

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-10960-RS
ADDRESS: 539 28 1/4 ROAD

AUGUST 1985

FOR

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT OFFICE

ALBUQUERQUE OPERATIONS OFFICE

DEPARTMENT OF ENERGY

BY

BENDIX FIELD ENGINEERING CORPORATION
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DATE

August 1, 1985

REA10960:REA-705

8508150129 850802
PDR WASTE
WM-54 PDR

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-10960-RS, is a single-family residence located at 539 28 1/4 Road, Grand Junction, Colorado.

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

1.2 Evaluation and Recommendation

The action recommended is the removal of contaminated material and restoration of the property to its original condition. The identified residual radioactive material found on this property is tailings; the estimated volume is: exterior, 41 cu. yd.; interior, 0 cu. yd.

Estimated cost to perform remedial action, including dislocation when applicable, is \$2,751. Remedial action on this property will take approximately 7 days to complete.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 539 28 1/4 Road, Grand Junction, Colorado

Zoning: Residential (RSF-8)

Lot Size: Approximately 43,560 sf (1 acre)

Legal Description: South one acre of the north nine acres of the NE 4 NW4 SW4, Section 7, T1 S, R1 E, of the Ute Meridian, City of Grand Junction, County of Mesa State of Colorado.

Point of Reference: This property is located approximately 2 mile(s) northeast of the State of Colorado Tailings Repository. Appendix Figure 2.1 shows the property location relative to its surroundings.

Utilities: Utility locations are shown in Appendix Figure 2.2.

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

Bordering Properties:

| | |
|--------|-------------------------|
| North: | Single-family residence |
| South: | Single-family residence |
| East: | 28 1/4 Road |
| West: | 28 Road |

2.2 Existing Facilities and Structures

Primary Structure:

| | |
|--------------------|---|
| Type: | Single-story residence |
| Size: | Approximately 1,170 sf |
| Construction Date: | 1900 |
| Construction: | Wood-frame |
| Foundation: | Concrete stemwall on spread footing |
| Footing Depth: | Approximately 16" to bottom of footing from grade |
| Basement: | None |
| Crawl Space: | Yes - under entire living area |
| Condition: | Fair |

Other Structures:

Type: Solar building
Size: Approximately 56 sf
Construction: Wood-frame
Foundation: None
Condition: Fair

Type: Two chicken houses
Size: Approximately 64 and 16 sf, respectively
Construction: Wood-frame
Foundation: None
Condition: Fair

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: None known

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-10960-RS on June 27, 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 contaminated materials located north and east of the primary structure.

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

3.2 Gamma Exposure-Rate Surveys

3.2.1 Exterior Findings

Background Readings: 14 to 17 uR/h
Highest Outside Gamma Reading (HOG): 478 uR/h

Exterior radium-concentration measurements are presented in Appendix Table 3.1. Exterior exposure-rate results are shown in Appendix Figures 3.1a, 3.1b, and 3.1c.

3.2.2 Interior Findings

Background Readings: 14 to 16 uR/h
Highest Inside Gamma Reading (HIG): 22 uR/h

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

3.3 Boreholes, Soil Samples, and Other Measurements

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

3.4 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 3.3 shows identified areas and estimated depths of contamination on this property, based on assessments of all measurements taken. As noted in this figure, areas recommended for remedial action that contain identified residual radioactive materials are:

- (Area A) Surface Material: Soil
 Direction From Primary Structure: North
 Total Depth of Contamination: 12 inches
 Approximate Square Footage: 220
- (Area B) Surface Material: Soil
 Direction From Primary Structure: Northeast
 Total Depth of Contamination: 12 inches
 Comments: Strawberry bed
 Approximate Square Footage: 68
- (Area C) Surface Material: Masonry pavers/gravel
 Direction From Primary Structure: East
 Total Depth of Contamination: 12 inches
 Approximate Square Footage: 400
- (Area D) Surface Material: Soil
 Direction From Primary Structure: East
 Total Depth of Contamination: 12 inches
 Comments: 2 flower beds with domestic and wild flowers
 Approximate Square Footage: 183
- (Area E) Surface Material: Soil
 Direction From Primary Structure: East
 Total Depth of Contamination: 30 inches
 Other (height or thickness): 18-inch-high planter
 Comments: This is a raised stone planter containing domestic and wild flowers. The depth of contamination is based on data collected in Area C.
 Approximate Square Footage: 64
- (Area F) Surface Material: Soil
 Direction From Primary Structure: Southeast
 Other Directions: Along south property boundary
 Total Depth of Contamination: 6 inches
 Comments: Flowerbed
 Approximate Square Footage: 105

(Area G) Surface Material: Scoria (red)
Direction From Primary Structure: South
Total Depth of Contamination: 9 inches
Comments: Area is beneath a bay-window extension on
the primary structure
Approximate Square Footage: 8

(Area H) Surface Material: Sand/gravel
Direction From Primary Structure: Southwest
Total Depth of Contamination: 6 inches
Approximate Square Footage: 10

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-10960-RS, includes removal of all areas identified as containing radioactive material (as discussed in Section 3.5 and shown in Appendix Figure 3.3) and transport of removed material to the disposal site.

After remedial action is completed, the areas involved will be restored to original condition in accordance with the Bendix drawings, Vicinity Properties General Construction Specification (Bendix Field Engineering Corporation, 1984), and Statement of Work for Construction Subcontractor.

Dislocation of the occupants will not be required for this remedial action.

4.2 Evaluation of Recommended Remedial Action

Volume calculations of the areas included for remedial action are presented in Appendix Table 4.1. Cost estimates are presented in Appendix Table 4.2.

Estimated cost of remedial action is \$2,751.

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:

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| Table 3.2 | Summary of Interior Gamma Exposure Rates |
| Table 4.1 | Area and Volume Calculations |
| Table 4.2 | Estimated Cost of Decontamination and Restoration |

Appendix Figures:

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| Figure 2.2 | Site Plan |
| Figure 3.1a | Exterior Exposure Rates |
| Figure 3.1b | Exterior Exposure Rates |
| Figure 3.1c | Exterior Exposure Rates |
| Figure 3.2 | Exterior Sample Locations |
| Figure 3.3 | Exterior Estimated Extent of Contamination |

Official Survey Report

Team Leader Notes

Deconvolution Graphs (Apparent Radium-226 Concentration)

Exterior Gamma Scan Map

Radium Concentrations at Exterior Locations

DOE ID #GJ-10960-RS

539 28 1/4 Road

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| Loc # | Grid Location | Depth (in.) | Meas. Type | In Situ Ra-226 (pCi/g) | | Chem Ra-226 (pCi/g) | Comments |
|-------|---------------|-------------|------------|------------------------|---------|---------------------|-------------------|
| | | | | Tot. Ct | Spectr. | | |
| 1 | 230270 | 00 | DS | 1.5 | | * | Background |
| | | 03 | TC | 3.3 | | * | West of primary |
| | | 06 | TC | 3.5 | | * | structure |
| | | 09 | TC | 3.7 | | * | |
| | | 12 | TC | 3.8 | | * | DC = 0 inches |
| | | 15 | TC | 3.9 | | * | |
| | | 18 | TC | 4.0 | | * | |
| | | 21 | TC | 4.0 | | * | |
| | | 24 | TC | 4.1 | | * | |
| | | 27 | TC | 4.2 | | * | |
| | | 30 | TC | 4.3 | | * | |
| | | 33 | TC | 4.2 | | * | |
| | | 36 | TC | 4.1 | | * | |
| | | 39 | TC | 3.9 | | * | |
| 2 | 273257 | 00 | DS | 15.3 | | * | Southwest of |
| | | 06 | DS | 3.0 | | * | primary structure |
| 3 | 285294 | 03 | TC | 7.9 | | * | North or primary |
| | | 06 | TC | 7.5 | | * | structure |
| | | 09 | TC | 6.0 | | * | |
| | | 12 | TC | 4.9 | | * | DC = 9 inches |
| | | 15 | TC | 4.3 | | * | Based on the |
| | | 18 | TC | 4.0 | | * | deconvolution |
| | | 21 | TC | 3.9 | | * | graph |
| | | 24 | TC | 3.8 | | * | |
| | | 27 | TC | 3.9 | | * | |
| | | 30 | TC | 3.9 | | * | |
| 4 | 293234 | 00 | DS | 1508.6 | | * | Point source |
| | | 06 | DS | 1.8 | | * | Source removed |
| 5 | 300257 | 03 | TC | 40.6 | | * | Southeast of bay |
| | | 06 | TC | 31.7 | | * | window |
| | | 09 | TC | 17.4 | | * | |
| | | 12 | TC | 10.2 | | * | DC = 9 inches |
| | | 15 | TC | 6.7 | | * | Based on the |
| | | 18 | TC | 5.2 | | * | deconvolution |
| | | 21 | TC | 4.5 | | * | graph |
| | | 24 | TC | 4.2 | | * | |
| | | 27 | TC | 4.1 | | * | |

Radium Concentrations at Exterior Locations

DOE ID #GJ-10960-RS

539 28 1/4 Road

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| Loc # | Grid Location | Depth (in.) | Meas. Type | In Situ Ra-226 (pCi/g) | | Chem Ra-226 (pCi/g) | Comments |
|-------|---------------|-------------|------------|------------------------|---------|---------------------|--|
| | | | | Tot. Ct | Spectr. | | |
| 6 | 300290 | 03 | TC | 10.3 | | * | North of primary structure |
| | | 06 | TC | 11.6 | | * | |
| | | 09 | TC | 9.0 | | * | |
| | | 12 | TC | 6.4 | | * | DC = 12 inches Based on the deconvolution graph |
| | | 15 | TC | 5.2 | | * | |
| | | 18 | TC | 4.5 | | * | |
| | | 21 | TC | 4.4 | | * | |
| | | 24 | TC | 4.2 | | * | |
| | | 27 | TC | 4.2 | | * | |
| | | 30 | TC | 4.1 | | * | |
| | | 33 | TC | 3.9 | | * | |
| 7 | 304262 | 00 | DS | 2.3 | | * | Gas line |
| | | 15 | DS | 1.5 | | * | |
| 8 | 308258 | 03 | TC | 9.2 | | * | Southeast of primary structure |
| | | 06 | TC | 8.9 | | * | |
| | | 09 | TC | 7.2 | | * | |
| | | 12 | TC | 5.7 | | * | DC = 12 inches Based on the deconvolution graph |
| | | 15 | TC | 4.9 | | * | |
| | | 18 | TC | 4.6 | | * | |
| | | 21 | TC | 4.4 | | * | |
| | | 24 | TC | 4.2 | | * | |
| | | 27 | TC | 4.1 | | * | |
| | | 30 | TC | 4.1 | | * | |
| | | 33 | TC | 4.1 | | * | |
| | | 36 | TC | 4.0 | | * | |
| | | 39 | TC | 3.9 | | * | |
| | | 42 | TC | 4.0 | | * | |
| 9 | 308294 | 03 | TC | 27.9 | | * | North of primary structure |
| | | 06 | TC | 28.9 | | * | |
| | | 09 | TC | 20.7 | | * | |
| | | 12 | TC | 13.1 | | * | DC = 12 inches Based on the deconvolution graph |
| | | 15 | TC | 8.6 | | * | |
| | | 18 | TC | 6.5 | | * | |
| | | 21 | TC | 5.5 | | * | |
| | | 24 | TC | 5.1 | | * | |
| | | 27 | TC | 4.7 | | * | |
| | | 30 | TC | 4.6 | | * | |
| | | 33 | TC | 4.4 | | * | |
| | | 36 | TC | 4.4 | | * | |
| | | 39 | TC | 4.6 | | * | |
| | | 42 | TC | 4.7 | | * | |

