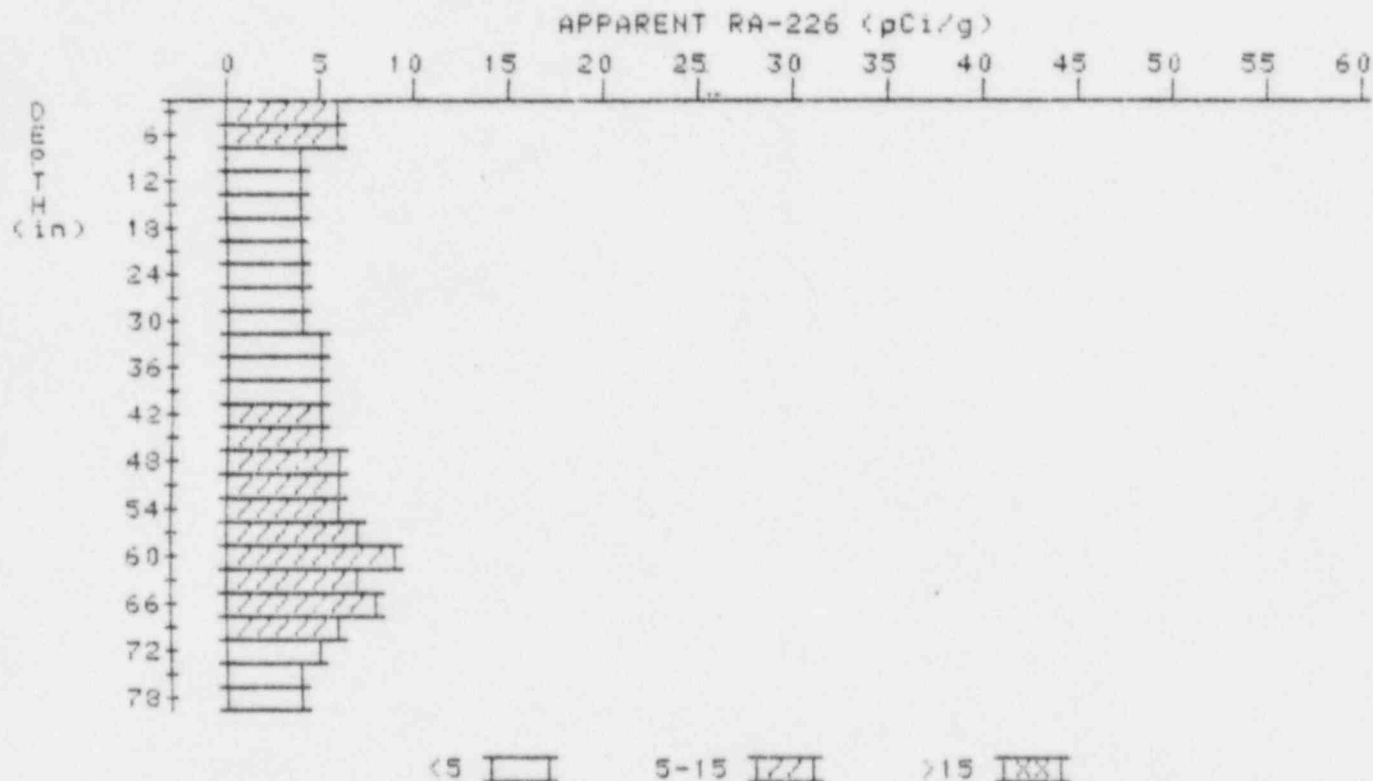
PROPERTY NUMBER: GJ-05609-RS
HOLE NUMBER: 42
LOCATION: 135226



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	7.2	7.2
6	7.1	7.8
9	6.6	6.6
12	6.1	5.7
15	5.8	5.1
18	5.9	6.3
21	5.8	5.6
24	5.8	5.6
27	5.9	6.3
30	5.9	6.0
33	5.6	5.8
36	5.3	4.9
39	5.2	5.2

APPARENT RADIUM-226 CONCENTRATION 43 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-05609-RS
HOLE NUMBER: 43
LOCATION: 137237



