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OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION

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March 12, 1996

W. Alexander Williams, PhD
Designation and Certification Manager
U.S. Department of Energy
EM-421
Cloverleaf Building
Washington, DC 20585-0002

SUBJECT: REVISED REPORT—TYPE A VERIFICATION OF PROPERTIES 44 AND 45, ST. LOUIS AIRPORT SITE VICINITY PROPERTIES, HAZELWOOD AND BERKELEY, MISSOURI

Dear Dr. Williams:

Please replace the St. Louis Airport Site Vicinity Properties 44 and 45 Type A verification survey report provided February 21, 1996, with the enclosed revised report. The initial document was inadvertently submitted with an error in the text. I apologize for any inconvenience.

Sincerely,

Timothy J. Vitkus
Project Manager
Environmental Survey and
Site Assessment Program

TJV:tsf

cc: A. Johnson, DOE/HQ
D. Adler, DOE/ORO
G. Palau, BNI
W. Beck, ORISE/ESSAP
E. Abelquist, ORISE/ESSAP
File/321

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SUBJECT: TYPE A VERIFICATION OF PROPERTIES 44 AND 45, ST. LOUIS AIRPORT SITE VICINITY PROPERTIES, HAZELWOOD AND BERKELEY, MISSOURI

Dear Dr. Williams:

The Environmental Survey and Site Assessment Program (ESSAP) of the Oak Ridge Institute for Science and Education (ORISE) has completed the verification activities for Properties 44 and 45. These were two of the six St. Louis Airport Site (SLAPS) Vicinity Properties that were remediated by Bechtel National, Inc. (BNI) during the period October through December 1994. Figures 1 and 2 show the general area and the location of each remediated vicinity property. Figure 3 shows the remediated grids in Properties 44 and 45.

ESSAP verified the radiological status of these properties through reviews of BNI's data and confirmatory analyses of representative post-remedial action samples collected by BNI. ESSAP initially analyzed each sample by gamma spectrometry and reviewed the spectra for Ra-226, Th-230, Th-232, and U-238. Each sample was then analyzed by alpha spectrometry for isotopic thorium. The results of the confirmatory analyses were then compared directly with the results reported by BNI. Table 1 provides a summary of the confirmatory analytical results. In summary, the overall results were comparable, within the accepted statistical deviation, and residual concentrations of radionuclides are below the generic and site-specific guidelines (DOE 1990a; DOE 1990b). These guidelines are as follows:

Radionuclide	Soil Concentration Above Background
Ra-226, Th-230, Th-232	5 pCi/g averaged over the first 15 centimeters (cm) of soil below the surface; 15 pCi/g averaged over 15 cm thick layers of soil greater than 15 cm below the surface.
U-238	50 pCi/g

The maximum thorium-230 activity concentration levels, determined by ESSAP, were 3.67 pCi/g and 3.07 pCi/g for Properties 44 and 45, respectively. The maximum uranium-238 activity concentrations were 2.3 pCi/g for Property 44 and 12.1 pCi/g for Property 45.

Concentrations of radium-226 and thorium-232 were comparable to the respective area background level ranges of 0.7 to 1.0 pCi/g and 1.0 to 1.1 pCi/g (Table 2). Figure 4 shows the background sampling locations.

In summary, the results of ESSAP's independent data reviews and confirmatory analyses of post-remedial action samples support the conclusions of BNI that the excavated areas of Properties 44 and 45 satisfy the U. S. Department of Energy's guidelines for release to unrestricted use.

Please contact me at (423) 576-5073 or William L. (Jack) Beck at (423) 576-5031 should you have any questions.