Radium Concentrations at Exterior Locations

DOE ID #GJ-10960-RS

539 28 1/4 Road

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| Loc # | Grid Location | Depth (in.) | Meas. Type | In Situ Ra-226 (pCi/g) | | Chem Ra-226 (pCi/g) | Comments |
|-------|---------------|-------------|------------|------------------------|---------|---------------------|--|
| | | | | Tot. Ct | Spectr. | | |
| 10 | 310280 | 03 | TC | 7.4 | | * | East of primary structure |
| | | 06 | TC | 8.0 | | * | |
| | | 09 | TC | 7.3 | | * | |
| | | 12 | TC | 6.1 | | * | DC = 12 inches Based on the deconvolution graph |
| | | 15 | TC | 5.1 | | * | |
| | | 18 | TC | 4.6 | | * | |
| | | 21 | TC | 4.4 | | * | |
| | | 24 | TC | 4.4 | | * | |
| | | 27 | TC | 4.3 | | * | |
| | | 30 | TC | 4.4 | | * | |
| | | 33 | TC | 4.2 | | * | |
| | | 36 | TC | 4.3 | | * | |
| | | 39 | TC | 4.3 | | * | |
| | | 42 | TC | 4.3 | | * | |
| | | 45 | TC | 4.4 | | * | |
| 11 | 313291 | 03 | TC | 21.0 | | * | Northeast corner of primary structure |
| | | 06 | TC | 22.0 | | * | |
| | | 09 | TC | 16.8 | | * | |
| | | 12 | TC | 11.5 | | * | DC = 12 inches Based on the deconvolution graph |
| | | 15 | TC | 8.5 | | * | |
| | | 18 | TC | 6.7 | | * | |
| | | 21 | TC | 5.8 | | * | |
| | | 24 | TC | 5.3 | | * | |
| | | 27 | TC | 5.0 | | * | |
| | | 30 | TC | 4.9 | | * | |
| | | 33 | TC | 4.9 | | * | |
| | | 36 | TC | 4.7 | | * | |
| | | 39 | TC | 4.6 | | * | |
| | | 42 | TC | 4.6 | | * | |
| 12 | 315234 | 00 | DS | 3.6 | | * | South flower garden |
| | | 06 | DS | 2.0 | | * | |
| 13 | 318257 | 00 | DS | 9.9 | | * | Sand and gravel |
| | | 06 | DS | 2.8 | | * | |
| 14 | 319267 | 03 | TC | 13.4 | | * | Near water meter |
| | | 06 | TC | 11.0 | | * | |
| | | 09 | TC | 8.5 | | * | DC = 12 inches Based on the deconvolution graph |
| | | 12 | TC | 7.0 | | * | |
| | | 15 | TC | 5.9 | | * | |
| | | 18 | TC | 5.4 | | * | |
| | | 21 | TC | 5.1 | | * | |

Radium Concentrations at Exterior Locations

DOE ID #GJ-10960-RS

539 28 1/4 Road

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| Loc # | Grid Location | Depth (in.) | Meas. Type | In Situ Ra-226 (pCi/g) | | Chem Ra-226 (pCi/g) | Comments |
|-------|---------------|-------------|------------|------------------------|---------|---------------------|-----------------------------------|
| | | | | Tot. Ct | Spectr. | | |
| 14 | 319267 | 24 | TC | 4.9 | | * | |
| | | 27 | TC | 4.7 | | * | |
| | | 30 | TC | 4.6 | | * | |
| | | 33 | TC | 4.5 | | * | |
| 15 | 324278 | 03 | TC | 11.2 | | * | East of primary structure |
| | | 06 | TC | 10.0 | | * | |
| | | 09 | TC | 7.7 | | * | |
| | | 12 | TC | 5.9 | | * | DC = 12 inches |
| | | 15 | TC | 5.0 | | * | Based on the |
| | | 18 | TC | 4.5 | | * | deconvolution |
| | | 21 | TC | 4.3 | | * | graph |
| | | 24 | TC | 4.3 | | * | |
| 16 | 324292 | 27 | TC | 4.4 | | * | |
| | | 03 | TC | 11.4 | | * | Near northeast corner of property |
| | | 06 | TC | 9.7 | | * | |
| | | 09 | TC | 7.5 | | * | |
| | | 12 | TC | 6.2 | | * | DC = 12 inches |
| | | 15 | TC | 5.4 | | * | Based on the |
| | | 18 | TC | 4.9 | | * | deconvolution |
| | | 21 | TC | 4.5 | | * | graph |
| | | 24 | TC | 4.4 | | * | |
| | | 27 | TC | 4.3 | | * | |

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 = 06-27-85
 Team Leader = JD

Table 3.2

Summary of Interior Gamma Exposure Rates

DOE ID No. GJ-10960-RS

539 28 1/4 Road

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| Location | Number of Readings Taken at Waist Level | Range at Waist Level (uR/h) | Mean at Waist Level (uR/h) | Number of Readings Taken at Surface | Range at Surface (uR/h) | Mean Surface (uR/h) |
|---------------------------|---|--------------------------------------|-------------------------------------|--|-------------------------------|---------------------------|
| Cellar | 02 | 17-18 | 18 | 02 | 18-18 | 18 |
| Crawl Space | - | - | - | 01 | 17-17 | 17 |
| Room A | 07 | 14-15 | 15 | 07 | 14-16 | 15 |
| Room B | 02 | 14-14 | 14 | 02 | 15-15 | 15 |
| Room C | 05 | 15-16 | 15 | 05 | 15-16 | 16 |
| Room D | 05 | 14-15 | 15 | 05 | 14-15 | 15 |
| Room E | 14 | 15-22 | 17 | 14 | 15-21 | 17 |
| Room F | 03 | 14-15 | 14 | 03 | 14-15 | 14 |
| Wood Solar Building | 04 | 15-16 | 15 | 04 | 15-16 | 16 |
| Chicken House 1 | 04 | 13-14 | 14 | 04 | 13-14 | 14 |

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-10960-RS

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| <u>AREA</u> | <u>CALCULATIONS(ft)</u> | <u>SF</u> | <u>DEPTH(ft)</u> | <u>CF</u> | <u>CUBIC YARDS</u> |
|-------------------------|-------------------------|-----------|------------------|-----------|-----------------------|
| EXTERIOR | | | | | |
| A | 22 x 6 | = | 132 | | |
| | 8 x 8 | = | 64 | | |
| | 12 x 2 | = | 24 | | |
| | | | | | |
| | | | 220 x 1.0 | = | 220 |
| B | 17 x 4 | = | 68 x 1.0 | = | 68 |
| C | 11 x 19 | = | 209 | | |
| | 5 x 21 | = | 105 | | |
| | (3 x 12) x 2 | = | 72 | | |
| | 7 x 2 | = | 14 | | |
| | | | 400 x 1.0 | = | 400 |
| D | 9 x 12 | = | 108 | | |
| | 15 x 5 | = | 75 | | |
| | | | 183 x 1.0 | = | 183 |
| E | 8 x 8 | = | 64 x 2.5 | = | 160 |
| F | 35 x 3 | = | 105 x 0.5 | = | 53 |
| G | 4 x 2 | = | 8 x 0.8 | = | 6 |
| H | 5 x 2 | = | 10 x 0.5 | = | 5 |
| TOTAL VOLUME - EXTERIOR | | | | = | 1,095 = 1,095/27 = 41 |

See Appendix Figure 3.3 For Areas

Table 4.2
Estimated Cost of Decontamination and Restoration
DOE ID No. GJ-10960-RS

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EXTERIOR

| | | |
|---|----|-------|
| Remove identified residual radioactive material | | |
| 36 cy @ \$14.50/cy (machine-open) | \$ | 522 |
| 5 cy @ \$44/cy (manual-open) | | 220 |
| Remove/replace masonry pavers/gravel | | |
| 250 sf @ \$1/sf | | 250 |
| Replace areas with compacted roadbase | | |
| 2 cy @ \$11.50/cy | | 23 |
| Replace areas with topsoil | | |
| 39 cy @ \$9.50/cy | | 371 |
| Remove/replace stone planter | | |
| Lump sum | | 300 |
| <hr/> | | |
| TOTAL EXTERIOR | \$ | 1,686 |
| TOTAL INTERIOR | | 0 |
| ACCESS CONTROL | | 100 |
| <hr/> | | |
| SUBTOTAL | \$ | 1,786 |
| CONTINGENCY @ 10% | | 179 |
| <hr/> | | |
| SUBTOTAL | \$ | 1,965 |
| CONTRACTOR OVERHEAD & PROFIT @ 40% | | 786 |
| <hr/> | | |
| GRAND TOTAL | \$ | 2,751 |

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LR072685
REAL0960/REA-705/AP

