

RADIOLOGIC AND ENGINEERING ASSESSMENT

FOR

DOE ID NO.: GJ-00312-RS
ADDRESS: 718 GALAXY DRIVE

AUGUST 1985

FOR

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT OFFICE

ALBUQUERQUE OPERATIONS OFFICE

DEPARTMENT OF ENERGY

BY

BENDIX FIELD ENGINEERING CORPORATION
P.O. Box 1569
Grand Junction, Colorado 81502

APPROVED BY

Michael K. Tucker
H. TUCKER
DOE PROJECT ENGINEER

DATE

August 27, 1985

REA00312:REA-618

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The location, DOE ID No. GJ-00312-RS, is a single-family residence located at 718 Galaxy Drive, 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, 2 cu. yd.; interior, 0 cu. yd.

Estimated cost to perform remedial action, including dislocation when applicable, is \$384. Remedial action on this property will take approximately 3 days to complete.

2.0 PROPERTY DESCRIPTION

2.1 General Description

Address: 718 Galaxy Drive, Grand Junction, Colorado

Zoning: Residential (R-1-B)

Lot Size: Approximately 20,943 sf (0.48 acres)

Legal Description: Lot 2, Block 3, Galaxy Subdivision, Section 35, 1N 1W, County of Mesa, State of Colorado.

Point of Reference: This property is located approximately 4 mile(s) north 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: | Underground |
| Sewer: | Underground |
| Water: | Underground |
| Cable TV: | Overhead |

Bordering Properties:

| | |
|--------|-------------------------|
| North: | Single-family residence |
| South: | Single-family residence |
| East: | Single-family residence |
| West: | Galaxy Drive |

2.2 Existing Facilities and Structures

Primary Structure:

| | |
|--------------------|---|
| Type: | Tri-level residence with attached garage |
| Size: | Approximately 2,364 sf including basement |
| Construction Date: | 1964 |
| Construction: | Wood-frame with brick veneer |
| Foundation: | Concrete stemwall on spread footing |
| Footing Depth: | Not determined |
| Basement: | Yes - partial |
| Crawl Space: | Yes - partial |
| Condition: | Good |

Other Structures: None

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-00312-RS on July 30, 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 the historical information available for this property was conducted to determine the areas of potential contamination identified during previous radiologic assessments.

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 18 uR/h
Highest Outside Gamma Reading (HOG): 30 uR/h

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

3.2.2 Interior Findings

Background Readings: 15 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.

3.3 Boreholes, Soil Samples, and Other Measurements

Areas which displayed elevated gamma levels were further investigated; the locations and types of these investigations are shown in Appendix Figures 3.2a and 3.2b. Data from these investigations is included in Appendix Tables 3.1 and 3.2.

3.4 Radon/Radon Daughter Concentration (RDC)

Determined by CDH: 0.006 gross working level (WL). 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: Lawn
Direction From Primary Structure: South
Other Directions: Along south property line
Total Depth of Contamination: 15 inches
Approximate Square Footage: 24
- (Area B) Surface Material: Lawn
Direction From Primary Structure: Southeast
Other Directions: Along south property line
Total Depth of Contamination: 6 inches
Approximate Square Footage: 42
- (Area C) Surface Material: Lawn
Direction From Primary Structure: Southeast
Other Directions: Southeast property corner
Total Depth of Contamination: 12 inches
Approximate Square Footage: 8

4.0 RECOMMENDED REMEDIAL ACTION

4.1 Decontamination and Restoration

The recommended remedial action for this property, DOE ID No. GJ-00312-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

This property has been included for remedial action because it is spillover contamination from adjacent property GJ-00034.

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 \$384.

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

Appendix Figures:

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|-------------|-----------------------------------|
| Figure 2.1 | Vicinity Map |
| Figure 2.2 | Site Plan |
| Figure 3.1 | Exterior Exposure Rates |
| Figure 3.2a | Interior Sample Locations |
| Figure 3.2b | Exterior Sample Locations |
| Figure 3.3 | 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-00312-RS

718 Galaxy Drive

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| Loc # | Grid Location | Depth (in.) | Meas. Type | In Situ Ra-226 (pCi/g) | | Chem Ra-226 (pCi/g) | Comments |
|-------|---------------|-------------|------------|------------------------|---------|---------------------|----------------------------------|
| | | | | Tot. Ct | Spectr. | | |
| 3 | 156229 | 00 | DS | 1.5 | | * | Water line |
| 4 | 158250 | 00 | DS | <1.0 | | * | West side of primary structure |
| 5 | 163271 | 00 | DS | 1.8 | | * | Gas line |
| | | 16 | DS | 2.3 | | * | |
| 6 | 170143 | 00 | DS | 1.2 | | * | Along south property line |
| | | 03 | TC | 3.3 | | * | |
| | | 06 | TC | 3.4 | | * | |
| | | 09 | TC | 3.5 | | * | DC = 0 inches |
| | | 12 | TC | 3.5 | | * | |
| | | 15 | TC | 3.5 | | * | |
| | | 18 | TC | 3.6 | | * | |
| | | 21 | TC | 3.6 | | * | |
| | | 24 | TC | 3.5 | | * | |
| | | 27 | TC | 3.6 | | * | |
| | | 30 | TC | 3.6 | | * | |
| 7 | 171271 | 00 | DS | 1.8 | | * | North of primary structure |
| | | 06 | DS | 1.9 | | * | |
| 8 | 177271 | 00 | DS | 1.2 | | * | North side of primary structure |
| 9 | 178141 | 00 | DS | 3.7 | | * | |
| | | 03 | TC | 5.6 | | * | Along south property line |
| | | 06 | TC | 6.2 | | * | |
| | | 09 | TC | 6.1 | | * | |
| | | 12 | TC | 5.5 | | * | |
| | | 15 | TC | 4.8 | | * | DC = 15 inches |
| | | 18 | TC | 4.3 | | * | Based on the deconvolution graph |
| | | 21 | TC | 4.2 | | * | |
| | | 24 | TC | 4.1 | | * | |
| | | 27 | TC | 4.1 | | * | |
| | | 30 | TC | 4.0 | | * | |
| 10 | 180146 | 00 | DS | 2.1 | | * | |
| | | 03 | TC | 3.4 | | * | South of primary structure |
| | | 06 | TC | 3.7 | | * | |
| | | 09 | TC | 3.9 | | * | |
| | | 12 | TC | 3.8 | | * | DC = 0 inches |
| | | 15 | TC | 3.9 | | * | |

Radium Concentrations at Exterior Locations

DOE ID #GJ-00312-RS

718 Galaxy Drive

Page 2 of 4

| Loc # | Grid Location | Depth (in.) | Meas. Type | In Situ Ra-226 (pCi/g) | | Chem Ra-226 (pCi/g) | Comments |
|-------|---------------|-------------|------------|------------------------|---------|---------------------|---------------------------------------|
| | | | | Tot. Ct | Spectr. | | |
| 10 | 180146 | 18 | TC | 3.9 | | * | |
| | | 21 | TC | 3.9 | | * | |
| | | 24 | TC | 4.0 | | * | |
| | | 27 | TC | 4.0 | | * | |
| 11 | 189201 | 00 | DS | 1.6 | | * | Southeast corner of primary structure |
| 12 | 191244 | 00 | DS | 1.2 | | * | Telephone line |
| | | 18 | DS | 1.3 | | * | |
| 13 | 191249 | 00 | DS | 1.0 | | * | Sewer line |
| 14 | 200142 | 00 | DS | 2.0 | | * | Southeast of primary structure |
| | | 03 | TC | 3.2 | | * | By fence line |
| | | 06 | TC | 3.4 | | * | |
| | | 09 | TC | 3.6 | | * | |
| | | 12 | TC | 3.6 | | * | DC = 0 inches |
| | | 15 | TC | 3.6 | | * | |
| | | 18 | TC | 3.5 | | * | |
| | | 21 | TC | 3.5 | | * | |
| | | 24 | TC | 3.5 | | * | |
| | | 27 | TC | 3.5 | | * | |
| | | 30 | TC | 3.5 | | * | |
| 15 | 210141 | 00 | DS | 1.6 | | * | Southeast of primary structure |
| | | 06 | DS | 1.9 | | * | |
| 16 | 220250 | 00 | DS | <1.0 | | * | East of primary structure |
| | | 03 | TC | 3.4 | | * | |
| | | 06 | TC | 3.7 | | * | |
| | | 09 | TC | 3.8 | | * | |
| | | 12 | TC | 3.9 | | * | |
| | | 15 | TC | 3.9 | | * | DC = 0 inches |
| | | 18 | TC | 4.0 | | * | |
| | | 21 | TC | 4.1 | | * | |
| | | 24 | TC | 4.0 | | * | |
| | | 27 | TC | 4.1 | | * | |
| 17 | 221141 | 00 | DS | 1.9 | | * | Along south property line |
| | | 03 | TC | 3.3 | | * | |
| | | 06 | TC | 3.4 | | * | DC = 0 inches |