Sincerely,

Timothy J. Vitkus
Project Manager
Environmental Survey and
Site Assessment Program

TJV:tsf

Attachment

cc: A. Johnson, DOE/HQ
D. Adler, DOE/ORO
G. Palau, BNI
W. Beck, ORISE/ESSAP
File/321

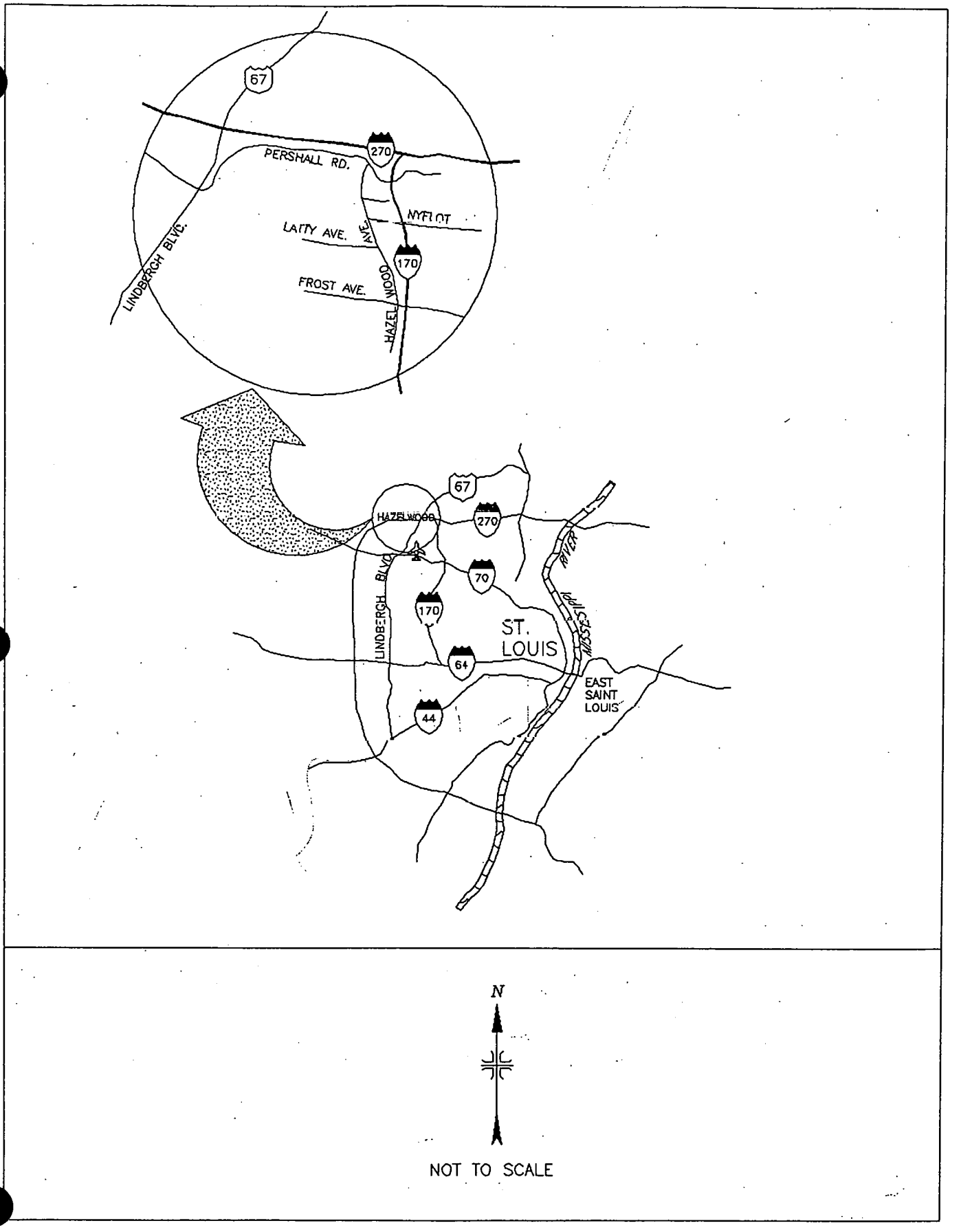

FIGURE 1: St. Louis, Missouri Area – Location of Haul Roads

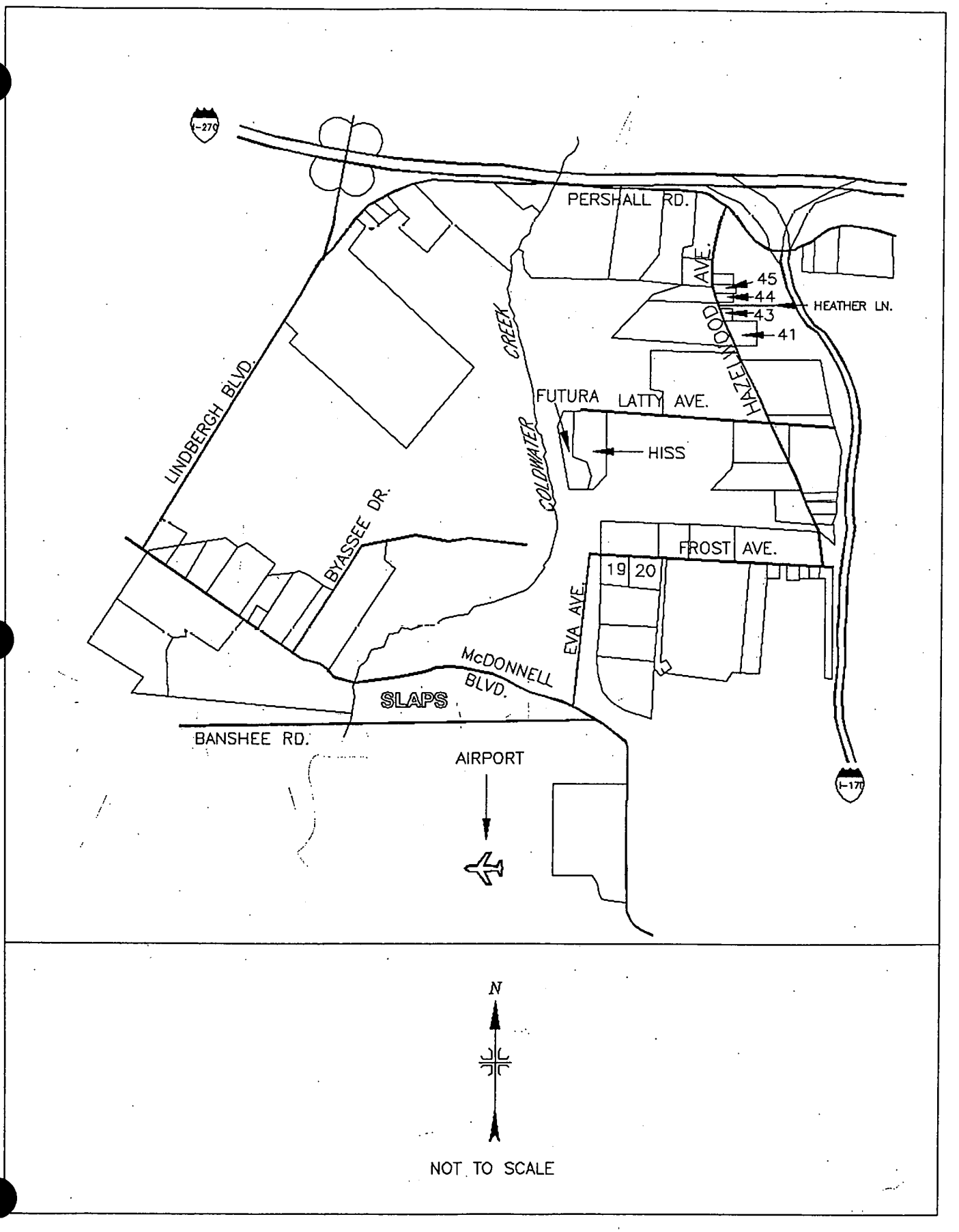