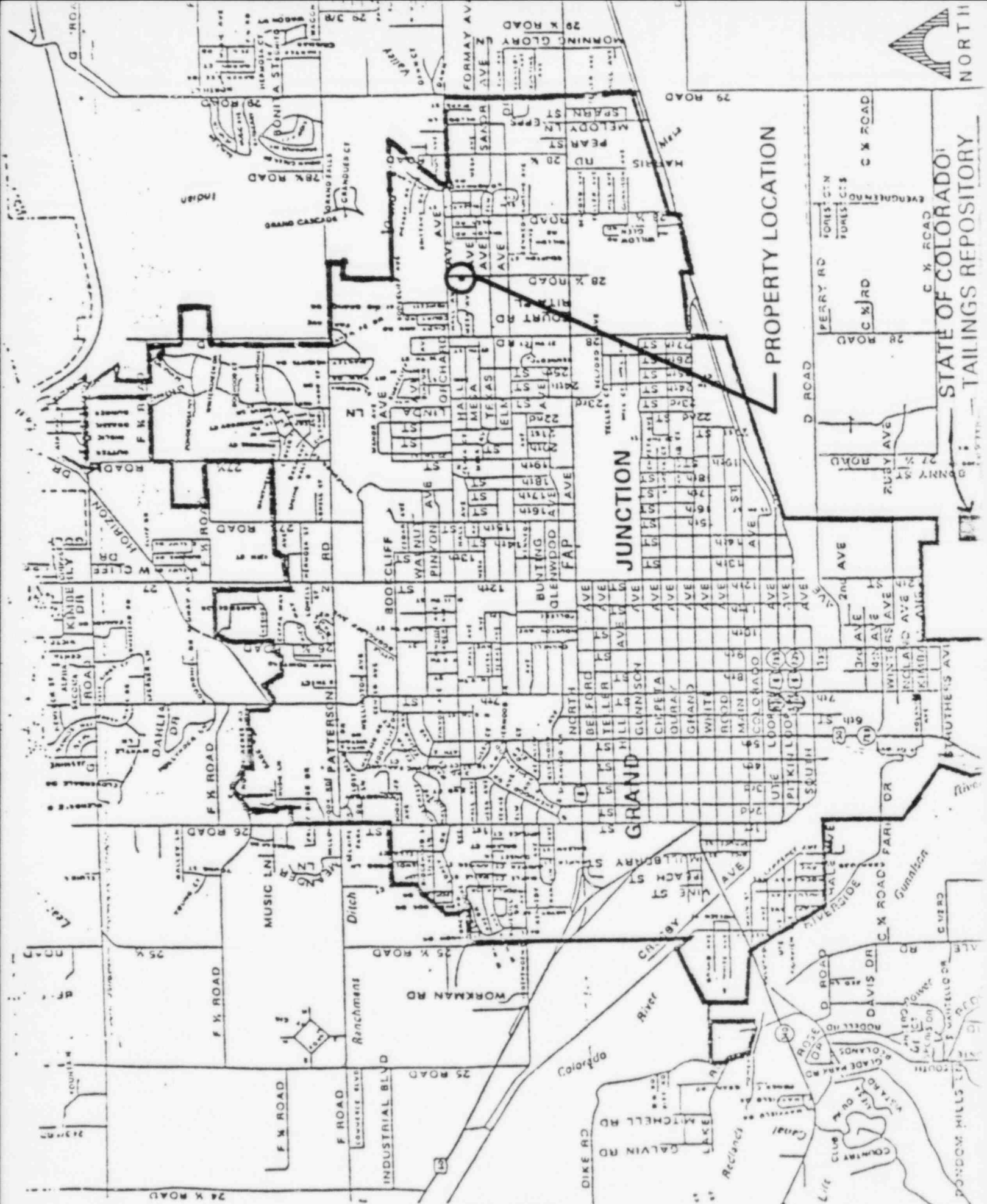
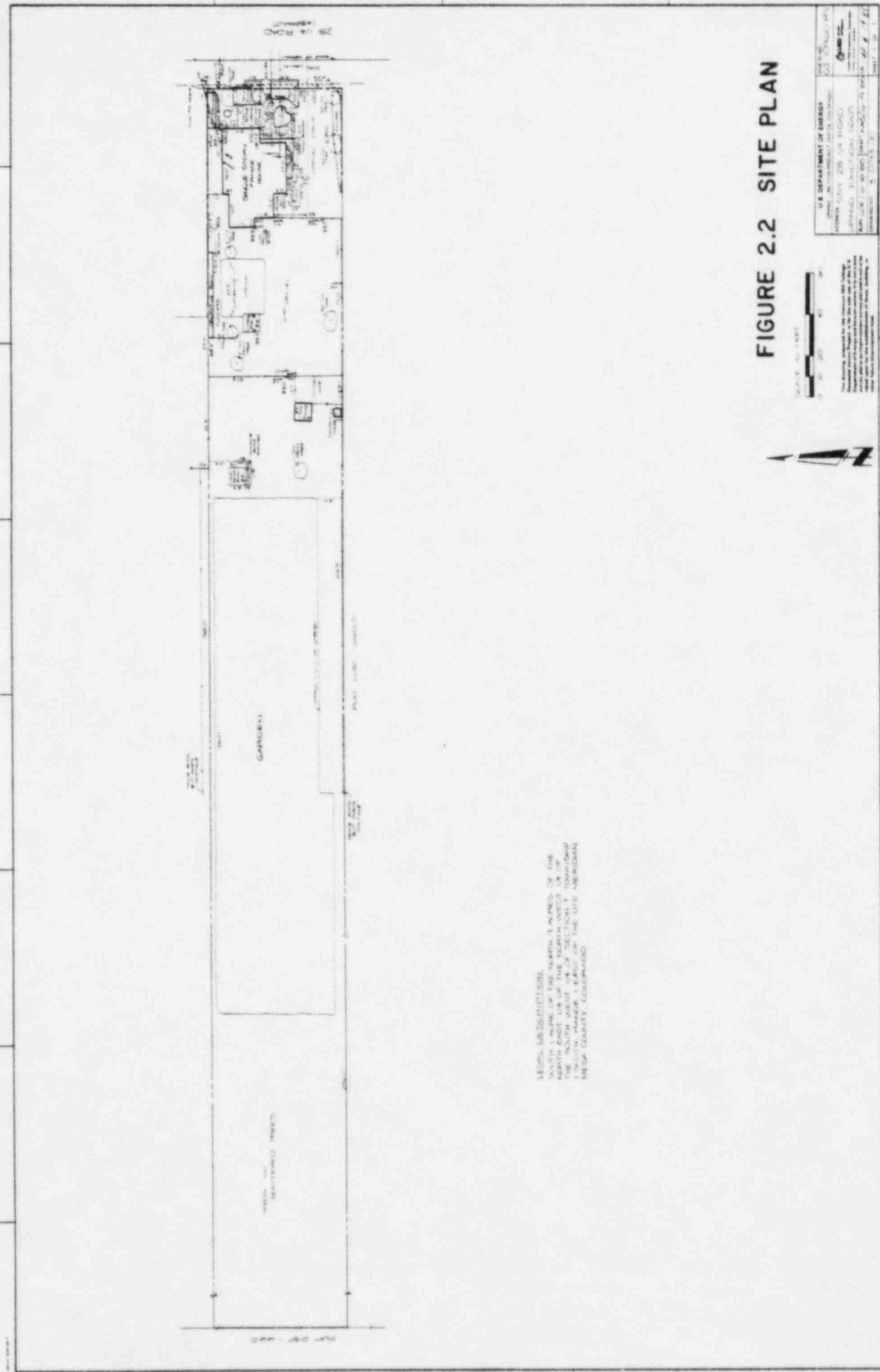
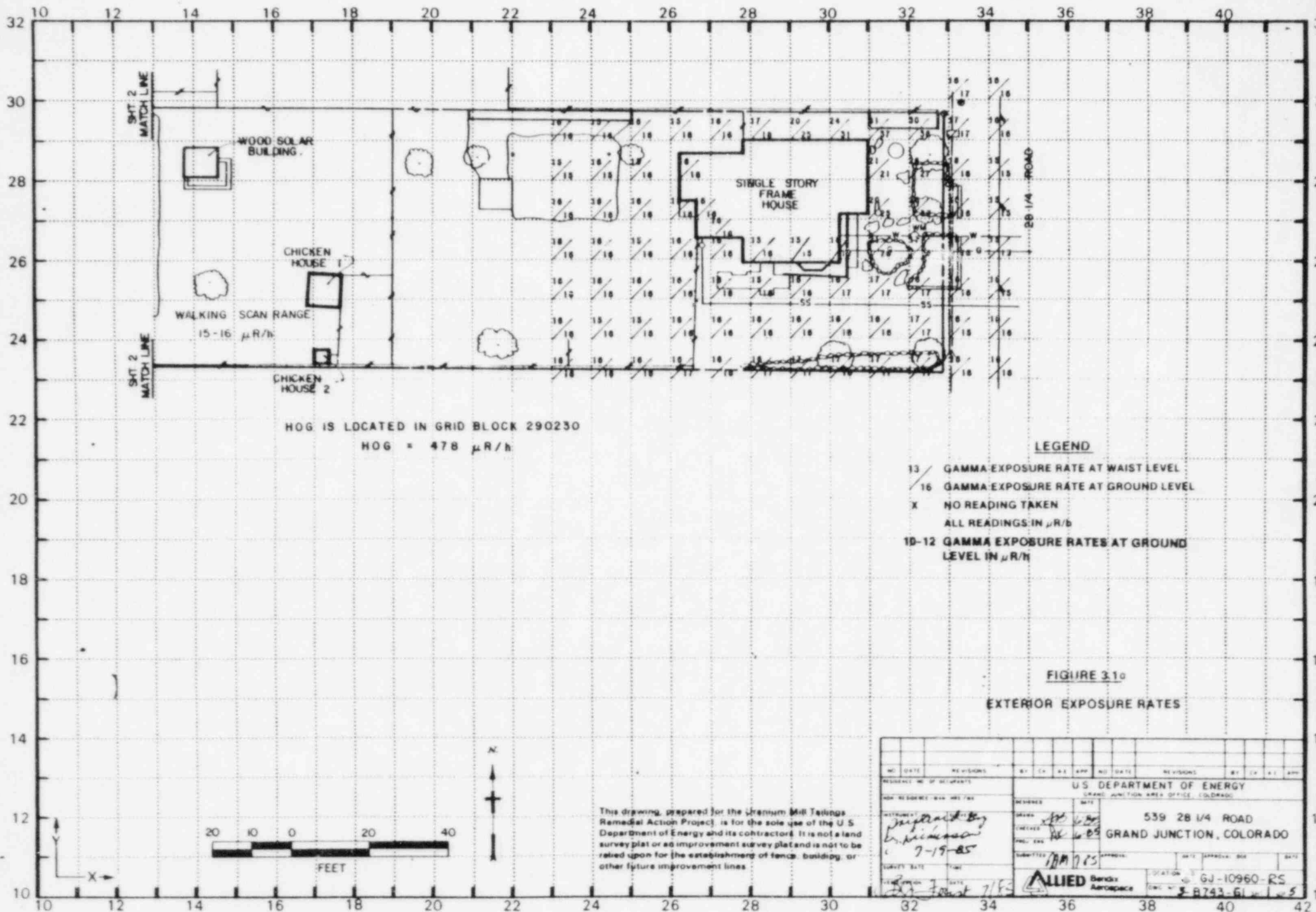