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
=====	=====	=====
3	5.7	5.7
6	5.4	5.9
9	4.9	4.3
12	4.5	4.3
15	4.3	4.3
18	4.1	3.9
21	4.0	3.6
24	4.1	4.1
27	4.2	4.2
30	4.3	4.1
33	4.5	4.5
36	4.7	4.9
39	4.8	4.6

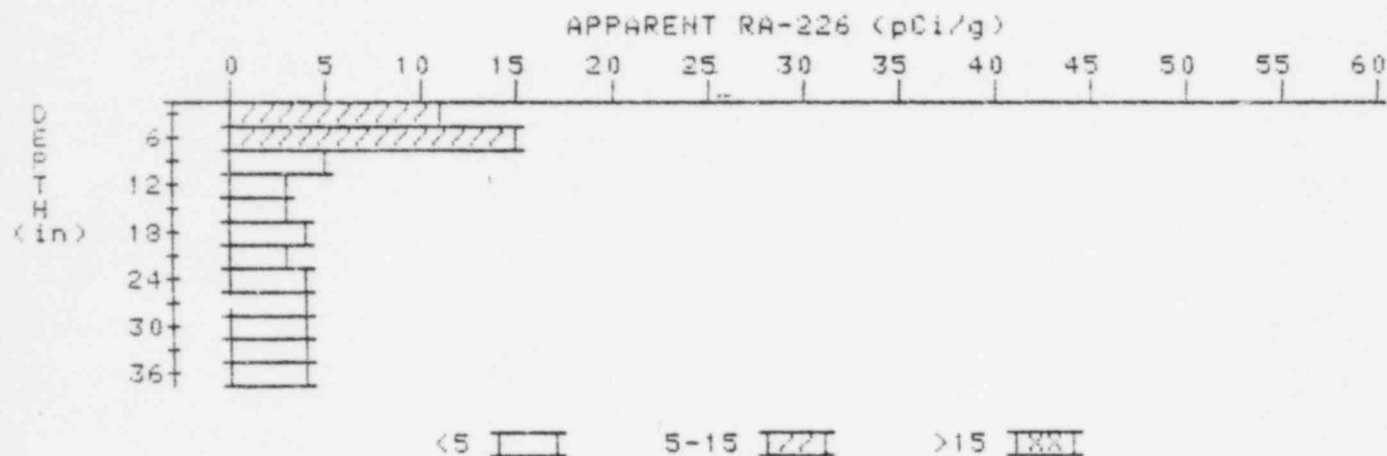
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5.2
5.5
5.8
6.2
6.9
7.4
7.1
6.8
5.9
5.1
4.6
4.2