FIGURE 2: Location of SLAPS Vicinity Properties 19, 20, 41, 43, 44, and 45

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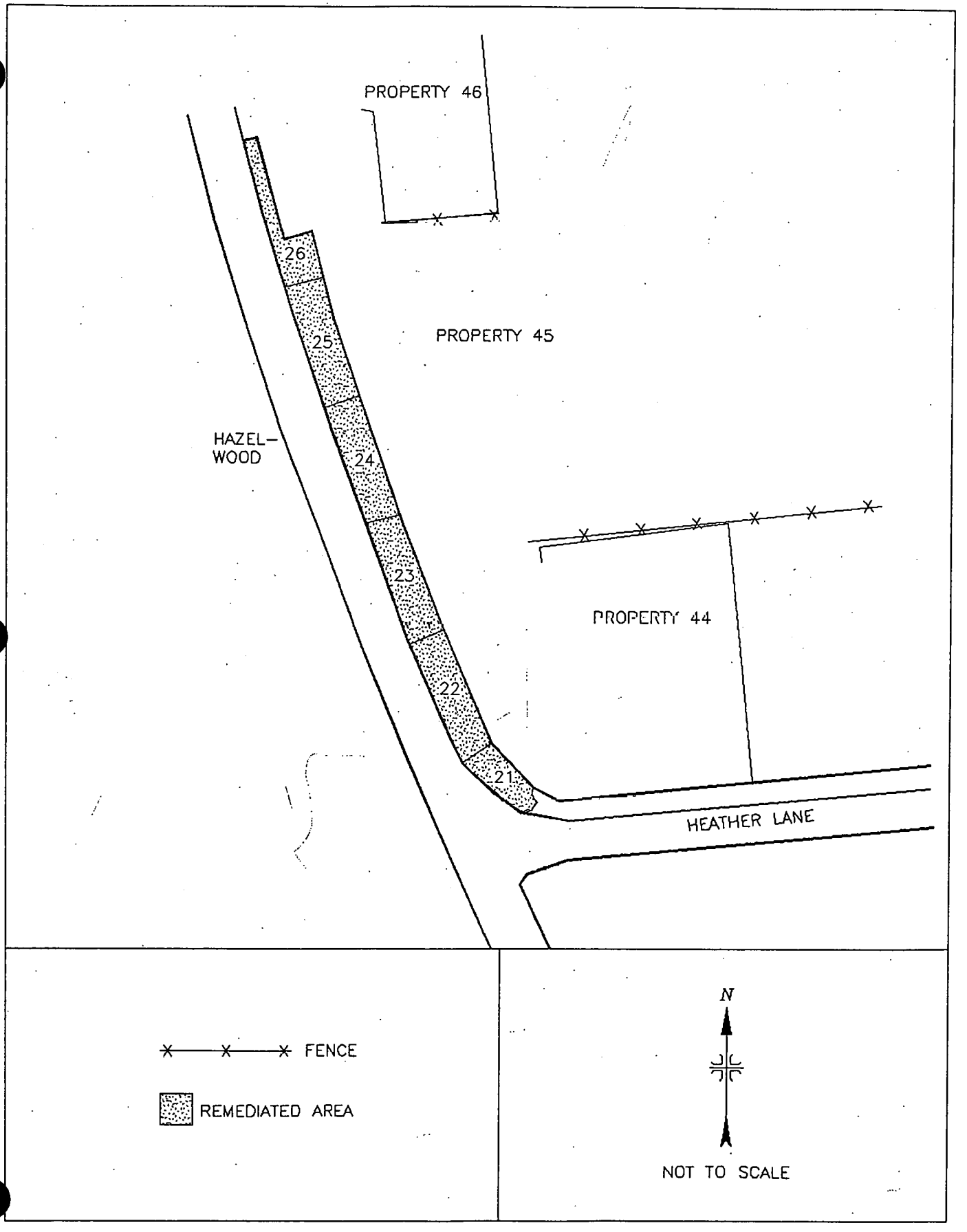