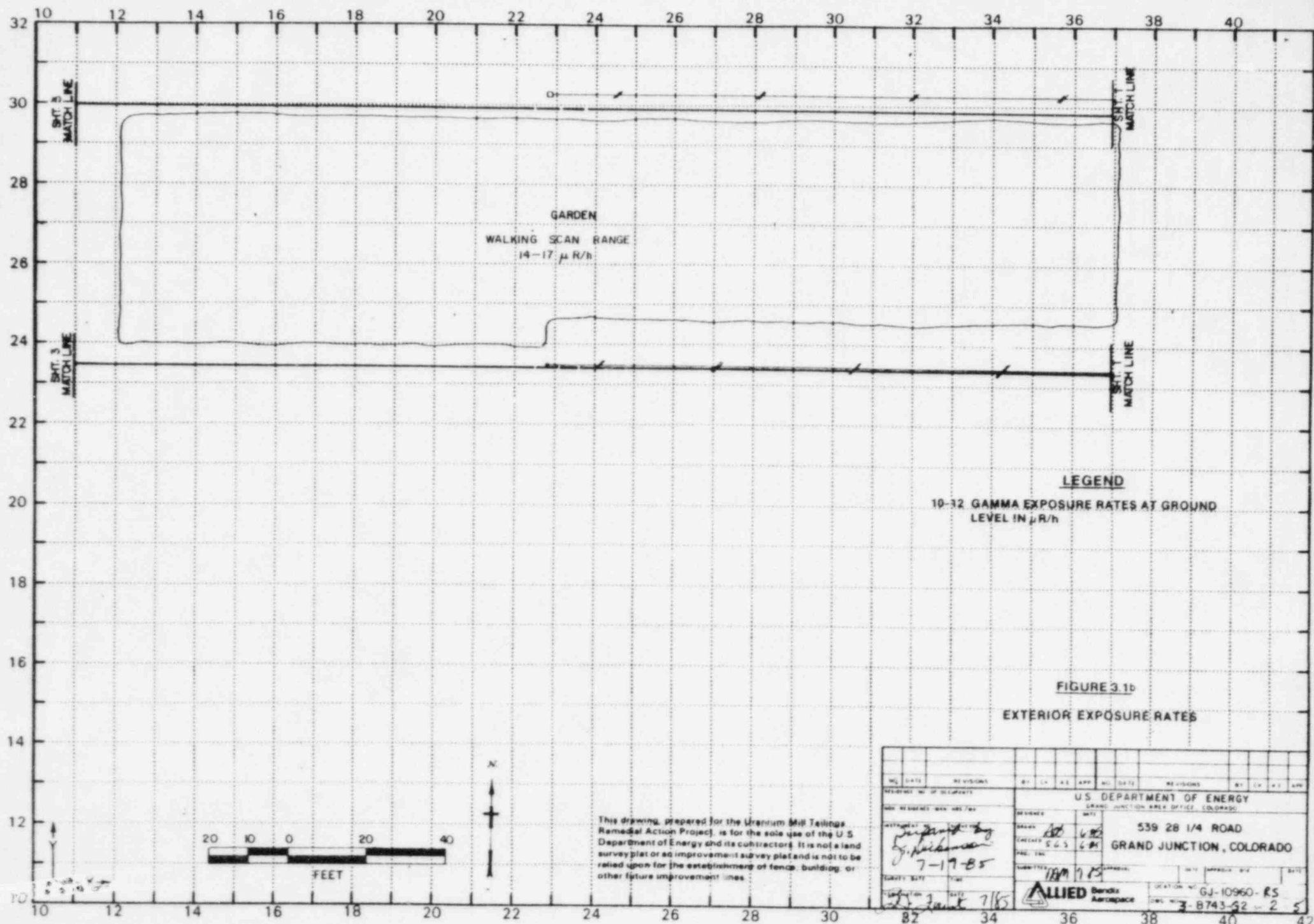
FIGURE 2.1
VICINITY MAP

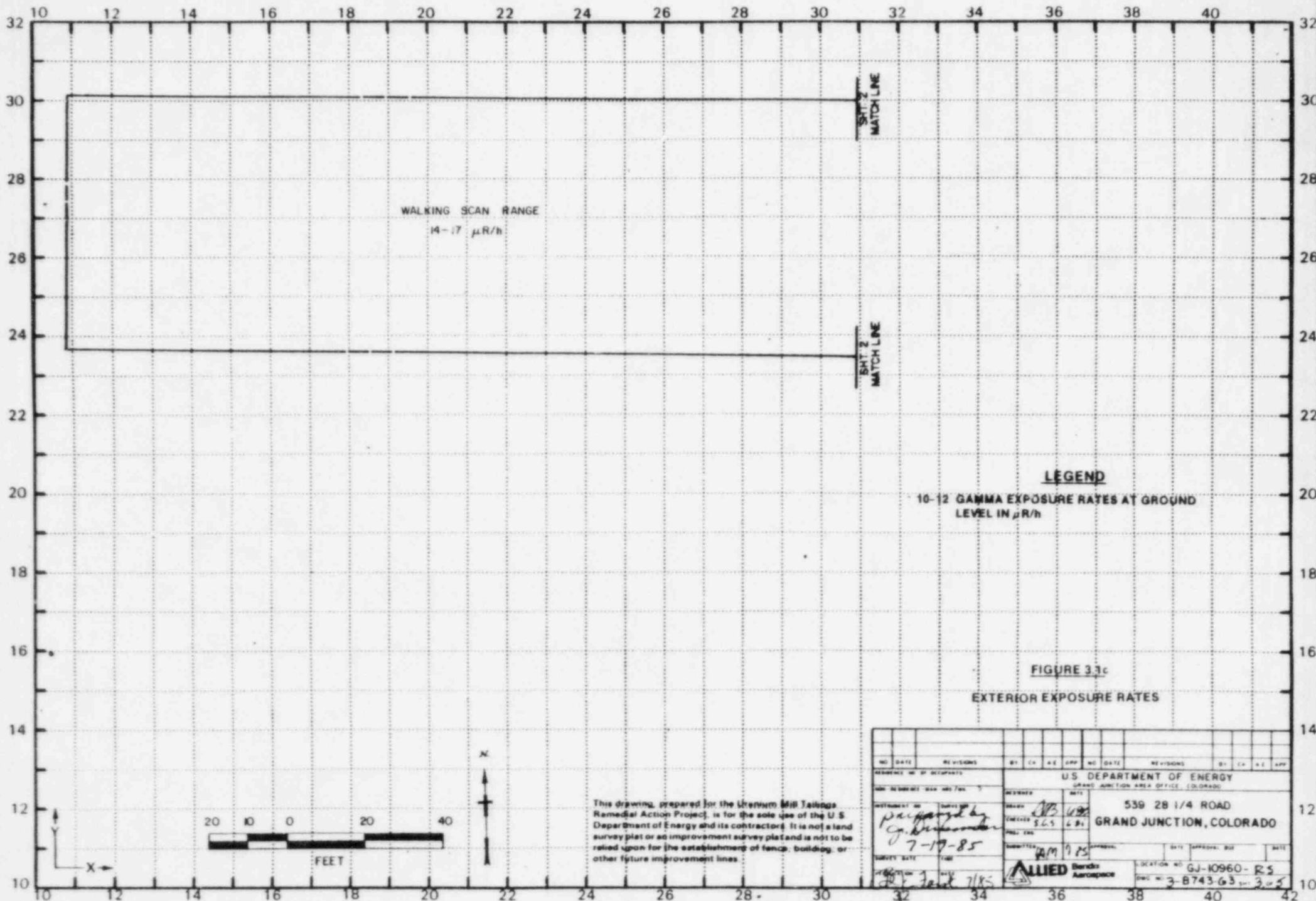


LEGEND: THE DESCRIPTIONS OF THE STATIONARY ENGINE AND THE GARAGE ARE FOR THE PURPOSES OF THE ENVIRONMENTAL IMPACT STATEMENT ONLY. THE ACTUAL LOCATION AND SIZE OF THE STATIONARY ENGINE AND GARAGE WILL BE DETERMINED BY THE U.S. DEPARTMENT OF ENERGY.

