ORNL/RASA-84/LJ4

Health and Safety Research Division

RESULTS OF THE RADIOLOGICAL SURVEY AT 58 TRUDY DRIVE (LJ004), LODI, NEW JERSEY

October 1984

Work performed as part of the
RADIOLOGICAL SURVEY ACTIVITIES PROGRAM

OAK RIDGE NATIONAL LABORATORY
Oak Ridge, Tennessee 37831
operated by
MARTIN MARIETTA ENERGY SYSTEMS, INC.
for the
U.S. DEPARTMENT OF ENERGY
under Contract No. DE-AC05-84OR21400

LJ004

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RESULTS OF THE RADIOLOGICAL SURVEY AT 58 TRUDY DRIVE (LJ004), LODI, NEW JERSEY

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CONTENTS

	Page
LIST OF FIGURES AND TABLES	iii
INTRODUCTION	1
SURVEY METHODS	1
SURVEY RESULTS	1
Systematic and Biased Soil Samples	2
Gamma Radiation Levels	2
SUMMARY	2
REFERENCES	3

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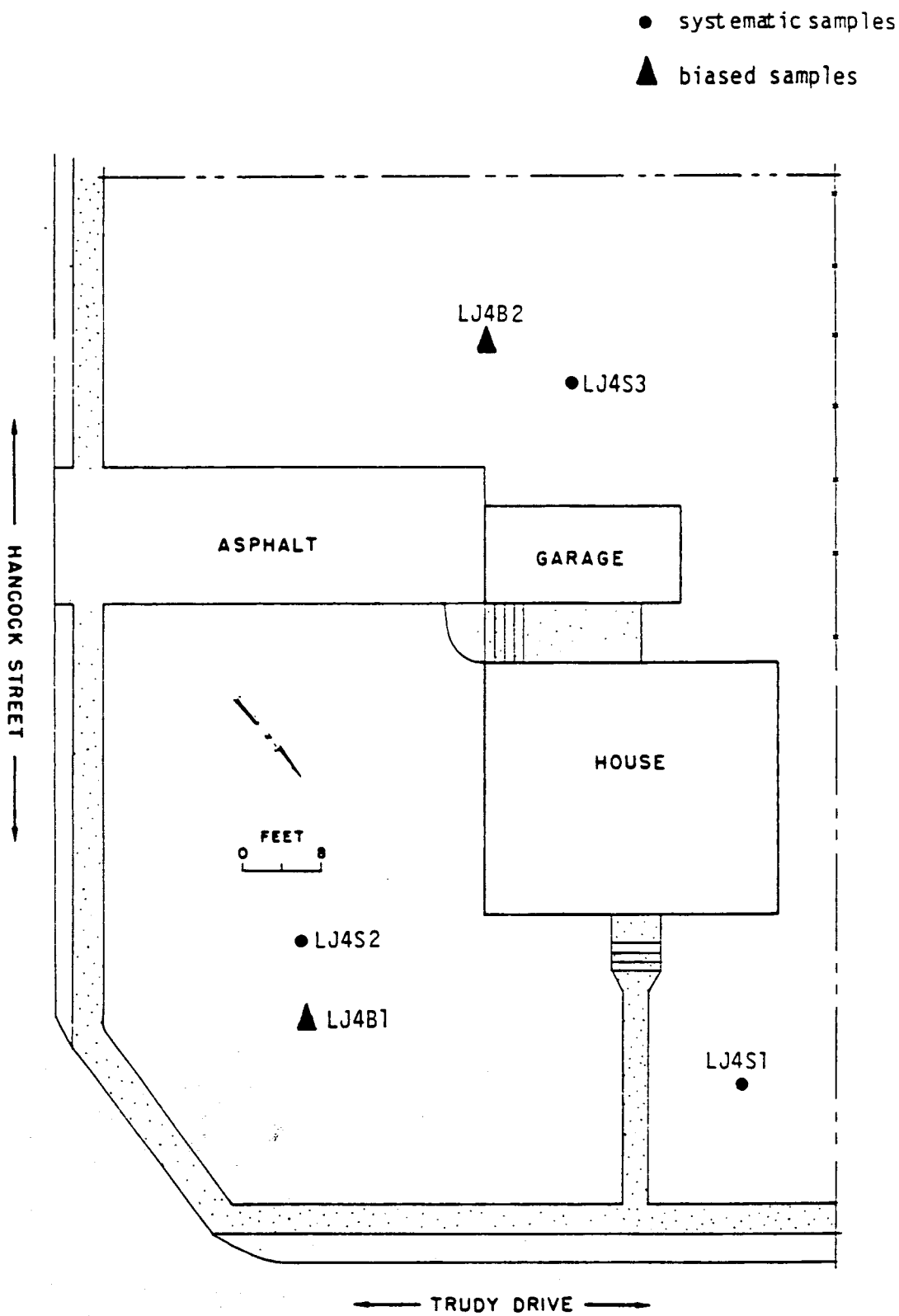

Fig. 1. Diagram showing locations of soil samples taken at 58 Trudy Drive.