FIGURE 3: SLAPS Vicinity Properties 44 and 45 – Remediated Grids

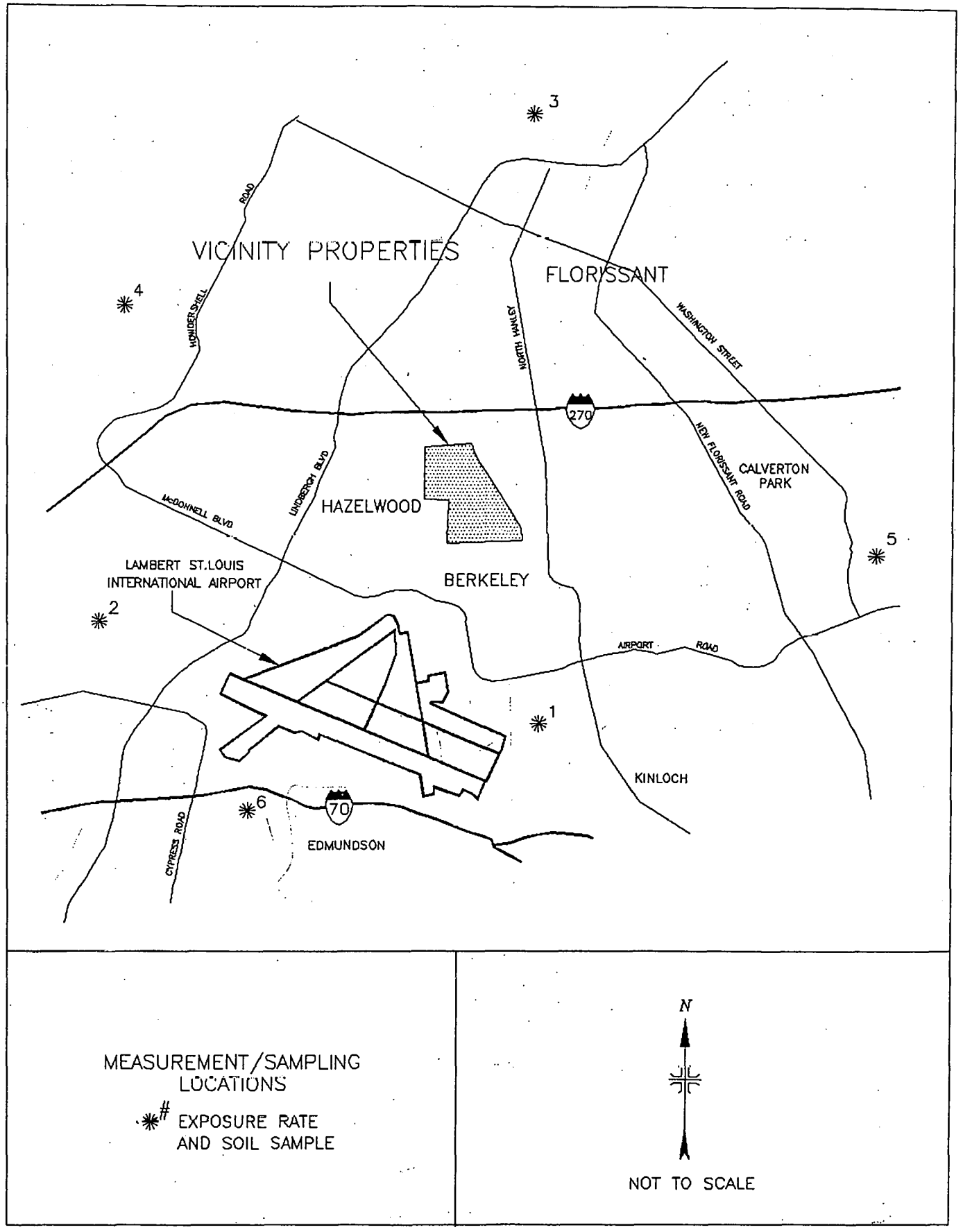

FIGURE 4: Hazelwood and Berkeley, Missouri Area Background Measurement and Sampling Locations