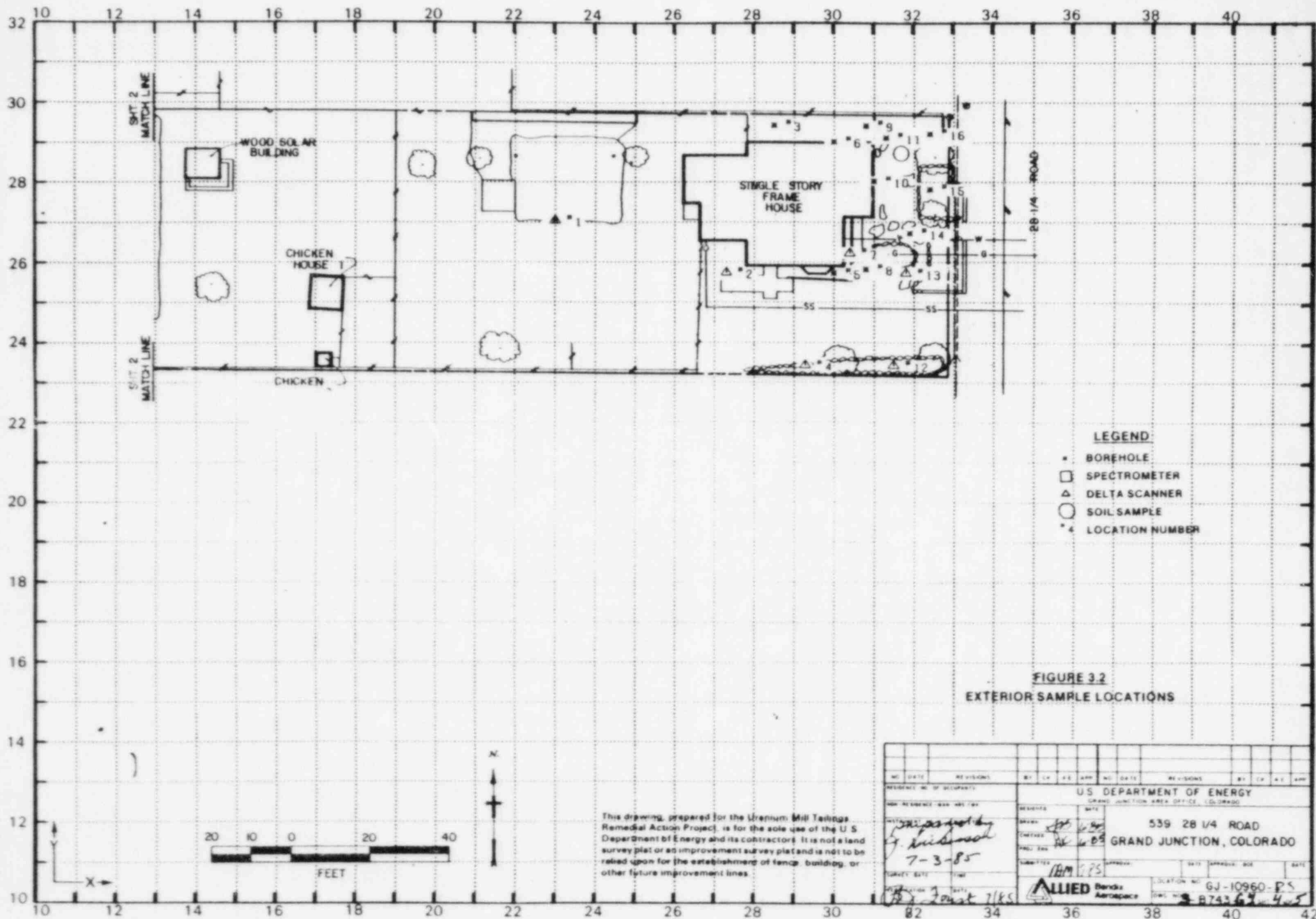
FIGURE 2.2 SITE PLAN

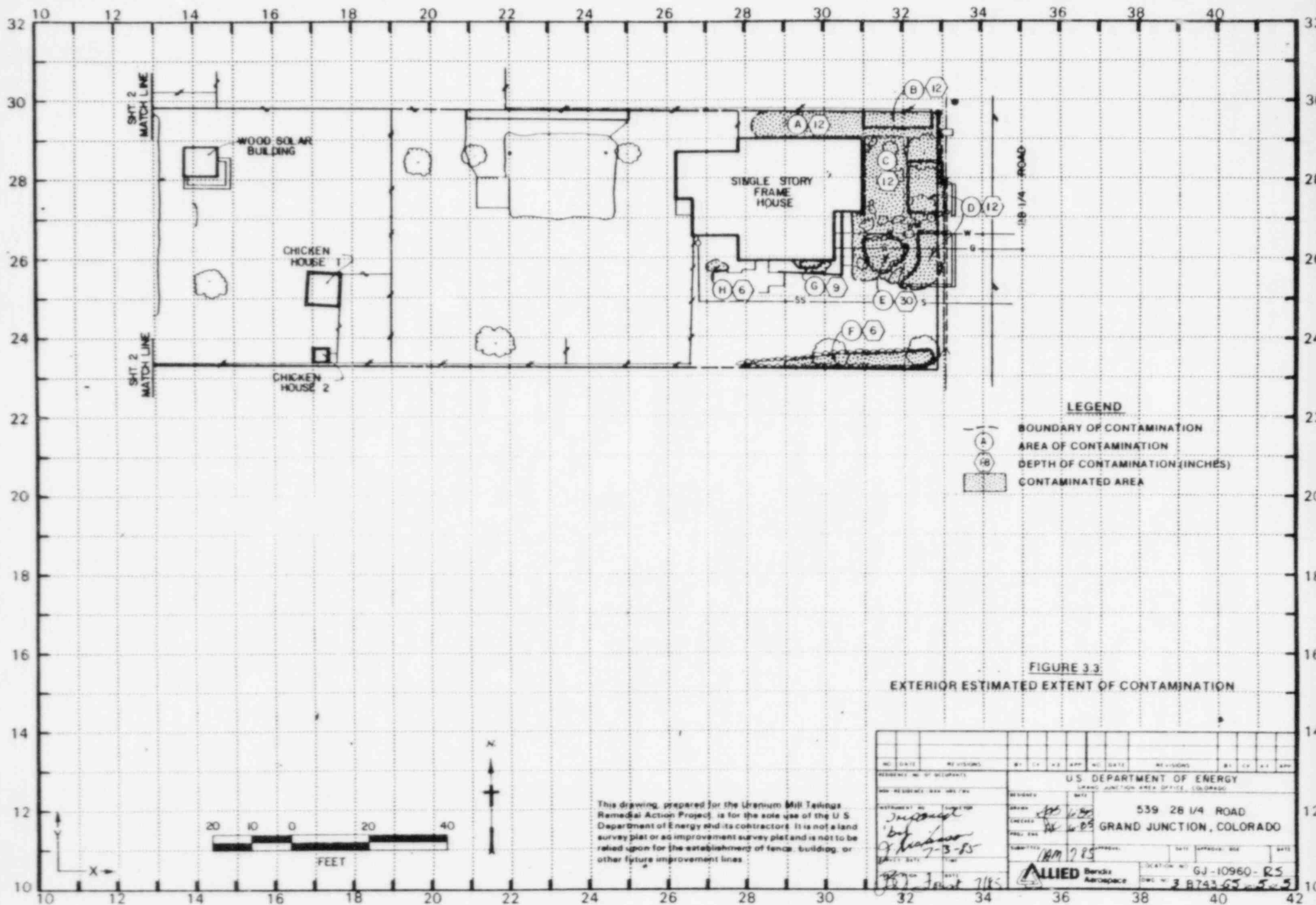






| | | | | | | | | | | | | | |
|---|--|-----------------------------------|--|-------------------------------|-----|---------------------------------|-----|----------------------------------|-----------|--------------------|----|----------------------------------|-----|
| NO. DATE | | REVISIONS | | BY | CHK | APP | NO. | DATE | REVISIONS | | BY | CHK | APP |
| RESIDENCE NO. OF OCCUPANTS 539 28 1/4 ROAD GRAND JUNCTION, COLORADO | | | | | | | | | | | | | |
| WITHDRAWN BY <i>paid by</i> <i>G. J. [signature]</i> 7-17-85 | | SURVEYED BY <i>SLC</i> 6-21 | | DRAWN BY <i>AM</i> 7-25 | | CHECKED BY <i>AM</i> 7-25 | | APPROVED BY <i>AM</i> 7-25 | | DATE 7-25 | | APPROVED BY <i>AM</i> 7-25 | |
| SURVEY DATE 7-17-85 | | TIME 10:00 AM | | ALLIED Berco Aerospace | | LOCATION NO. GJ-10960-RS | | DRAW NO. 3-B743-63-3-5 | | SCALE 1" = 100' | | SHEET NO. 3 of 5 | |





| | | | | | | | |
|--|--|--|--|---|--|--|--|
| NO. DATE REVISIONS | | | | NO. DATE REVISIONS | | | |
| REVISIONS NO. OF REVISIONS | | | | REVISIONS NO. OF REVISIONS | | | |
| REV. REVISIONS DATE | | | | REV. REVISIONS DATE | | | |
| <p align="center">U.S. DEPARTMENT OF ENERGY</p> <p align="center">GRAND JUNCTION AREA OFFICE, COLORADO</p> <p align="center">539 28 1/4 ROAD</p> <p align="center">GRAND JUNCTION, COLORADO</p> | | | | | | | |
| <p>DESIGNED BY <i>[Signature]</i></p> <p>CHECKED BY <i>[Signature]</i></p> <p>DATE 7-3-85</p> | | | | <p>DATE 10/12/85</p> <p>APPROVED BY <i>[Signature]</i></p> <p>DATE 10/12/85</p> | | | |
| <p>ALLIED</p> <p>Grand Junction, Colorado</p> | | | | <p>LOCATION NO. GJ-10960-RS</p> <p>FIG. NO. 3 8743-65-5-5</p> | | | |

3/85

DOE ID NO. GJ-10960-RS

Date July 3, 1985

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

Official Survey Report

Property Address 539 28 $\frac{1}{2}$ Road
Property Owner Silvia Sellars (Helen Meyers-Personal Rep. of estate)
Address of Owner (if different from above) 973 22 Road
Report Prepared By J. Dickerson

I. PRESENCE/ABSENCE OF RESIDUAL RADIOACTIVE MATERIALS

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

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

1 1 In open areas.

1 1 Under or around exterior improvements.

1 1 Under or around a typically nonoccupied structure.

1 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 = 22 uR/h
HOG = 478 uR/h

ALLIED Bendix
Aerospace

Bendix Field Engineering Corporation
Grand Junction Operations
Grand Junction, Colorado

Date: June 27, 1985

To: Files

From: John Dickerson

Subject: Team Leader Notes - GJ-10960-RS

Address: 539 28-1/4 Road

Owner: Sylvia A. Sandars

Team Members

J. Dickerson (Team Leader)
M. Johnson
H. Lucero
D. Clay

L. Kula
S. Garcia
G. Meeker
S. Larsen

The property to the north of Department of Energy (DOE) Identification (ID) number GJ-10960 showed elevated gamma readings immediately adjacent to the property line. Waist level readings were higher than the readings noted at ground level, indicating the readings are most likely the result of 'shine' from a deposit of contaminated materials on DOE ID number GJ-10960.

D. Diss, Health and Safety personnel, visited this property at 0945 hours; no problems were noted.

The sewer line, water lines, and foundation (southwest and north) were investigated by a downhole scintillometer (42 inches at locations 269264 and 303267). No contamination was detected.

No K-factor or high voltage data on instrument C-3573 (total count); however, numbers were obtained from I. Caley at 1400 hours.

A walking scan was conducted on the large, unimproved area west of the primary structure. No elevated readings were found.

Team Leader Notes
John Dickerson
GJ-10960-RS
June 27, 1985
Page 2

An interior survey (waist and floor/ground level) was conducted in the primary and outlying structures.

The crawl space was not accessible, due to the low floor, cross-beams, pipes, and wiring.

Slightly elevated readings were noted in the root cellar due to geometry of excavation.

The property was cleaned up after the survey was conducted, all team members were 'frisked' at 1315 hours.