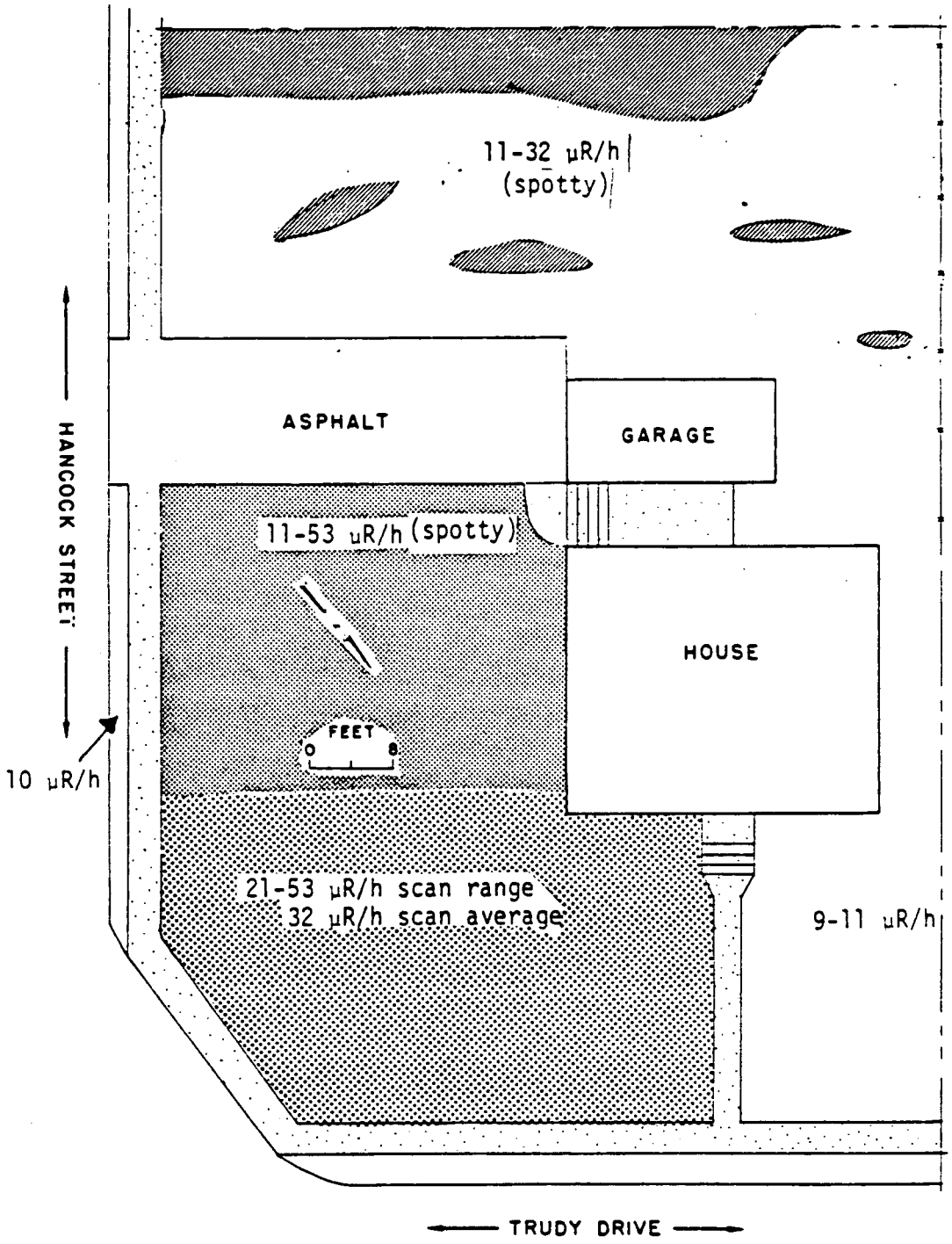

Fig. 2. Location of elevated gamma radiation levels at 58 Trudy Drive.

Table 1. A summary of proposed applicable radiation guidelines for the FUSRAP program (April 1984).

Mode of exposure	Exposure conditions	Guideline value	Guideline source
1. External gamma radiation	Continuous exposure to individual in general population (whole body)	60 μR/h	Nuclear Regulatory Commission (NRC) - Standards for Protection Against Radiation (10 CFR 20.105)
2. Radionuclide concentrations in soil	Maximum permissible concentration of the following radionuclides in soil above background levels averaged over 100 m^2 area		DOE Interim Residual Contamination and Waste Control Guidelines for FUSRAP and SFMP Sites (April 1984)
	^{226}Ra ^{232}Th	5 pCi/g averaged over the first 15 cm of soil below the surface; 15 pCi/g when averaged over 15-cm thick soil layers more than 15 cm below the surface.	

Table 2. Background radiation levels for the northern New Jersey area.

Type or radiation measurement or sample	Radiation level or radionuclide concentration
Gamma exposure rate at 1 m above floor or ground surface (μR/h)	8[a]
Concentration of radionuclides in soil (pCi/g)	
^{232}Th	0.9[b]
^{238}U	0.9[b]
^{226}Ra	0.9[b]

[a]Reference 4.
[b]Reference 5.

Table 3. Results of soil sample analyses at property LJ004.

Sample[a]	Depth (cm)	Radionuclide concentration (pCi/g)		
		^{226}Ra[b]	^{232}Th	^{238}U[c]
		Systematic samples		
LJ4S1	0 - 15	0.87 ± 0.1	1.2 ± 0.3	0.88
LJ4S2	0 - 15	4.6 ± 0.2	20 ± 5	8.6
LJ4S3	0 - 10	2.8 ± 0.3	12 ± 3	5.2
		Biased samples[d]		
LJ4B1A	0 - 10	5.2 ± 0.6	30 ± 7	9.6
LJ4B1B	10 - 20	3.5 ± 0.4	18 ± 4	6.2
LJ4B2A	0 - 10	2.2 ± 0.3	8.6 ± 3	3.7
LJ4B2B	10 - 18	2.8 ± 0.4	12 ± 3	5.0

[a]Locations of soil samples are shown on Fig. 1.

[b]Indicated counting error is at the 95% confidence level (± 2 σ).

[c] Total analytical error of measurement results is less than ± 3% (95% confidence level).

[d]Biased samples are taken from areas shown to have elevated gamma exposure rates.