Radium Concentrations at Exterior Locations

DOE ID #GJ-00312-RS

718 Galaxy Drive

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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. | | |
| 17 | 221141 | 09 | TC | 3.4 | | * | |
| | | 12 | TC | 3.7 | | * | |
| | | 15 | TC | 3.8 | | * | |
| | | 18 | TC | 3.8 | | * | |
| | | 21 | TC | 3.8 | | * | |
| | | 24 | TC | 3.8 | | * | |
| | | 27 | TC | 3.9 | | * | |
| | | 30 | TC | 4.0 | | * | |
| | | 33 | TC | 3.7 | | * | |
| 18 | 238141 | 00 | DS | 11.7 | | * | |
| | | 03 | TC | 4.9 | | * | Along south |
| | | 06 | TC | 4.5 | | * | property line |
| | | 09 | TC | 4.1 | | * | |
| | | 12 | TC | 3.8 | | * | DC = 6 inches |
| | | 15 | TC | 3.7 | | * | Based on all |
| | | 18 | TC | 3.6 | | * | available data |
| | | 21 | TC | 3.7 | | * | |
| | | 24 | TC | 3.6 | | * | |
| | | 27 | TC | 3.8 | | * | |
| | | 30 | TC | 3.7 | | * | |
| | | 33 | TC | 3.7 | | * | |
| | | 36 | TC | 3.7 | | * | |
| 19 | 239145 | 00 | DS | <1.0 | | * | Along south |
| | | 03 | TC | 3.1 | | * | property line |
| | | 06 | TC | 3.4 | | * | |
| | | 09 | TC | 3.4 | | * | |
| | | 12 | TC | 3.3 | | * | DC = 0 inches |
| | | 15 | TC | 3.4 | | * | |
| | | 18 | TC | 3.5 | | * | |
| | | 21 | TC | 3.5 | | * | |
| | | 24 | TC | 3.6 | | * | |
| | | 27 | TC | 3.6 | | * | |
| | | 30 | TC | 3.7 | | * | |
| | | 33 | TC | 3.6 | | * | |
| 20 | 250220 | 00 | DS | <1.0 | | * | Background |
| | | 00 | GS | | 1.6 | * | |
| | | 03 | TC | 3.0 | | * | |
| | | 06 | TC | 3.3 | | * | DC = 0 inches |
| | | 09 | TC | 3.6 | | * | |
| | | 12 | TC | 3.9 | | * | |
| | | 15 | TC | 3.9 | | * | |

Radium Concentrations at Exterior Locations

DOE ID #GJ-00312-RS

718 Galaxy Drive

Page 4 of 4

| Loc # | Grid Location | Depth (in.) | Meas. Type | In Situ Ra-226 (pCi/g) | | Chem Ra-226 (pCi/g) | Comments |
|-------|---------------|-------------|------------|------------------------|---------|---------------------|---------------------|
| | | | | Tot. Ct | Spectr. | | |
| 20 | 250220 | 18 | TC | 4.1 | | * | |
| | | 21 | TC | 4.2 | | * | |
| | | 24 | TC | 4.1 | | * | |
| | | 27 | TC | 4.2 | | * | |
| | | 30 | TC | 4.3 | | * | |
| | | 33 | TC | 4.3 | | * | |
| 21 | 260144 | 00 | DS | 1.4 | | * | Along south |
| | | 06 | DS | 1.2 | | * | property line |
| 22 | 269141 | 00 | DS | 3.1 | | * | Southeast corner |
| | | 03 | TC | 4.6 | | * | of property |
| | | 06 | TC | 5.2 | | * | |
| | | 09 | TC | 5.4 | | * | DC = 12 inches |
| | | 12 | TC | 5.0 | | * | Based on the |
| | | 15 | TC | 4.7 | | * | deconvolution graph |
| | | 18 | TC | 4.5 | | * | |
| | | 21 | TC | 4.2 | | * | |
| | | 24 | TC | 3.9 | | * | |
| | | 27 | TC | 3.8 | | * | |
| | | 30 | TC | 3.7 | | * | |
| | | 33 | TC | 3.8 | | * | |

Measurement Types:

GB = GAD-6 Borehole
 GS = GAD-6 Surface
 DS = Delta Scintillometer
 TC = Total Count Borehole
 SS = Soil Sample
 BH = Combined GAD-6 and
 Total Count Borehole

Notes: DC = Depth of Contamination
 * = No Soil Sample Taken
 [n] = Reading Taken n-Inches
 Above Floor or Ground
 Date of Survey = 07-30-85
 Team Leader = MR

Radium Concentrations at Interior Locations

DOE ID #GJ-00312-RS

718 Galaxy Drive

Page 1 of 1

| Loc # | Grid Location | Depth (in.) | Meas. Type | In Situ Ra-226 (pCi/g) | | Chem Ra-226 (pCi/g) | Comments |
|-------|---------------|-------------|------------|------------------------|---------|---------------------|---------------------------|
| | | | | Tot. Ct | Spectr. | | |
| 1 | | 00 | DS | <1.0 | | * | On floor beside fireplace |
| | | 00 | GS | | 2.4 | * | |
| 2 | | 00 | DS | 1.1 | | * | Fireplace hearth |
| | | 00 | GS | | 3.0 | * | |

Measurement Types:

GB = GAD-6 Borehole
 GS = GAD-6 Surface
 DS = Delta Scintillometer
 TC = Total Count Borehole
 SS = Soil Sample
 BH = Combined GAD-6 and
 Total Count Borehole

Notes: DC = Depth of Contamination
 * = No Soil Sample Taken
 [n] = Reading Taken n-Inches
 Above Floor or Ground
 Date of Survey = 07-30-85
 Team Leader = MR

Table 3.3
Summary of Interior Gamma Exposure Rates

DOE ID No. GJ-00312-RS 718 Galaxy Drive Page 1 of 1

| 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) |
|----------------|---|--------------------------------------|-------------------------------------|--|-------------------------------|---------------------------|
| Fireplace | 03 | 18-19 | 18 | 03 | 18-19 | 19 |
| Basement | * | * | * | * | 15-16 | * |
| Crawl Space | * | * | * | * | 16-17 | * |
| Garage | * | * | * | * | 15-16 | * |

* Walking gamma scans were performed to confirm the absence of interior contamination in the basement, crawl space, and in the garage.