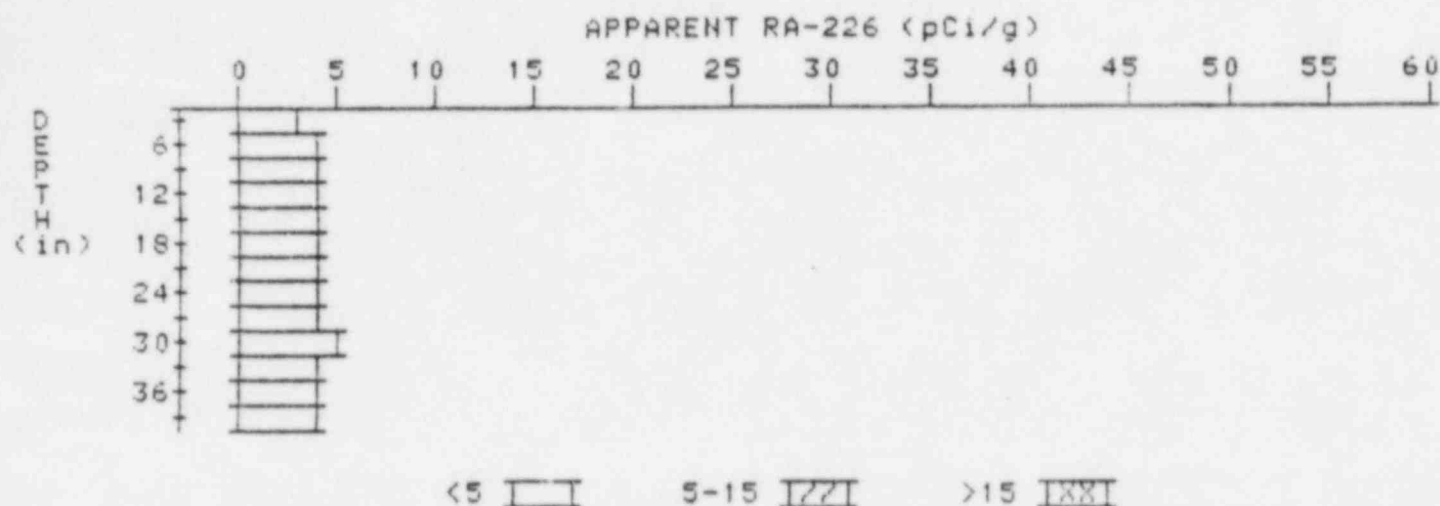
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

1

PROPERTY NUMBER: GJ-10960-RS

HOLE NUMBER: 1

LOCATION: 230270



| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---------------|--|--|
| 3 | 3.3 | 3.3 |
| 6 | 3.5 | 3.5 |
| 9 | 3.7 | 3.9 |
| 12 | 3.8 | 3.8 |
| 15 | 3.9 | 3.9 |
| 18 | 4.0 | 4.2 |
| 21 | 4.0 | 3.8 |
| 24 | 4.1 | 4.1 |
| 27 | 4.2 | 4.2 |
| 30 | 4.3 | 4.7 |
| 33 | 4.2 | 4.2 |
| 36 | 4.1 | 4.3 |
| 39 | 3.9 | 3.9 |

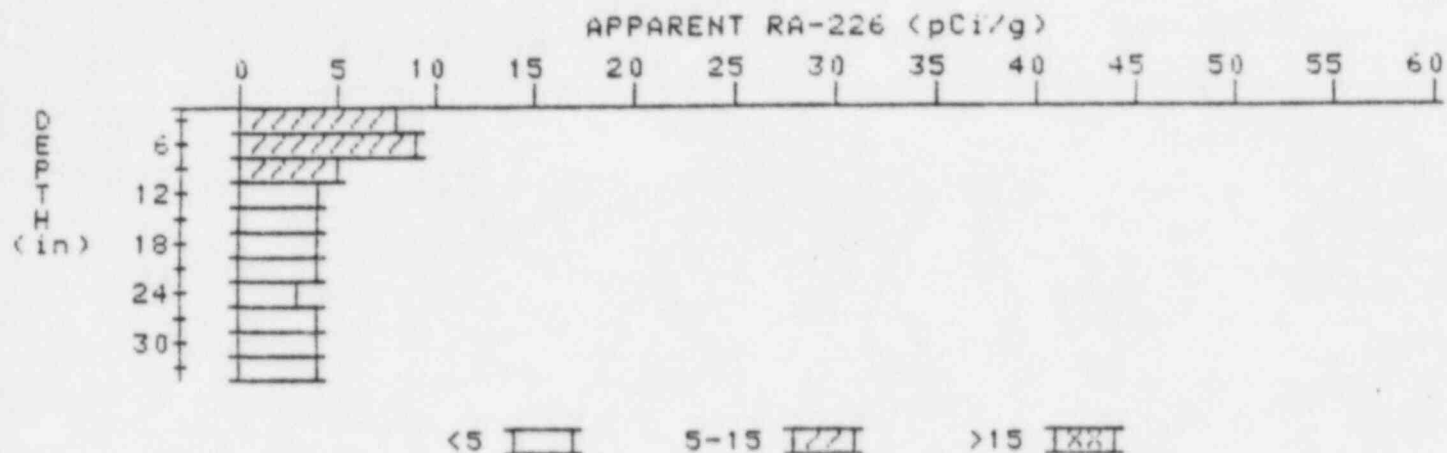
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

3

PROPERTY NUMBER: GJ-10960-RS

HOLE NUMBER: 3

LOCATION: 285294



| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---------------|--|--|
| 3 | 7.9 | 7.9 |
| 6 | 7.5 | 9.5 |
| 9 | 6.0 | 5.3 |
| 12 | 4.9 | 4.0 |
| 15 | 4.3 | 3.8 |
| 18 | 4.0 | 3.6 |
| 21 | 3.9 | 3.9 |
| 24 | 3.8 | 3.4 |
| 27 | 3.9 | 4.1 |
| 30 | 3.9 | 3.5 |
| 33 | 4.1 | 4.1 |

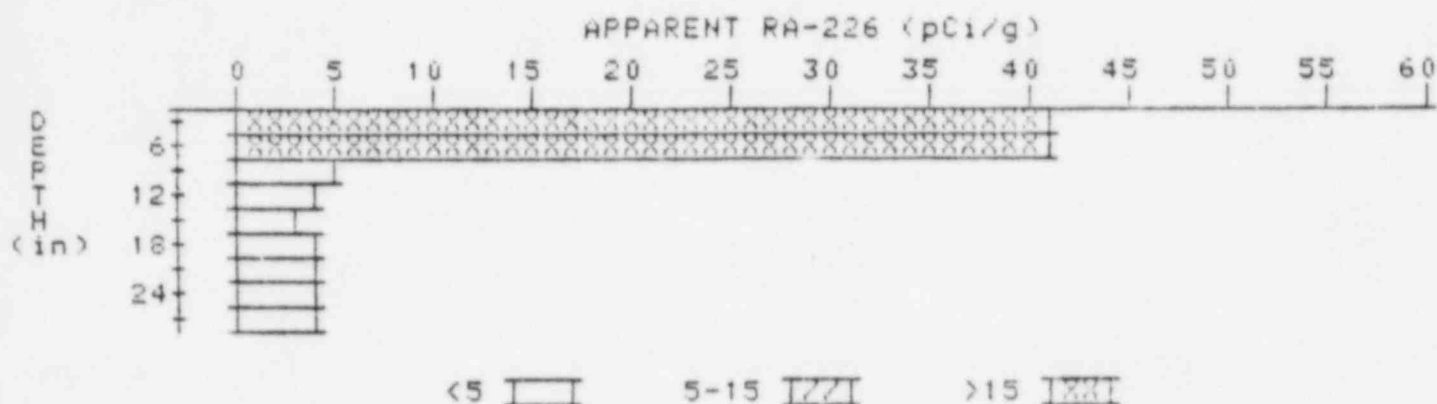
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

5

PROPERTY NUMBER: GJ-10960-RS

HOLE NUMBER: 5

LOCATION: 300257



| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---------------|--|--|
| 3 | 40.6 | 40.6 |
| 6 | 31.7 | 41.3 |
| 9 | 17.4 | 4.8 |
| 12 | 10.2 | 3.6 |
| 15 | 6.7 | 3.1 |
| 18 | 5.2 | 3.8 |
| 21 | 4.5 | 3.8 |
| 24 | 4.2 | 3.8 |
| 27 | 4.1 | 4.1 |

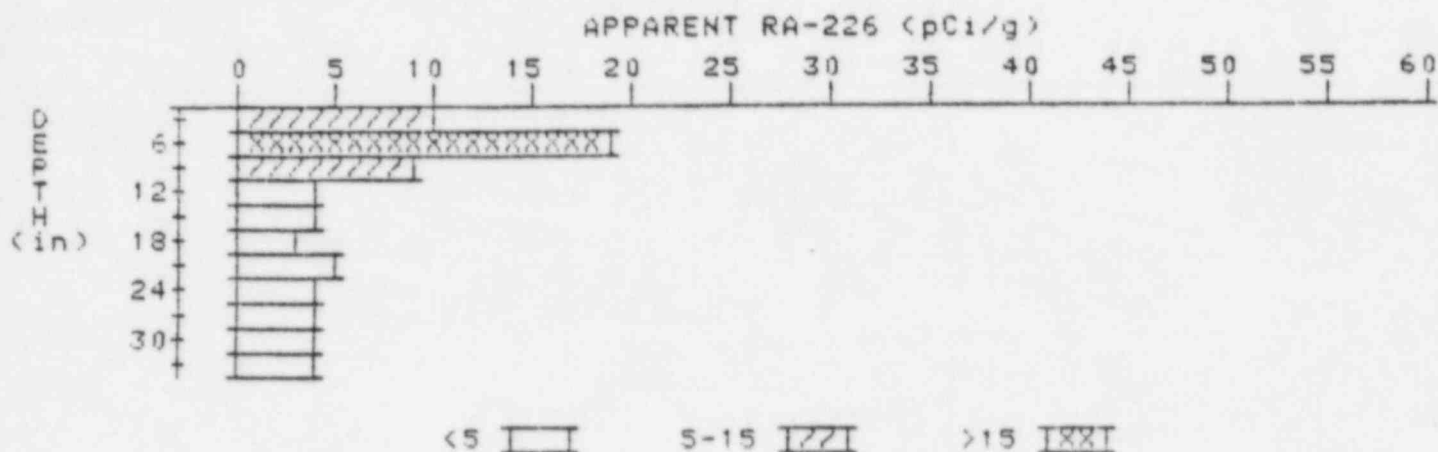
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