5.0
5.0
5.5
5.6
5.7
7.3
8.8
7.1
7.9
5.7
4.6
4.4
4.2

APPARENT RADIUM-226 CONCENTRATION 45 DECONVOLUTION GRAPH

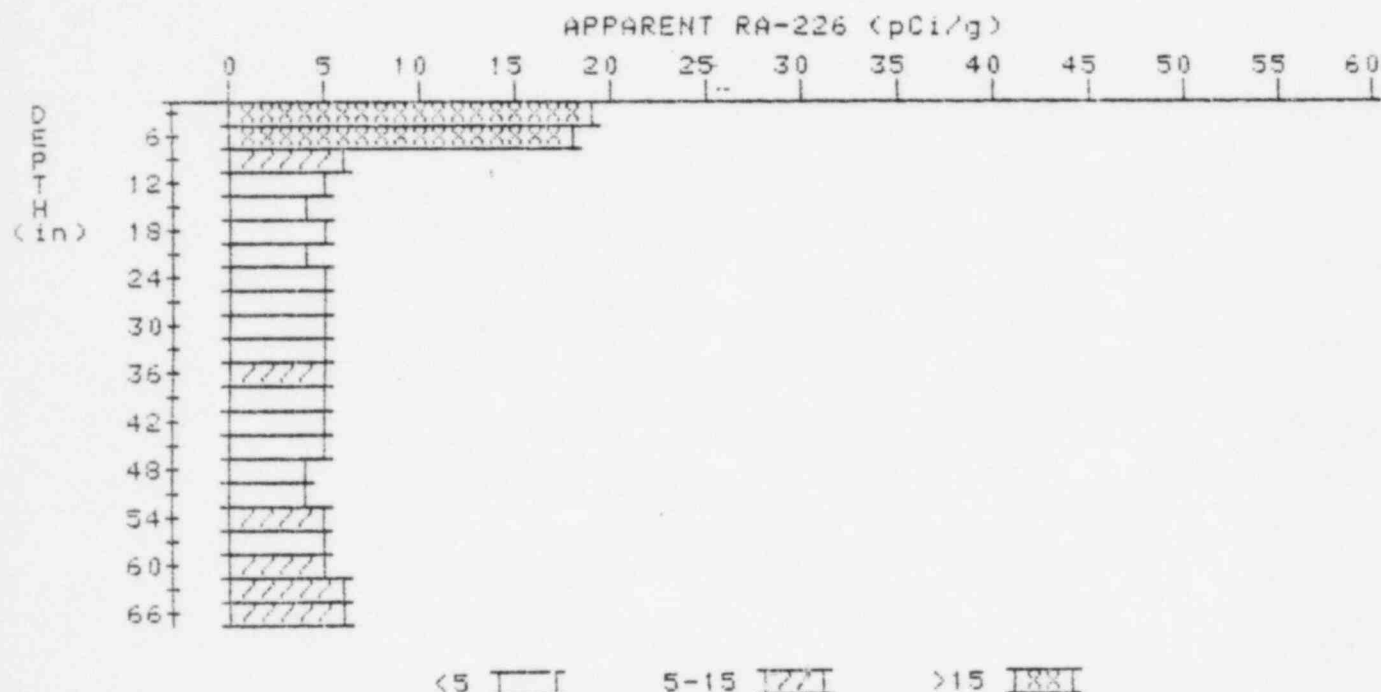
PROPERTY NUMBER: GJ-05609-RS
HOLE NUMBER: 45
LOCATION: 150252



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	10.9	10.9
6	10.3	14.9
9	7.1	5.0
12	5.1	3.3
15	4.1	2.9
18	3.8	3.6
21	3.6	2.9
24	3.8	4.2
27	3.3	3.6
30	3.9	3.5
33	4.2	4.4
36	4.4	4.4

APPARENT RADIUM-226 CONCENTRATION 47 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-05609-RS
HOLE NUMBER: 47
LOCATION: 153245



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	19.2	19.2
6	15.4	17.9
9	10.2	6.1
12	7.3	4.8
15	5.8	4.4
18	5.1	4.6
21	4.7	4.0
24	4.7	4.5
27	4.8	5.0
30	4.8	4.8
33	4.8	4.6
36	4.9	5.3
39	4.8	4.8
42	4.7	4.7
45	4.6	4.6
48	4.8	4.6