Table 4.1
Area and Volume Calculations
DOE ID No. GJ-00312-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 | | | | | |
| | Contaminated Fill | | | | |
| A | 8 x 3 = | 24 | x 1.3 = | 31 | |
| B | 21 x 2 = | 42 | x 0.5 = | 21 | |
| C | 4 x 2 = | 8 | x 1.0 = | 8 | |
| TOTAL VOLUME - EXTERIOR | | | | = 60 = | 60, 27 = 2 |

See Appendix Figure 3.3 For Areas

=====

Table 4.2
Estimated Cost of Decontamination and Restoration
DOE ID No. GJ-00312-RS Page 1 of 1

EXTERIOR

| | |
|---|--------|
| Remove identified residual radioactive material 2 cy @ \$44/cy (manual-open) | \$ 88 |
| Replace areas with topsoil 2 cy @ \$9.50/cy | 19 |
| Replace areas with sod 74 sf @ \$.50/sf | 37 |
| | <hr/> |
| TOTAL EXTERIOR | \$ 144 |
| TOTAL INTERIOR | 0 |
| ACCESS CONTROL | 100 |
| | <hr/> |
| SUBTOTAL | \$ 244 |
| CONTINGENCY @ 5% | 12 |
| | <hr/> |
| SUBTOTAL | \$ 256 |
| CONTRACTOR OVERHEAD & PROFIT @ 50% | 128 |
| | <hr/> |
| GRAND TOTAL | \$ 384 |