6

PROPERTY NUMBER: GJ-10960-RS

HOLE NUMBER: 6

LOCATION: 300290

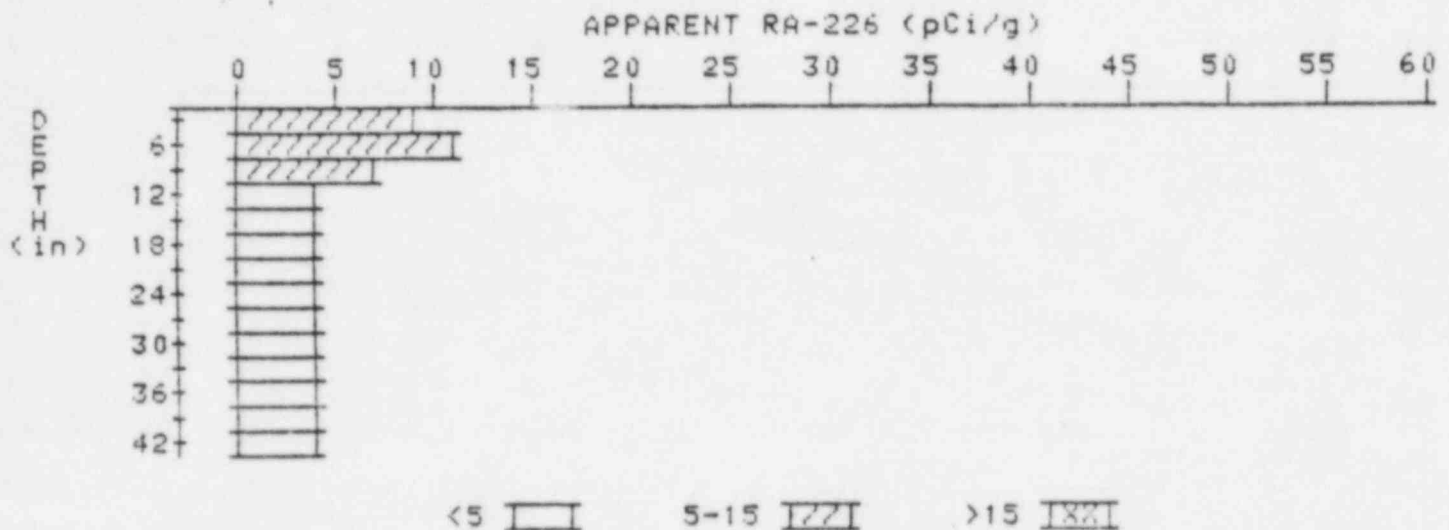


| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---------------|--|--|
| 3 | 10.3 | 10.3 |
| 6 | 11.6 | 13.5 |
| 9 | 9.0 | 9.0 |
| 12 | 6.4 | 3.9 |
| 15 | 5.2 | 4.3 |
| 18 | 4.5 | 3.4 |
| 21 | 4.4 | 4.6 |
| 24 | 4.2 | 3.8 |
| 27 | 4.2 | 4.4 |
| 30 | 4.1 | 4.3 |
| 33 | 3.9 | 3.9 |

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

8

PROPERTY NUMBER: GJ-10960-RS
HOLE NUMBER: 8
LOCATION: 308258



| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---------------|--|--|
| 3 | 9.2 | 9.2 |
| 6 | 8.9 | 11.4 |
| 9 | 7.2 | 6.8 |
| 12 | 5.7 | 4.5 |
| 15 | 4.9 | 4.0 |
| 18 | 4.6 | 4.4 |
| 21 | 4.4 | 4.4 |
| 24 | 4.2 | 4.0 |
| 27 | 4.1 | 3.9 |
| 30 | 4.1 | 4.1 |
| 33 | 4.1 | 4.3 |
| 36 | 4.0 | 4.0 |
| 39 | 3.9 | 3.5 |
| 42 | 4.0 | 4.0 |

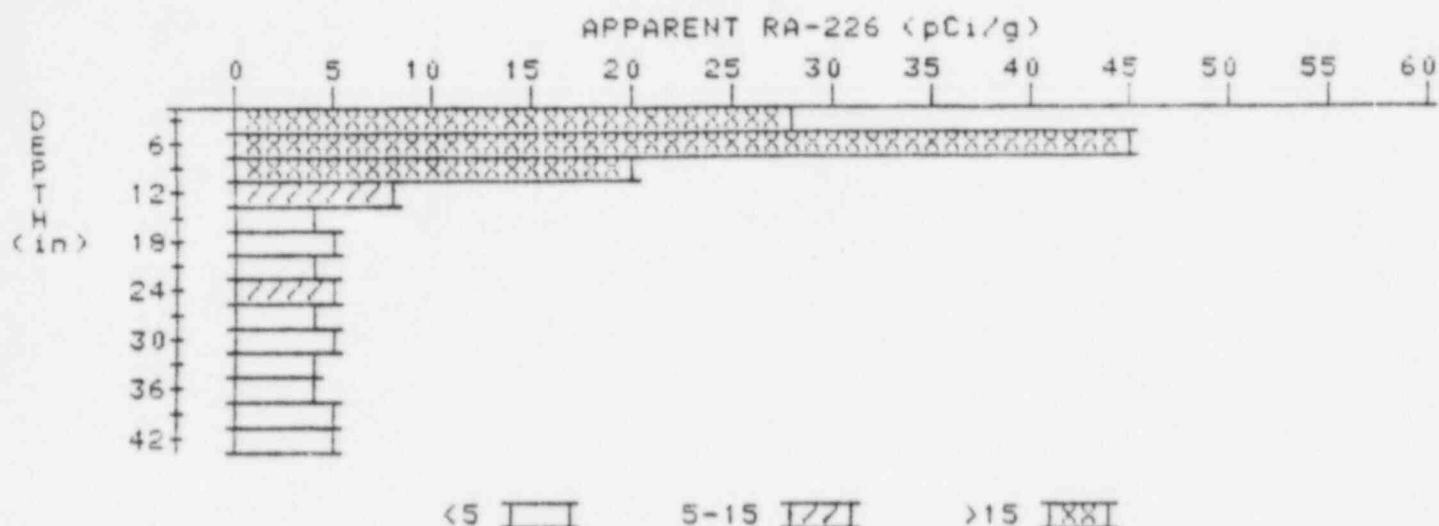
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

9

PROPERTY NUMBER: GJ-10960-RS

HOLE NUMBER: 9

LOCATION: 308294



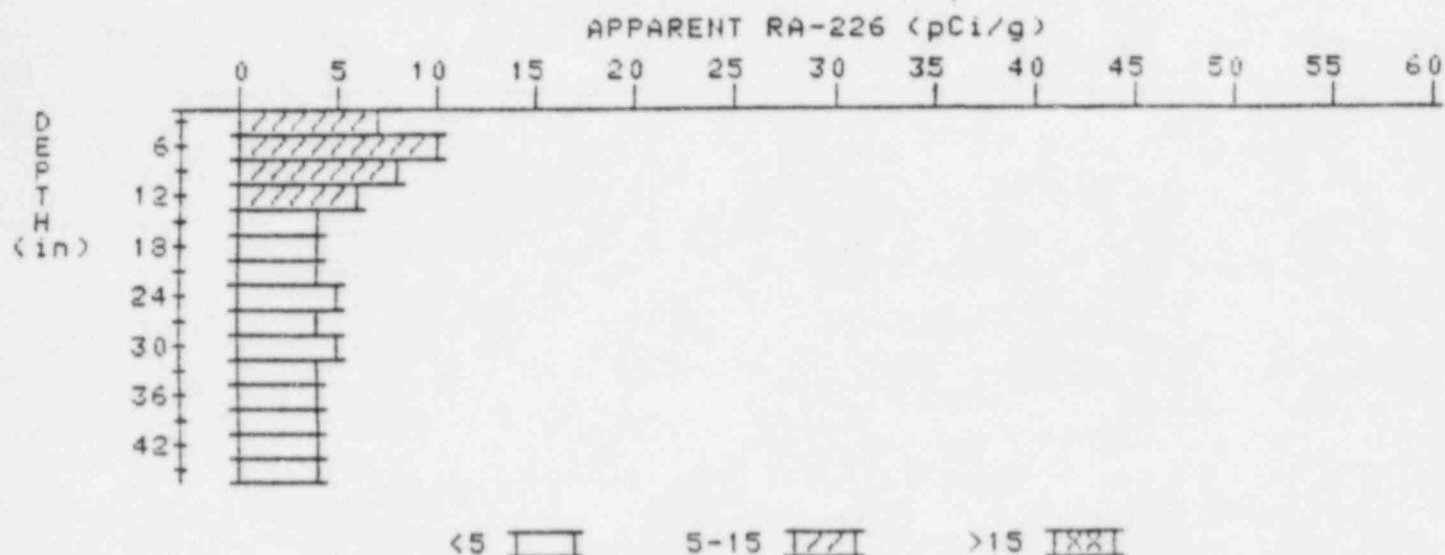
| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---------------|--|--|
| 3 | 27.9 | 27.9 |
| 6 | 28.9 | 45.3 |
| 9 | 20.7 | 19.6 |
| 12 | 13.1 | 7.6 |
| 15 | 8.6 | 4.3 |
| 18 | 6.5 | 4.5 |
| 21 | 5.5 | 4.4 |
| 24 | 5.1 | 5.1 |
| 27 | 4.7 | 4.2 |
| 30 | 4.6 | 4.8 |
| 33 | 4.4 | 4.0 |
| 36 | 4.4 | 4.0 |
| 39 | 4.6 | 4.8 |
| 42 | 4.7 | 4.7 |

APPARENT RADIUM-226 CONCENTRATION 10 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-10960-RS

HOLE NUMBER: 10

LOCATION: 310260



| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---------------|--|--|
| 3 | 7.4 | 7.4 |
| 6 | 8.0 | 10.3 |
| 9 | 7.3 | 8.2 |
| 12 | 6.1 | 5.7 |
| 15 | 5.1 | 4.2 |
| 18 | 4.6 | 4.1 |
| 21 | 4.4 | 4.0 |
| 24 | 4.4 | 4.6 |
| 27 | 4.3 | 3.9 |
| 30 | 4.4 | 4.9 |
| 33 | 4.2 | 3.7 |
| 36 | 4.3 | 4.5 |
| 39 | 4.3 | 4.3 |
| 42 | 4.3 | 4.1 |
| 45 | 4.4 | 4.4 |