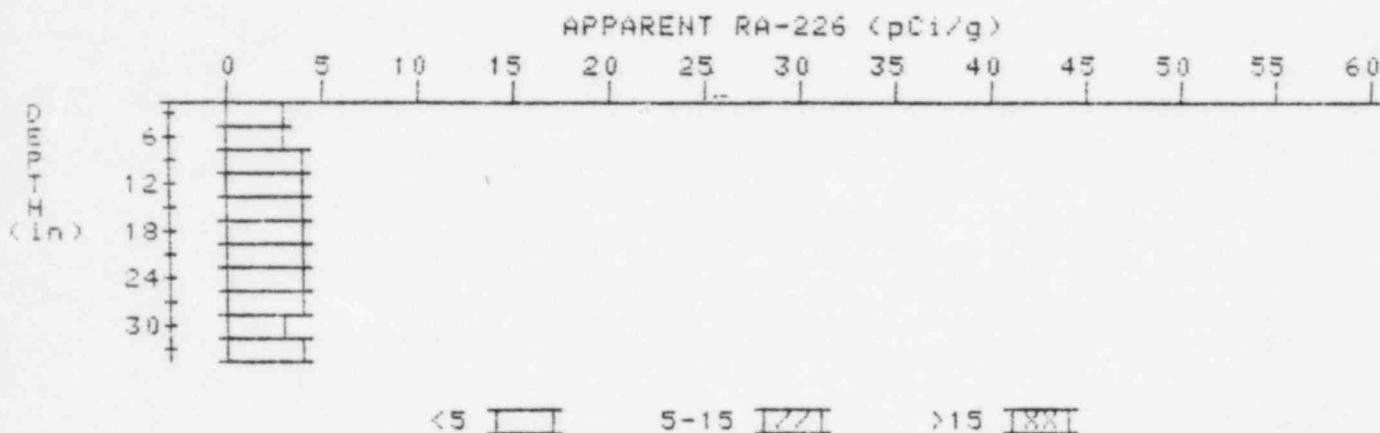
(
51
54
57
60
63
66

4.5
4.9
5.1
5.4
5.7
6.0

(
3.8
5.3
4.9
5.4
5.7
6.0

APPARENT RADIUM-226 CONCENTRATION 48 DECONVOLUTION GRAPH

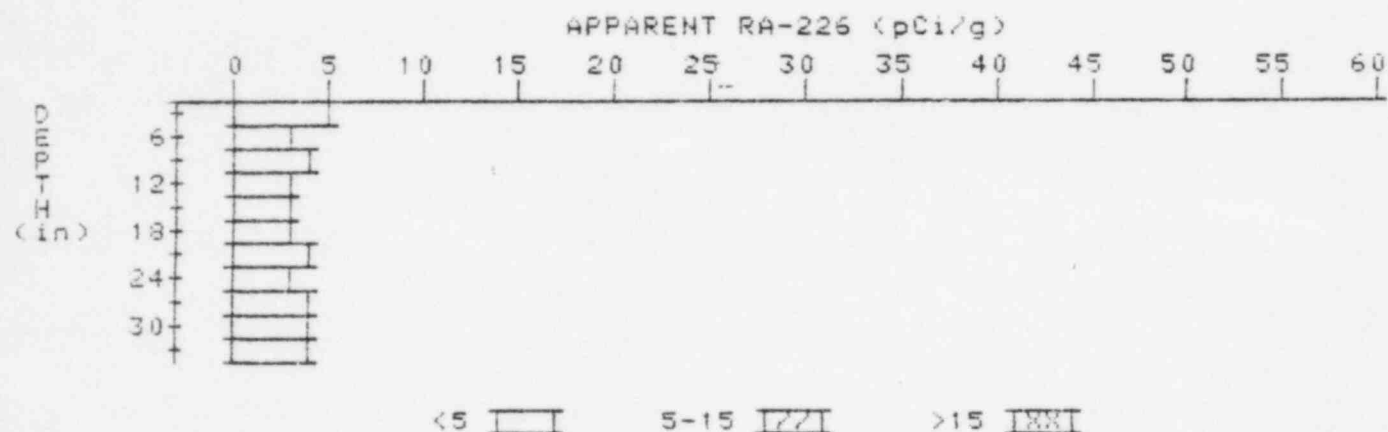
PROPERTY NUMBER: GJ-05609-RS
HOLE NUMBER: 48
LOCATION: 154273



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

APPARENT RADIUM-226 CONCENTRATION 49 DECONVOLUTION GRAPH

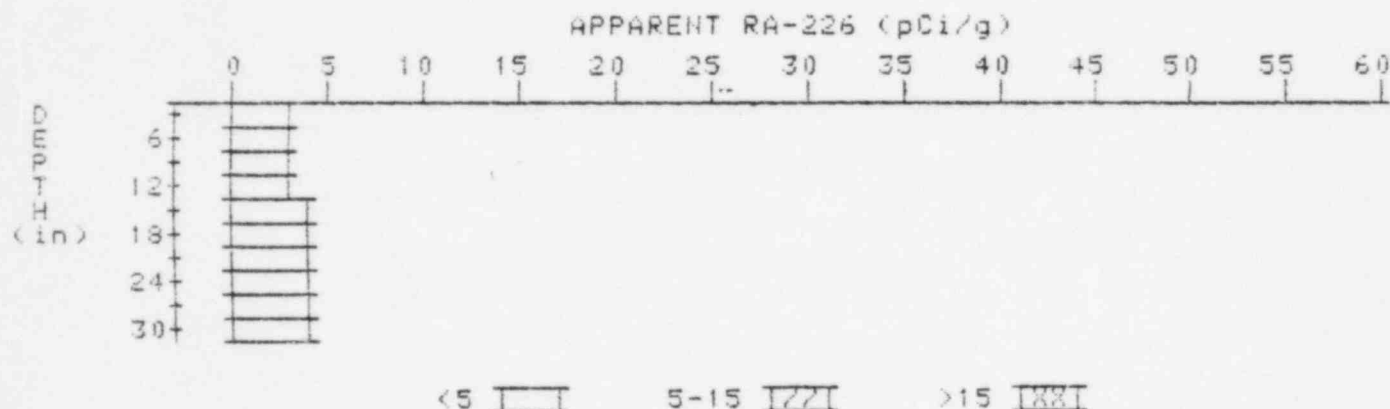
PROPERTY NUMBER: GJ-05609-RS
HOLE NUMBER: 49
LOCATION: 160250