LR081485
REA00312/REA-618/LMR



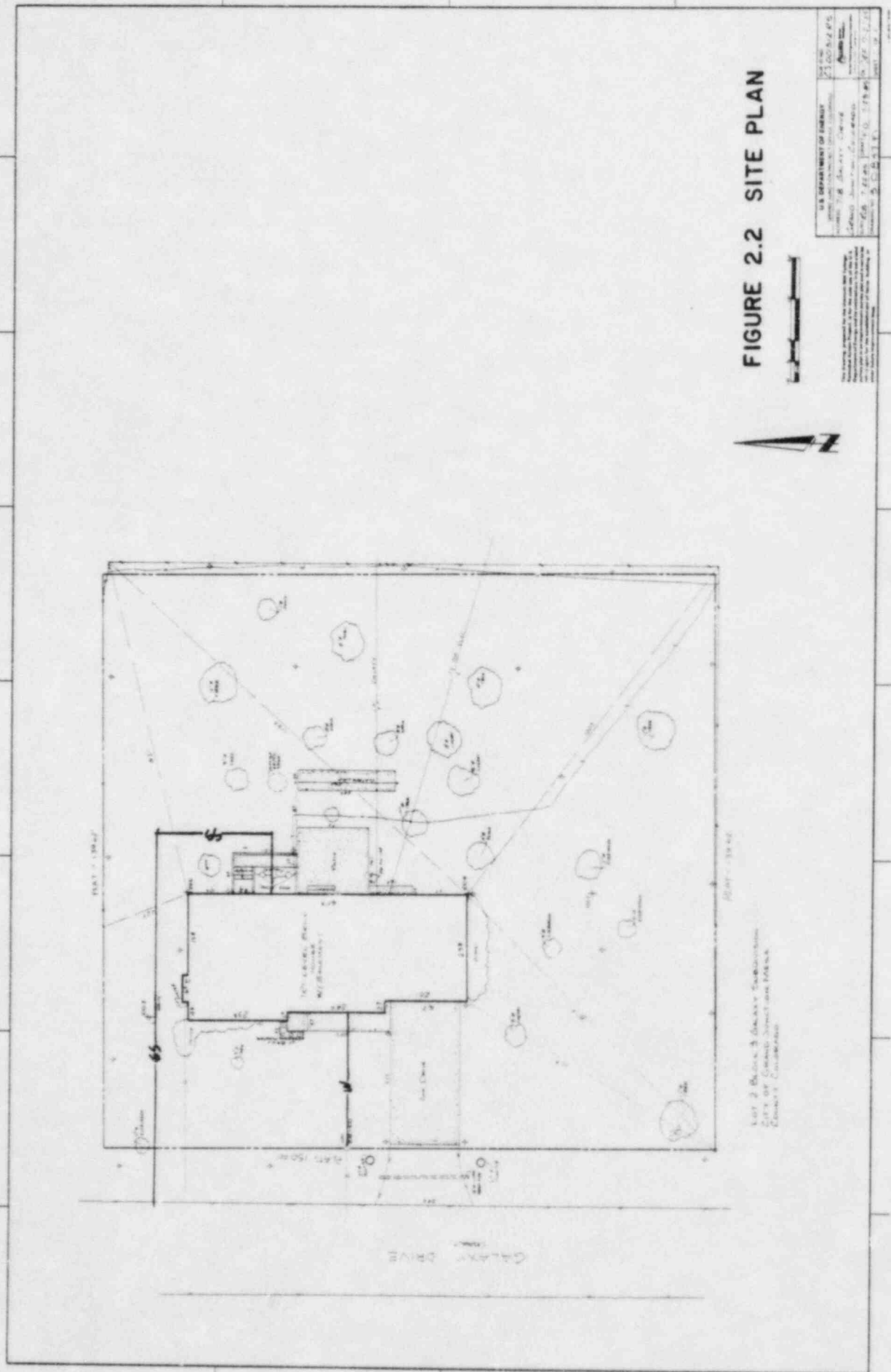
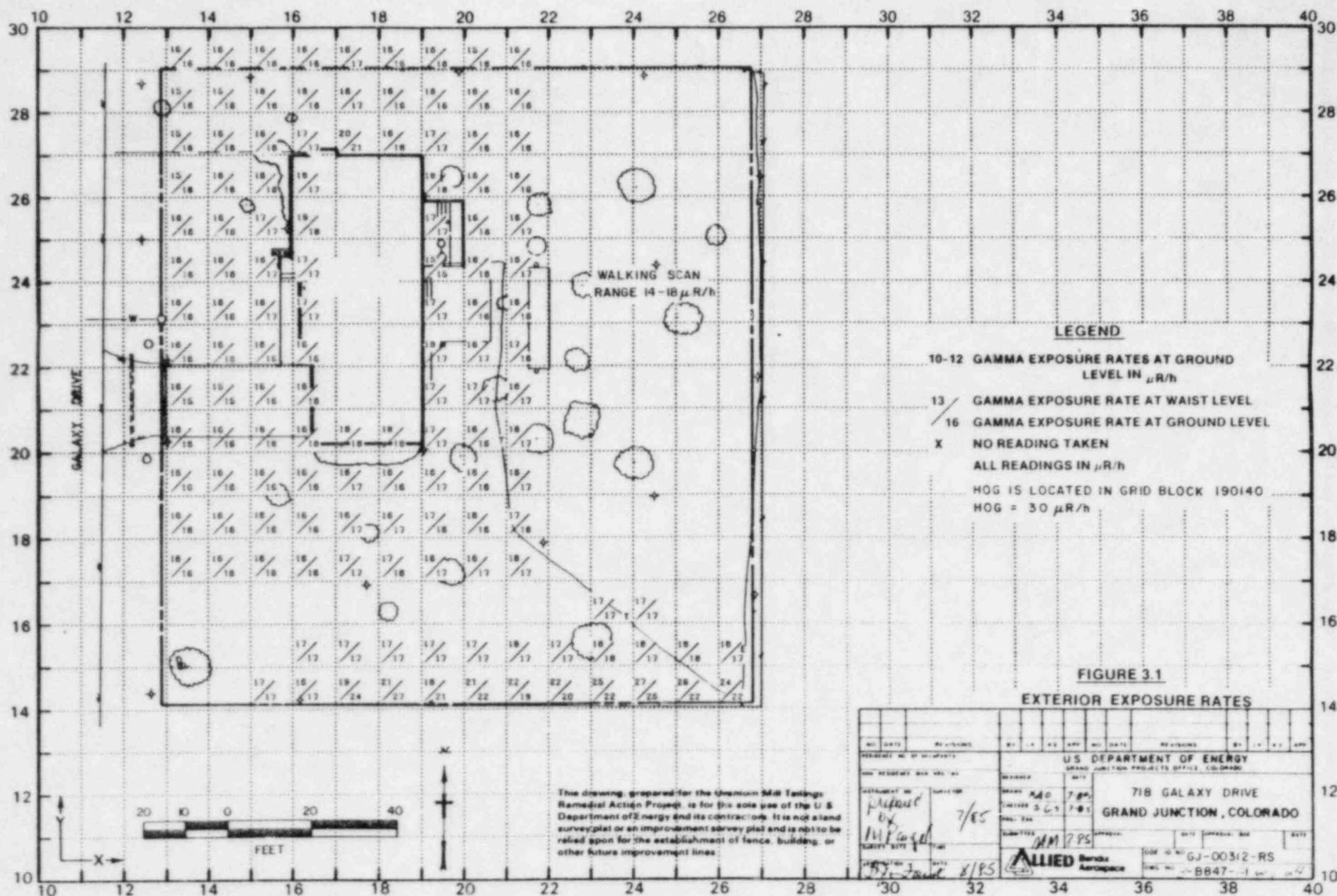
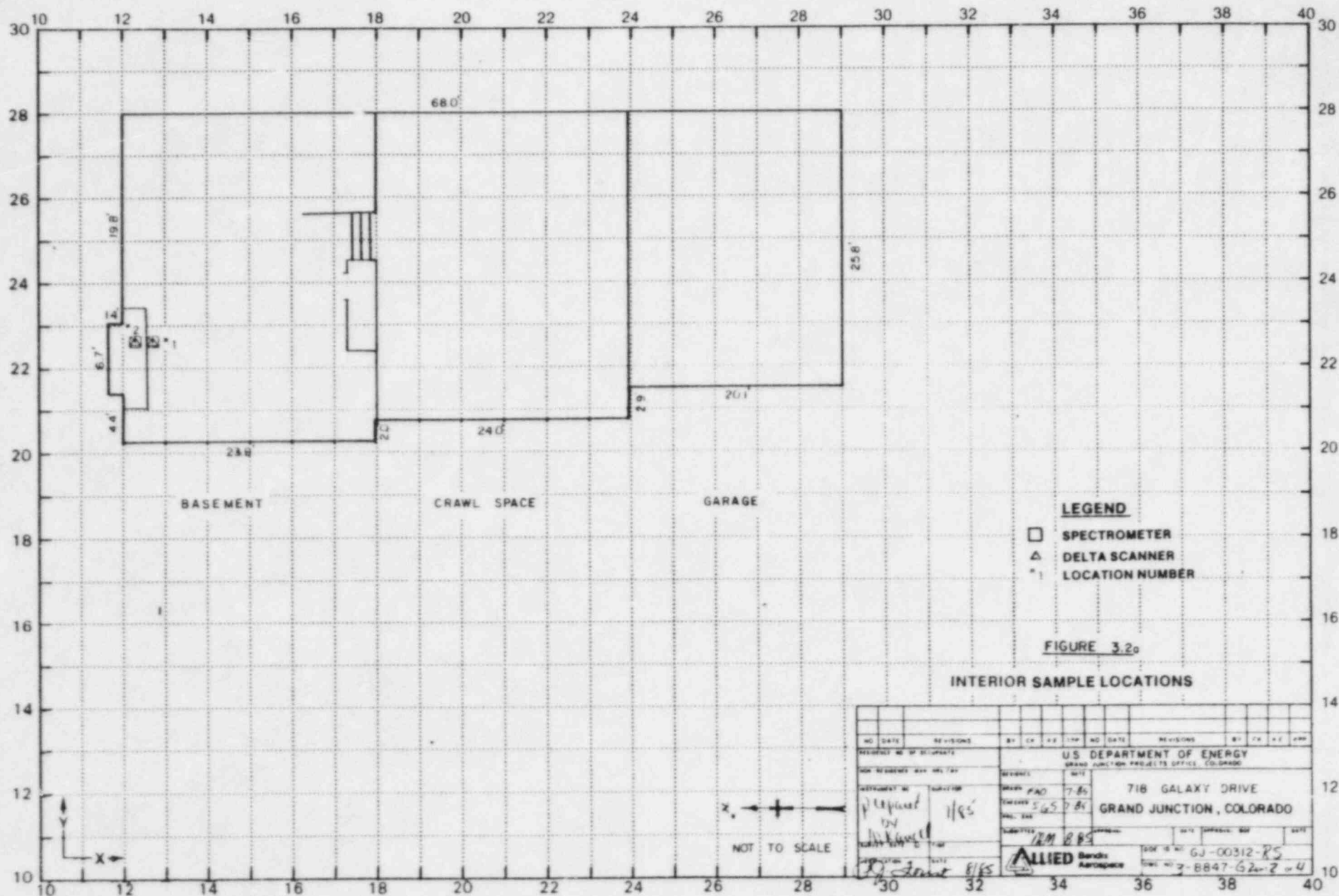
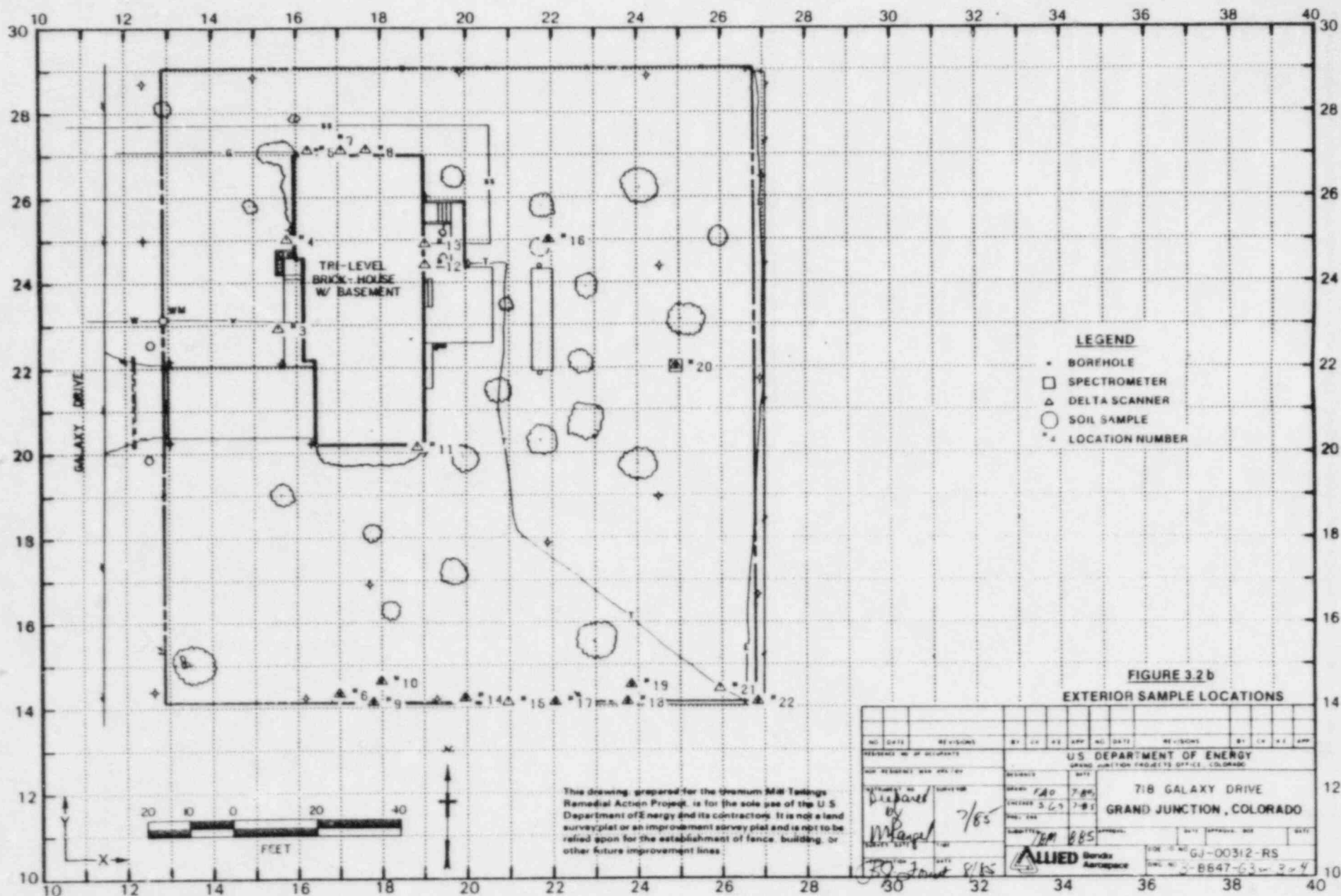
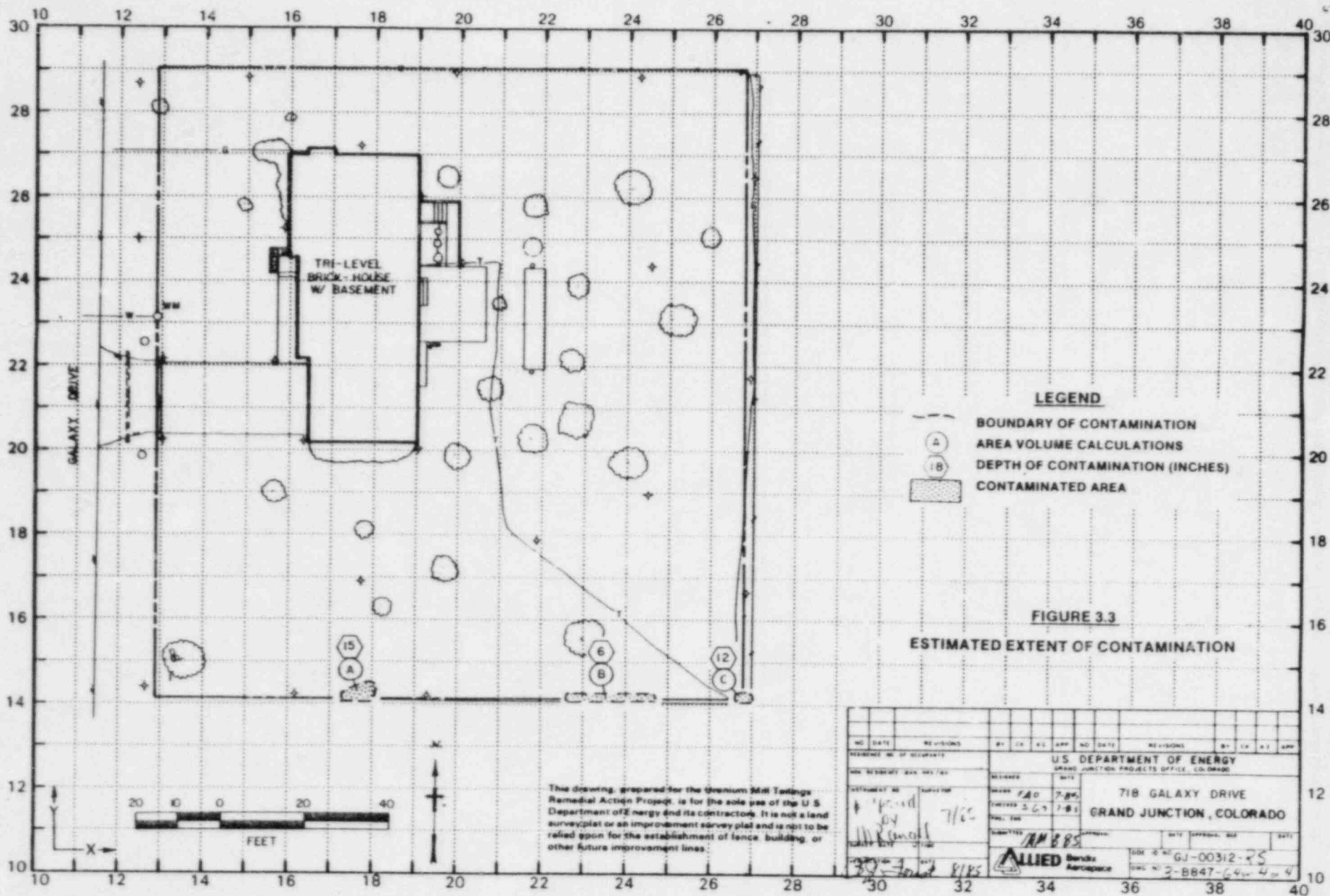