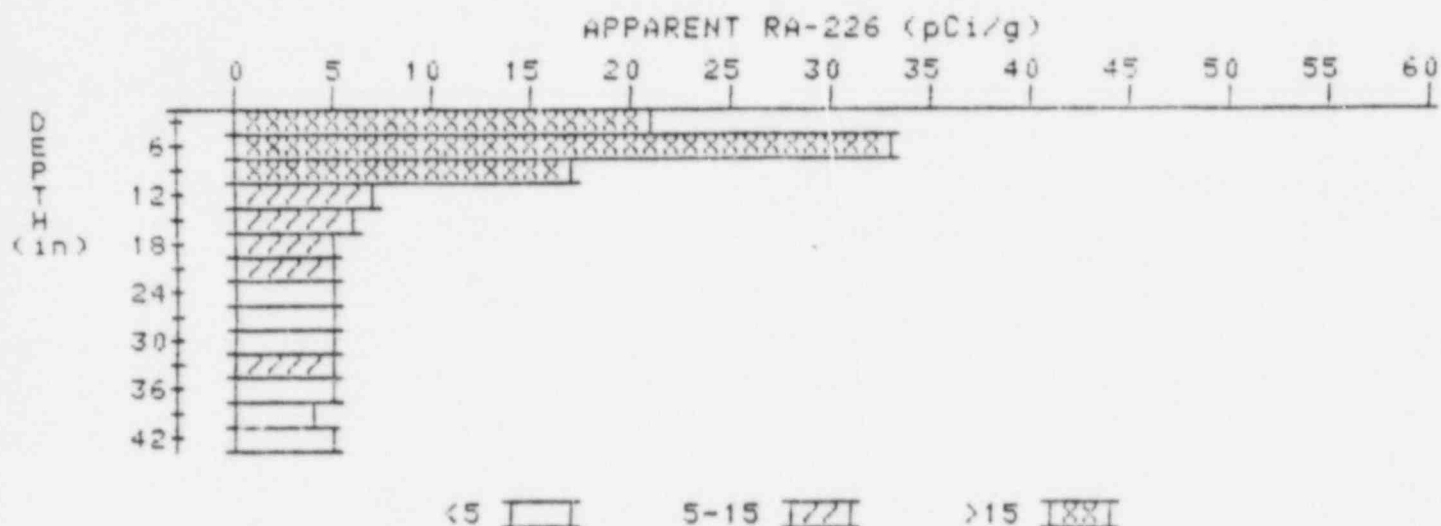
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

11

PROPERTY NUMBER: GJ-10960-RS

HOLE NUMBER: 11

LOCATION: 313291



| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---------------|--|--|
| 3 | 21.0 | 21.0 |
| 6 | 22.0 | 33.0 |
| 9 | 16.8 | 17.0 |
| 12 | 11.5 | 7.4 |
| 15 | 8.5 | 6.4 |
| 18 | 6.7 | 5.1 |
| 21 | 5.8 | 5.1 |
| 24 | 5.3 | 4.9 |
| 27 | 5.0 | 4.6 |
| 30 | 4.9 | 4.7 |
| 33 | 4.9 | 5.3 |
| 36 | 4.7 | 4.5 |
| 39 | 4.6 | 4.4 |
| 42 | 4.6 | 4.6 |

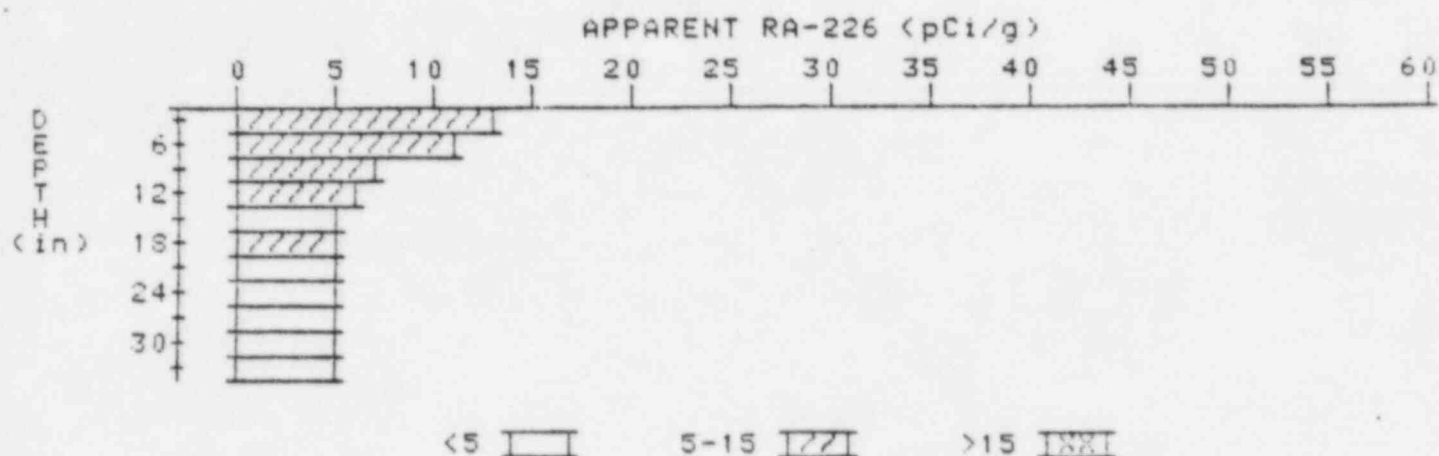
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

14

PROPERTY NUMBER: GJ-10960-RS

HOLE NUMBER: 14

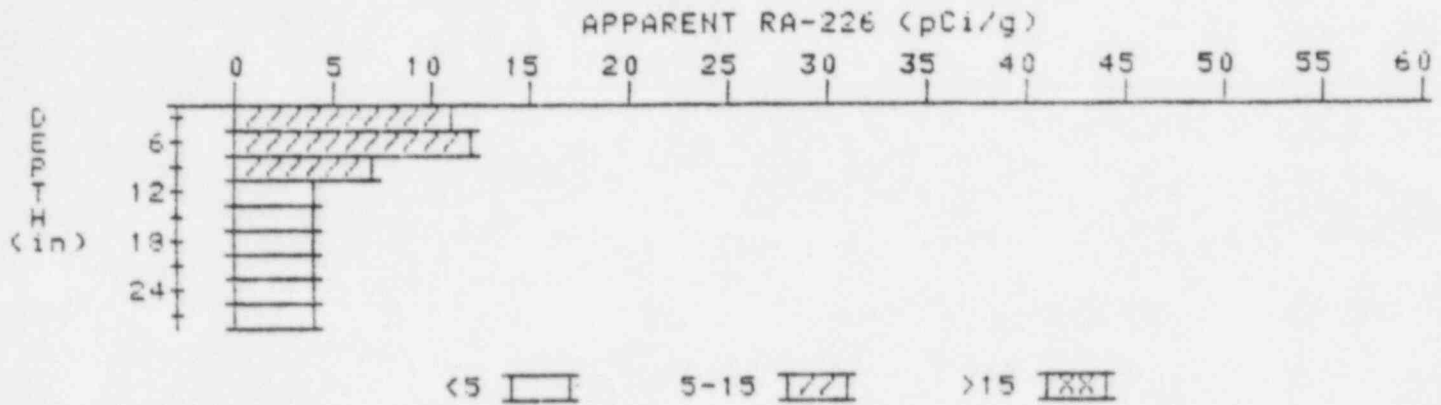
LOCATION: 319267



| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---------------|--|--|
| 3 | 13.4 | 13.4 |
| 6 | 11.0 | 11.2 |
| 9 | 8.5 | 6.7 |
| 12 | 7.0 | 6.3 |
| 15 | 5.9 | 4.8 |
| 18 | 5.4 | 5.0 |
| 21 | 5.1 | 4.9 |
| 24 | 4.9 | 4.9 |
| 27 | 4.7 | 4.5 |
| 30 | 4.6 | 4.6 |
| 33 | 4.5 | 4.5 |

APPARENT RADIUM-226 CONCENTRATION 15 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-10960-RS
HOLE NUMBER: 15
LOCATION: 324278



| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---------------|--|--|
| 3 | 11.2 | 11.2 |
| 6 | 10.0 | 12.0 |
| 9 | 7.7 | 6.8 |
| 12 | 5.9 | 4.3 |
| 15 | 5.0 | 4.3 |
| 18 | 4.5 | 4.0 |
| 21 | 4.3 | 3.9 |
| 24 | 4.3 | 4.1 |
| 27 | 4.4 | 4.4 |

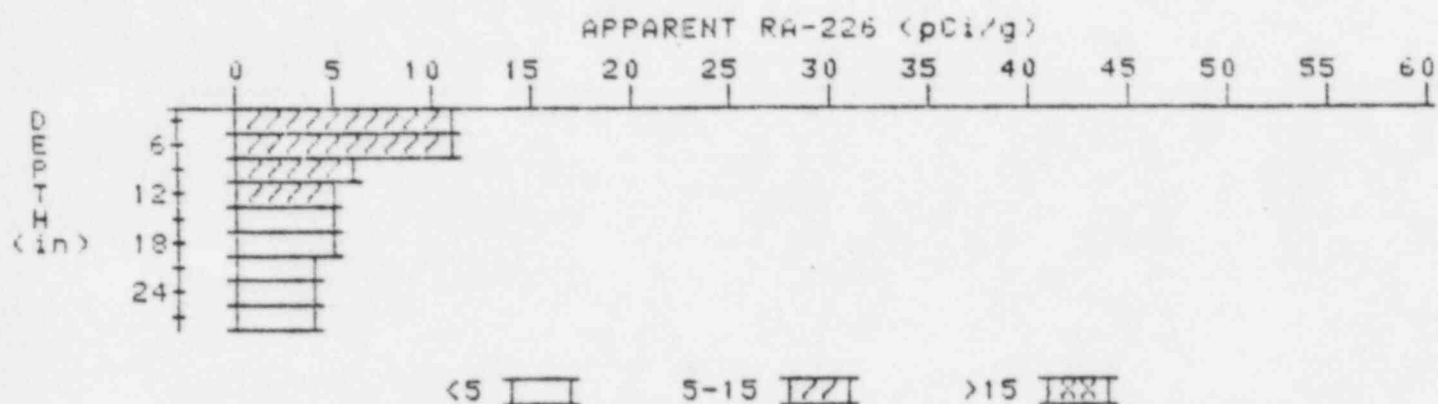
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

16

PROPERTY NUMBER: GJ-10960-R5

HOLE NUMBER: 16

LOCATION: 324292



| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---------------|--|--|
| 3 | 11.4 | 11.4 |
| 6 | 9.7 | 10.6 |
| 9 | 7.5 | 5.9 |
| 12 | 6.2 | 5.3 |
| 15 | 5.4 | 4.9 |
| 18 | 4.9 | 4.7 |
| 21 | 4.5 | 4.0 |
| 24 | 4.4 | 4.4 |
| 27 | 4.3 | 4.3 |