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	4.5	4.5
6	3.8	2.9
9	3.6	3.8
12	3.3	2.8
15	3.3	3.1
18	3.4	3.4
21	3.5	3.5
24	3.6	3.4
27	3.8	4.0
30	3.9	3.9
33	4.0	4.0

APPARENT RADIUM-226 CONCENTRATION 50 DECONVOLUTION GRAPH

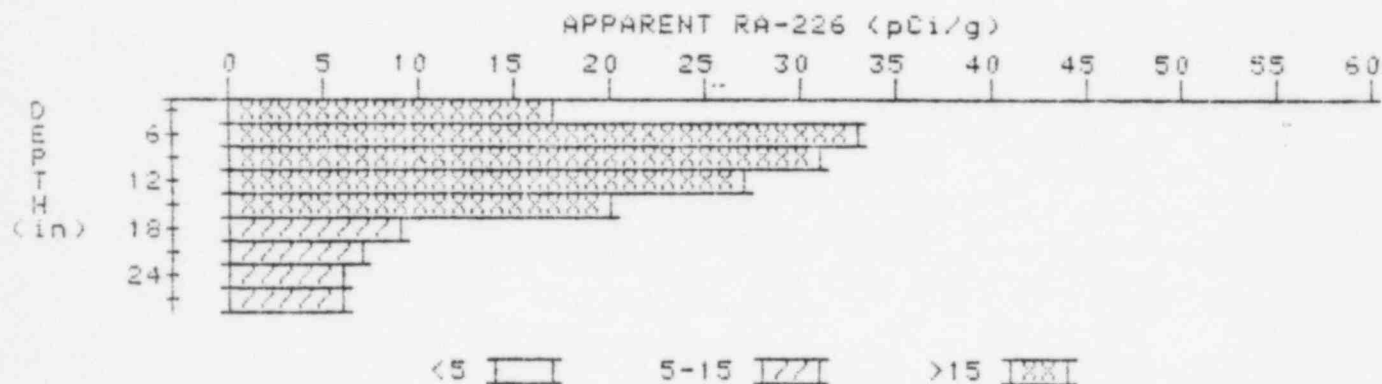
PROPERTY NUMBER: GJ-05609-RS
HOLE NUMBER: 50
LOCATION: 161232



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	3.1	3.1
6	3.3	3.5
9	3.4	3.4
12	3.5	3.3
15	3.7	3.7
18	3.9	4.1
21	4.0	3.8
24	4.2	4.4
27	4.3	4.3
30	4.4	4.4