FIGURE 2.2 SITE PLAN









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

Official Survey Report

Property Address 718 Galaxy Drive
Property Owner W. and P. Callahan
Address of Owner (if different from above) _____
Report Prepared By Mark Rangel

I. PRESENCE/ABSENCE OF RESIDUAL RADIOACTIVE MATERIALS

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

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

1 XXX 1 In open areas.

1 1 Under or around exterior improvements.

1 1 Under or around a typically nonoccupied structure.

1 1 Under or around a typically occupied structure.

II. RESULTS OF RADIOLOGIC ASSESSMENT

1 1 Levels of radiation from residual radioactive materials, if any, do not exceed EPA Standards and no action is required under the Uranium Mill Tailings Remedial Action Project.

1 YYY 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/CDE

J. Themelis, Mgr. UMTRA Proj. Off.

HIG = 19 uR/h
HOG = 30 uR/h

ALLIED Bendix
Aerospace

Bendix Field Engineering Corporation
Grand Junction Operations
Grand Junction, Colorado

Date: July 30, 1985

To: Files

From: Mark Rangel

Subject: Team Leader Notes - GJ-00312-RS

Address: 718 Galaxy Drive

Owner: W. and P. Callahan

Occupancy: Two

Team Members

| | |
|-------------------------|-----------|
| M. Rangel (Team Leader) | C. Holmes |
| J. Johnson | M. Dexter |
| H. Lucero | S. Larsen |
| N. Wallace | |

Instruments

See Equipment Operational Summary sheet

This property is included in the Uranium Mill Tailings Remedial Action Program (UMTRA) by spillover. Colorado Department of Health (CDH) data shows no contamination.

Five holes were drilled around the primary structure. This included the water and sewer lines, which were investigated by the downhole scintillometer at the following locations: 156229 - water line, 158250 - west foundation, 177271 - north foundation, 191249 - sewer line and east foundation, and 189201 - south foundation.

No elevated readings were encountered along the footing or in the utility line trenches. The telephone and gas lines were investigated with a delta, no elevated readings were present on these lines. Two elevated areas were encountered around the exterior of the fireplace, which was investigated and showed a natural elevation from the firebrick used in the fireplace. A hole was drilled to the top of the septic tank, this showed no elevated readings during the total count logging. This septic tank is no longer used, or connected to the main sewer line.

The property on the south side appeared to have extremely elevated gamma readings coming from the property. A SC-132 reading of 180 to 190 counts per second (cps) was encountered along the south property line at 96 inches from the ground. This may account for some of the elevated readings along this fence line. A shine field was detected as far as 20- to 30-feet from the fence line.

Contamination spilled over onto the east property along the east fence line. No investigation was conducted at this time, due to the absence of the home owner. We are awaiting permission before we proceed to collect the needed data.

A natural elevated gamma reading was found on the fireplace brick. No contamination is apparent from the delta and surface spectrometer investigations.

A walking scan was conducted on a portion of this property, readings ranged from 90 to 145 cps.

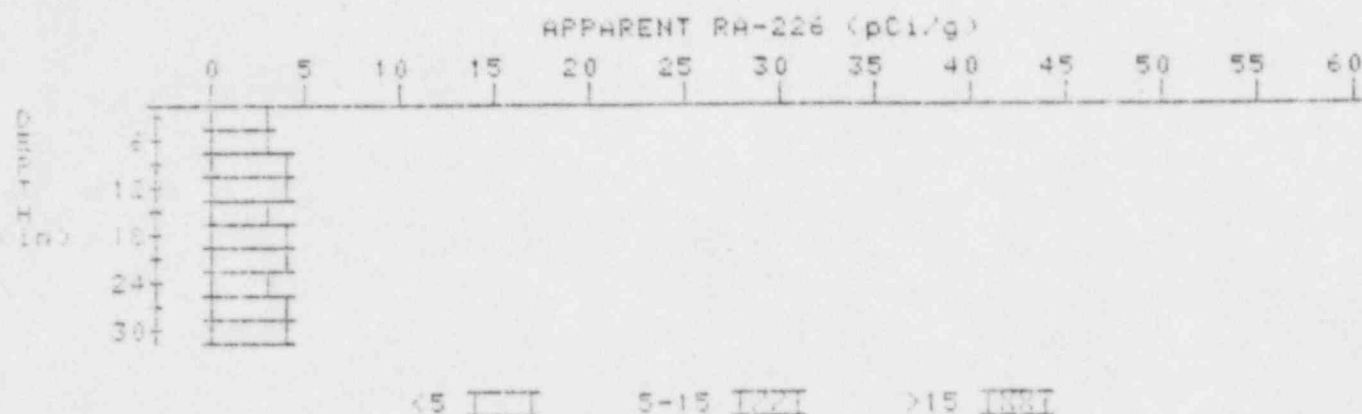
No problems were encountered during the survey.

All team members were alpha scanned before leaving the property.

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

6

PROPERTY NUMBER: GJ-00312-RS
HOLE NUMBER: 6
LOCATION: 170143

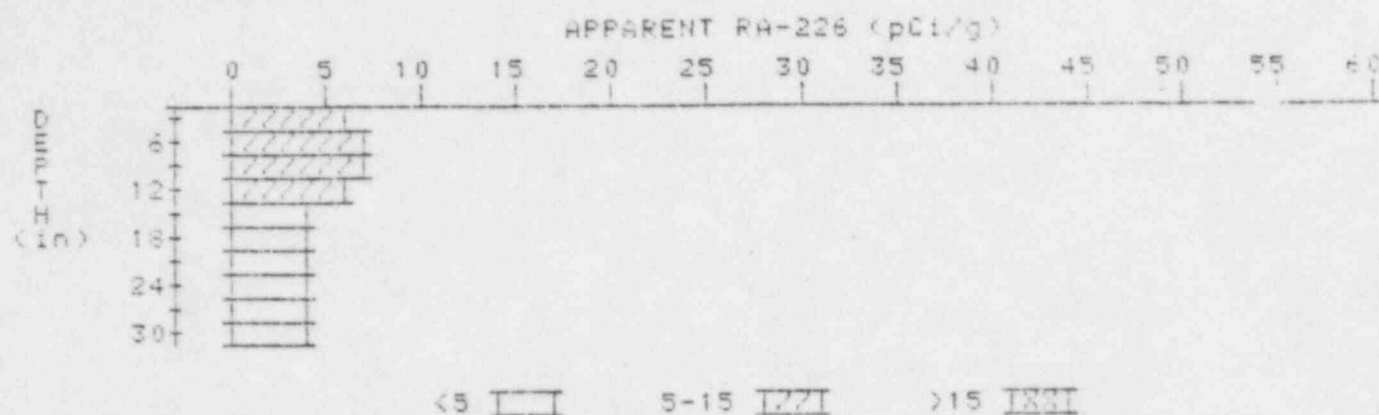


| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---------------|--|--|
| 3 | 3.3 | 3.3 |
| 6 | 3.4 | 3.4 |
| 9 | 3.5 | 3.7 |
| 12 | 3.6 | 3.8 |
| 15 | 3.6 | 3.9 |
| 18 | 3.6 | 3.9 |
| 21 | 3.6 | 3.9 |
| 24 | 3.6 | 4.1 |
| 27 | 3.6 | 3.9 |
| 30 | 3.6 | 3.6 |

APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

9

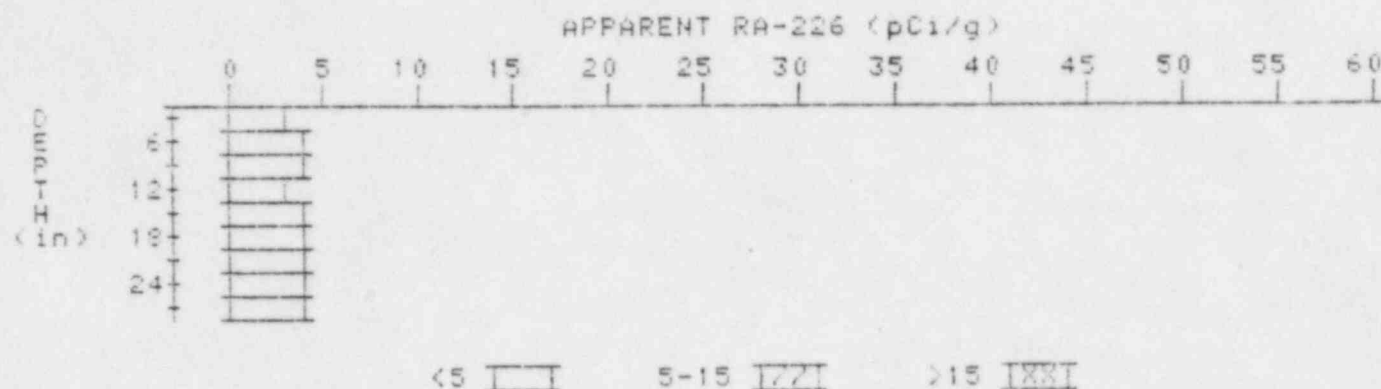
PROPERTY NUMBER: GJ-00312-RS
HOLE NUMBER: 9
LOCATION: 178141



| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---------------|--|--|
| 3 | 5.6 | 5.6 |
| 6 | 6.2 | 7.4 |
| 9 | 6.1 | 7.0 |
| 12 | 5.5 | 5.7 |
| 15 | 4.8 | 4.4 |
| 18 | 4.3 | 3.6 |
| 21 | 4.2 | 4.2 |
| 24 | 4.1 | 3.9 |
| 27 | 4.1 | 4.3 |
| 30 | 4.0 | 4.0 |

APPARENT RADIUM-226 CONCENTRATION 10 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-00312-RS
HOLE NUMBER: 10
LOCATION: 180146



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

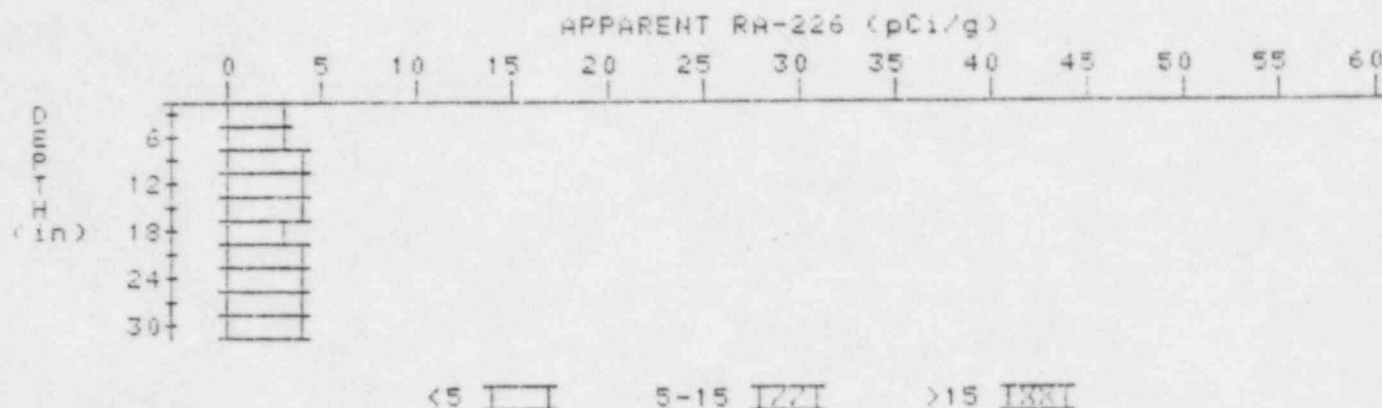
APPARENT RADIUM-226 CONCENTRATION DECONVOLUTION GRAPH

14

PROPERTY NUMBER: GJ-00312-RS

HOLE NUMBER: 14

LOCATION: 200142



| 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 | 4.0 |
| 12 | 3.6 | 3.6 |
| 15 | 3.6 | 3.6 |
| 18 | 3.5 | 3.3 |
| 21 | 3.5 | 3.5 |
| 24 | 3.5 | 3.5 |
| 27 | 3.5 | 3.5 |
| 30 | 3.5 | 3.5 |