APPARENT RADIUM-226 CONCENTRATION 53 DECONVOLUTION GRAPH

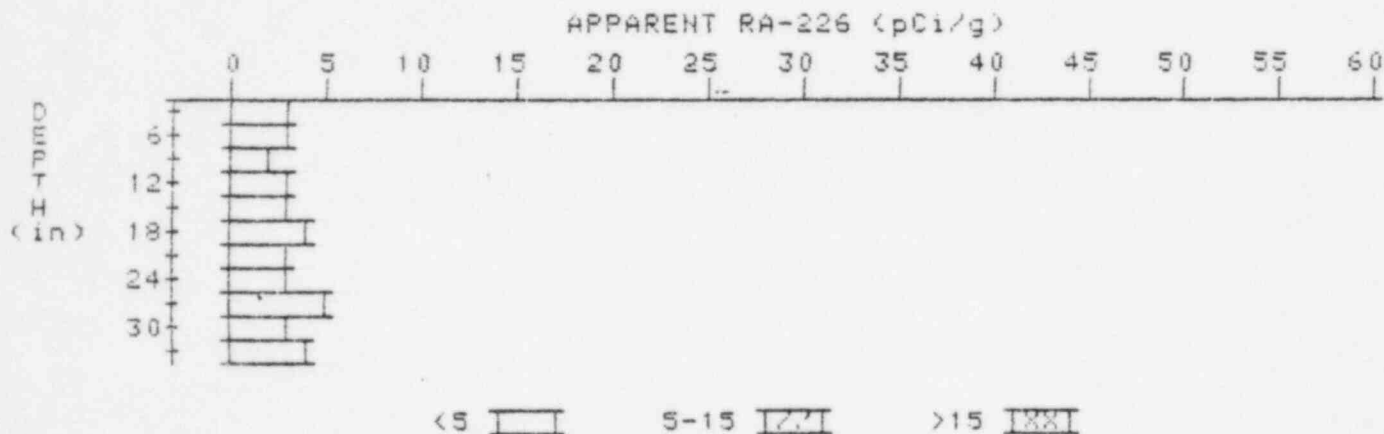
PROPERTY NUMBER: GJ-05609-RS
HOLE NUMBER: 53
LOCATION: 169265



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	17.1	17.1
6	23.6	32.8
9	24.9	30.9
12	22.8	27.2
15	18.2	20.0
18	12.6	8.7
21	9.2	7.1
24	7.0	5.8
27	5.5	5.5

APPARENT RADIUM-226 CONCENTRATION 55 DECONVOLUTION GRAPH

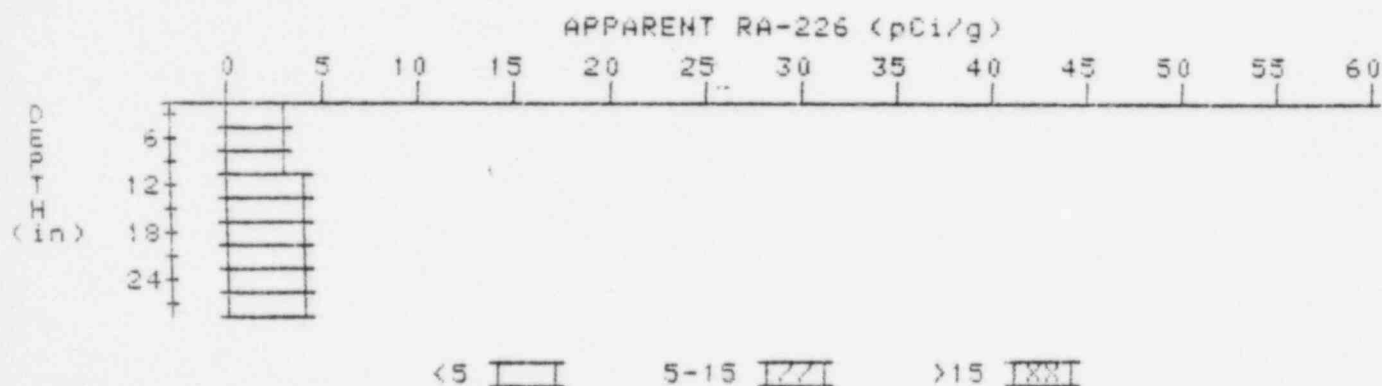
PROPERTY NUMBER: GJ-05609-R3
HOLE NUMBER: 55
LOCATION: 172258



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.7	2.7
6	2.9	3.2
9	2.7	2.2
12	2.9	2.9
15	3.1	2.9
18	3.4	3.9
21	3.4	3.2
24	3.5	3.3
27	3.7	4.6
30	3.4	2.7
33	3.5	3.5

APPARENT RADIUM-226 CONCENTRATION 56 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-05609-RS
HOLE NUMBER: 56
LOCATION: 180220



Depth (in)	Apparent Radium-226 (pCi/g) Undeconvolved	Apparent Radium-226 (pCi/g) Deconvolved
3	2.7	2.7
6	3.0	3.0
9	3.3	3.3
12	3.6	4.0
15	3.7	3.7
18	3.8	3.6
21	4.0	4.2
24	4.1	3.7
27	4.4	4.4