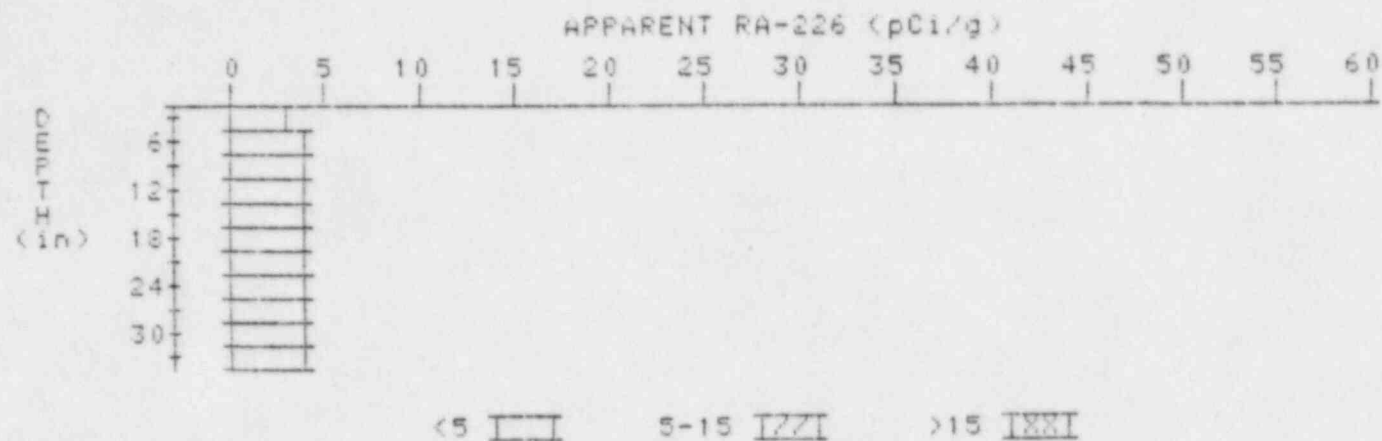
APPARENT RADIUM-226 CONCENTRATION 16

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-00312-RS

HOLE NUMBER: 16

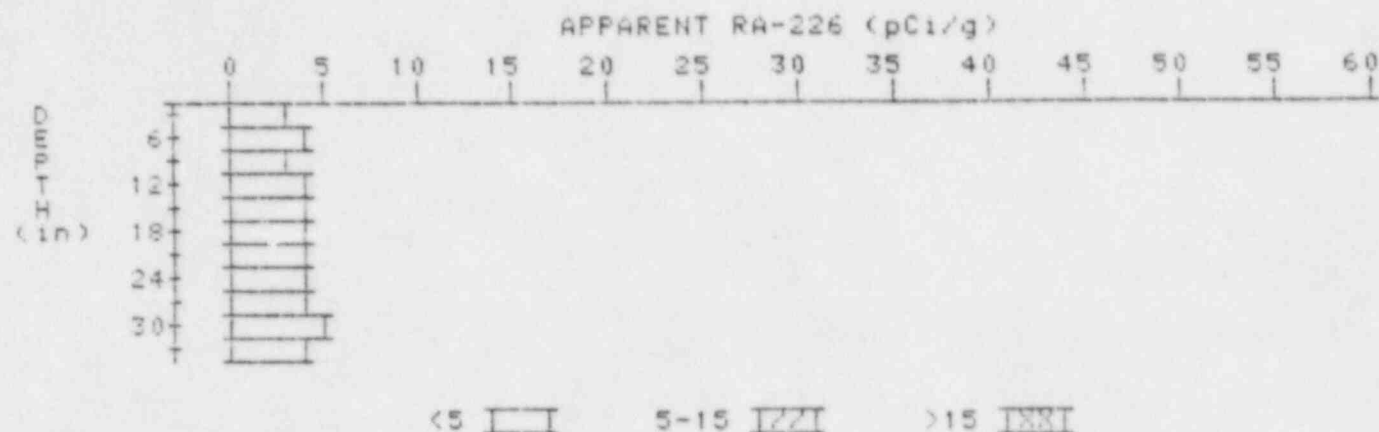
LOCATION: 220250



| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---------------|--|--|
| 3 | 3.4 | 3.4 |
| 6 | 3.7 | 4.1 |
| 9 | 3.8 | 3.8 |
| 12 | 3.9 | 4.1 |
| 15 | 3.9 | 3.7 |
| 18 | 4.0 | 4.0 |
| 21 | 4.1 | 4.5 |
| 24 | 4.0 | 3.6 |
| 27 | 4.1 | 4.5 |
| 30 | 4.0 | 3.8 |
| 33 | 4.0 | 4.0 |

APPARENT RADIUM-226 CONCENTRATION 17 DECONVOLUTION GRAPH

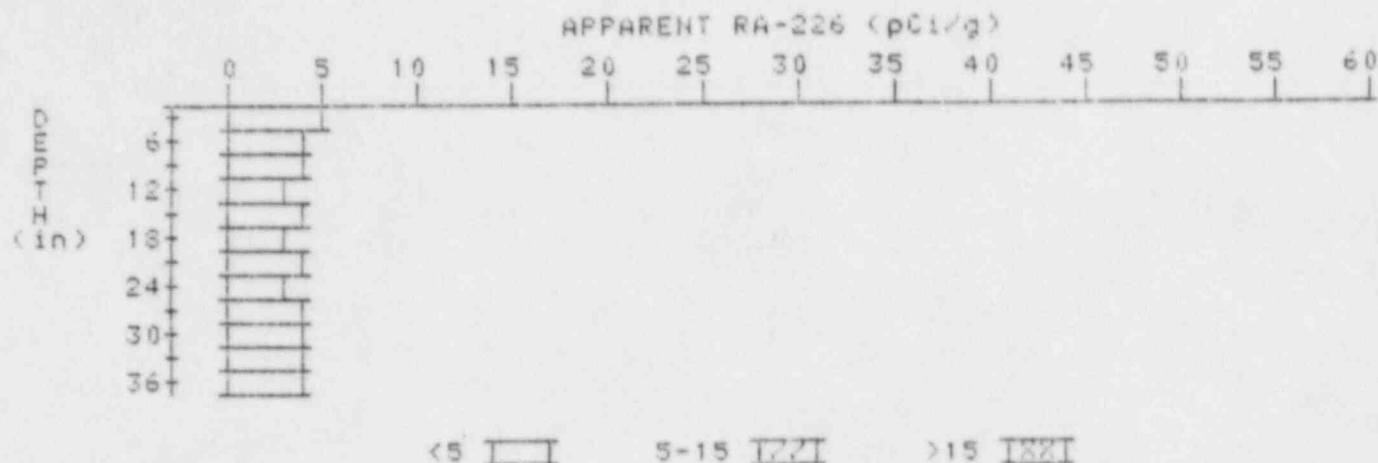
PROPERTY NUMBER: GJ-00312-RS
HOLE NUMBER: 17
LOCATION: 221141



| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---------------|--|--|
| 3 | 3.3 | 3.3 |
| 6 | 3.4 | 3.6 |
| 9 | 3.4 | 2.9 |
| 12 | 3.7 | 4.1 |
| 15 | 3.8 | 4.0 |
| 18 | 3.8 | 3.8 |
| 21 | 3.8 | 3.8 |
| 24 | 3.8 | 3.6 |
| 27 | 3.9 | 3.9 |
| 30 | 4.0 | 4.7 |
| 33 | 3.7 | 3.7 |

APPARENT RADIUM-226 CONCENTRATION 18 DECONVOLUTION GRAPH

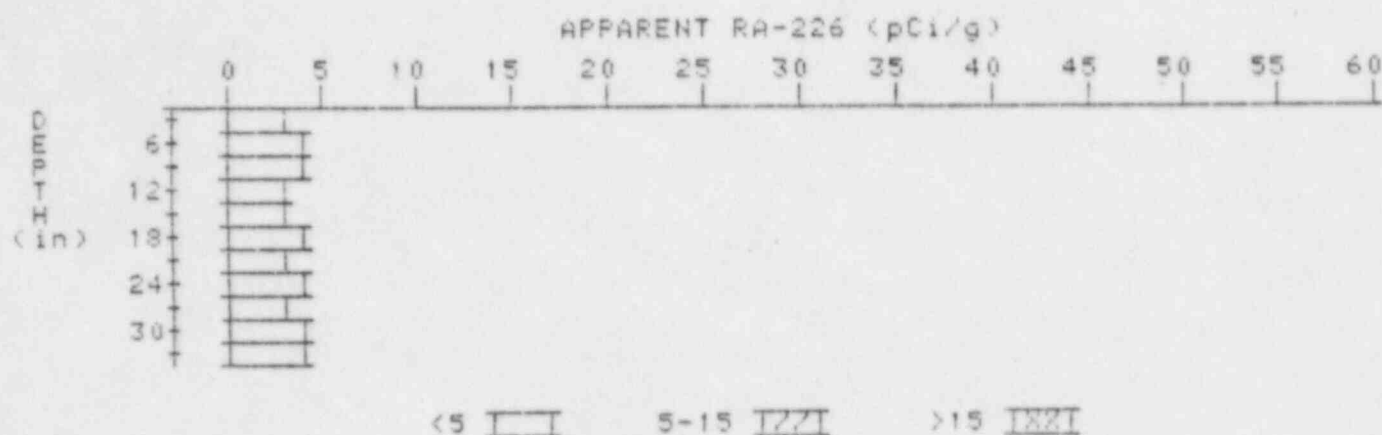
PROPERTY NUMBER: GJ-00312-RS
HOLE NUMBER: 18
LOCATION: 238141



| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---------------|--|--|
| 3 | 4.9 | 4.9 |
| 6 | 4.5 | 4.5 |
| 9 | 4.1 | 3.9 |
| 12 | 3.8 | 3.4 |
| 15 | 3.7 | 3.7 |
| 18 | 3.6 | 3.2 |
| 21 | 3.7 | 4.1 |
| 24 | 3.6 | 3.1 |
| 27 | 3.8 | 4.3 |
| 30 | 3.7 | 3.5 |
| 33 | 3.7 | 3.7 |
| 36 | 3.7 | 3.7 |

APPARENT RADIUM-226 CONCENTRATION 19 DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-00312-RS
HOLE NUMBER: 19
LOCATION: 239145



| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---------------|--|--|
| 3 | 3.1 | 3.1 |
| 6 | 3.4 | 3.9 |
| 9 | 3.4 | 3.6 |
| 12 | 3.3 | 2.9 |
| 15 | 3.4 | 3.4 |
| 18 | 3.5 | 3.7 |
| 21 | 3.5 | 3.3 |
| 24 | 3.6 | 3.8 |
| 27 | 3.6 | 3.4 |
| 30 | 3.7 | 4.1 |
| 33 | 3.6 | 3.6 |

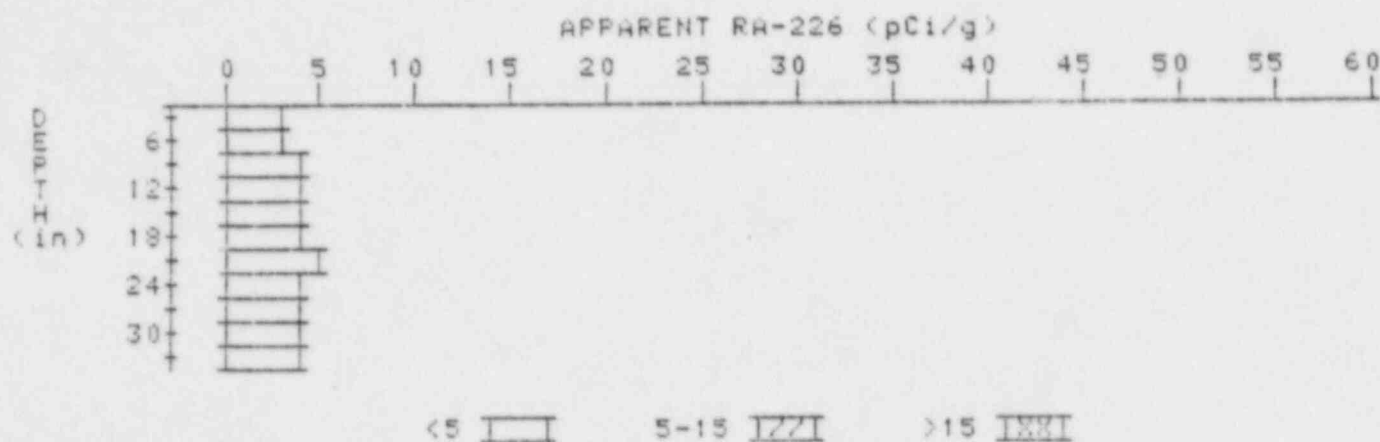
APPARENT RADIUM-226 CONCENTRATION 20

DECONVOLUTION GRAPH

PROPERTY NUMBER: GJ-00312-RS

HOLE NUMBER: 20

LOCATION: 250229



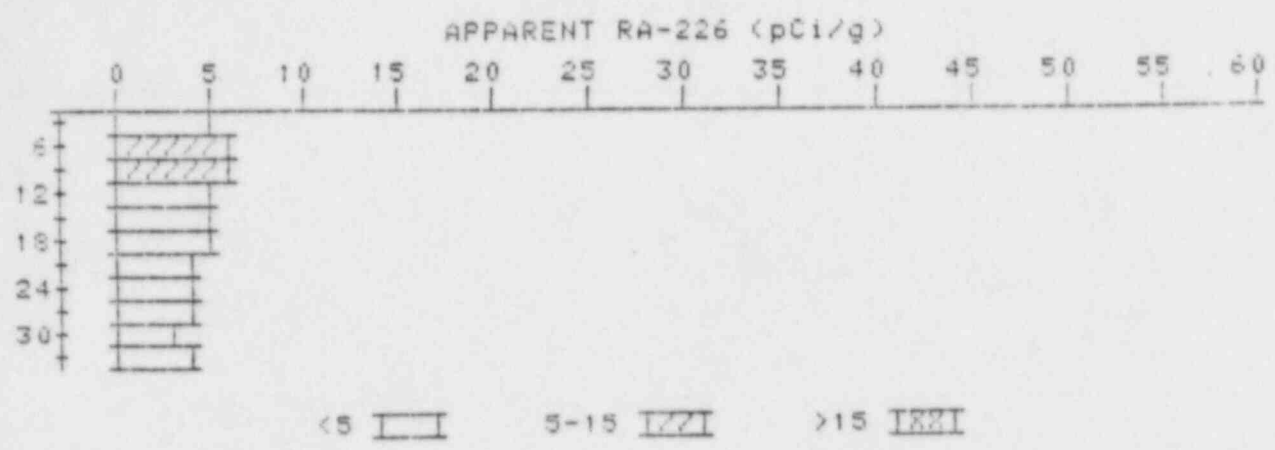
| Depth (in) | Apparent Radium-226 (pCi/g) | Apparent Radium-226 (pCi/g) |
|---------------|-----------------------------------|-----------------------------------|
| | Undeconvolved | Deconvolved |
| 3 | 3.0 | 3.0 |
| 6 | 3.3 | 3.3 |
| 9 | 3.6 | 3.6 |
| 12 | 3.9 | 4.4 |
| 15 | 3.9 | 3.5 |
| 18 | 4.1 | 4.3 |
| 21 | 4.2 | 4.6 |
| 24 | 4.1 | 3.7 |
| 27 | 4.2 | 4.2 |
| 30 | 4.3 | 4.5 |
| 33 | 4.3 | 4.3 |

PARENT RADIUM-226 CONCENTRATION

DECONVOLUTION GRAPH

22

ERTY NUMBER: GJ-00312-RS
SOLE NUMBER: 22
LOCATION: 269141



| Depth (in) | Apparent Radium-226 (pCi/g) Undeconvolved | Apparent Radium-226 (pCi/g) Deconvolved |
|---------------|--|--|
| 3 | 4.6 | 4.6 |
| 6 | 5.2 | 5.9 |
| 9 | 5.4 | 6.5 |
| 12 | 5.0 | 4.8 |
| 15 | 4.7 | 4.5 |
| 18 | 4.5 | 4.7 |
| 21 | 4.2 | 4.2 |
| 24 | 3.9 | 3.5 |
| 27 | 3.8 | 3.6 |
| 30 | 3.7 | 3.3 |
| 33 | 3.8 | 3.8 |