TABLE 1

CONFIRMATORY ANALYSIS AND COMPARISON OF RESULTS FOR POST-REMEDIAL ACTION SAMPLES RADIONUCLIDE CONCENTRATIONS IN SOIL ST. LOUIS AIRPORT SITE VICINITY PROPERTIES HAZELWOOD AND BERKELEY, MISSOURI

Sample No.	Location[a]	Radionuclide Concentrations (pCi/g)							
		Ra-226		Th-230		Th-232		U-238	
		ORISE	BNI	ORISE[b]	BNI	ORISE	BNI	ORISE	BNI
21862	Prop. 44, Grid 23	1.2 ± 0.2[c]	1.6 ± 0.6	3.09 ± 0.28	3.7 ± 1.0	1.1 ± 0.1	1.0 ± 0.4	1.3 ± 0.4	0.9 ± 0.3
21863	Prop. 44, Grid 23	1.1 ± 0.3	1.6 ± 0.7	2.05 ± 0.23	3.4 ± 1.0	1.1 ± 0.1	1.1 ± 0.5	2.3 ± 0.5	1.5 ± 0.5
21864	Prop. 44, Grid 23	1.0 ± 0.2	0.8 ± 0.4	2.35 ± 0.25	6.6 ± 2.0	1.0 ± 0.1	1.3 ± 0.6	0.9 ± 0.3	2.3 ± 1.4
21864	Prop. 44, Grid 23	1.4 ± 0.3	1.3 ± 0.5	2.66 ± 0.24	2.9 ± 0.9	1.2 ± 0.1	0.7 ± 0.3	1.5 ± 0.4	1.0 ± 0.3
21866	Prop. 44, Grid 21	1.2 ± 0.3	1.3 ± 0.4	3.67 ± 0.33	1.4 ± 0.5	1.0 ± 0.1	0.6 ± 0.3	1.1 ± 0.3	1.9 ± 0.6
21867	Prop. 44, Grid 22	1.4 ± 0.2	1.0 ± 0.4	2.07 ± 0.23	1.4 ± 0.5	1.3 ± 0.1	0.4 ± 0.3	1.1 ± 0.5	1.5 ± 0.5
21868	Prop. 44, Grid 23	1.2 ± 0.3	0.7 ± 0.4	3.02 ± 0.29	2.4 ± 0.7	1.2 ± 0.1	0.8 ± 0.3	1.5 ± 0.4	1.0 ± 0.3
21869	Prop. 45, Grid 24	2.1 ± 0.4	2.0 ± 0.6	3.07 ± 0.3	3.1 ± 1.2	1.2 ± 0.1	1.1 ± 0.6	12.1 ± 0.5	8.6 ± 2.0
21870	Prop. 45, Grid 25	1.3 ± 0.1	1.3 ± 0.5	2.49 ± 0.26	2.2 ± 0.8	1.1 ± 0.1	0.6 ± 0.3	1.7 ± 0.3	1.4 ± 0.4
21871	Prop. 45, Grid 26	1.4 ± 0.1	1.7 ± 0.6	2.95 ± 0.31	2.4 ± 0.8	1.0 ± 0.1	0.7 ± 0.4	1.6 ± 0.3	1.1 ± 0.4

[a]Refer to Figure 3.
[b]Th-230 activity determined by alpha spectrometry.
[c]Uncertainties represent the 95% confidence level, based only on counting statistics.

TABLE 2

BACKGROUND EXPOSURE RATES AND RADIONUCLIDE CONCENTRATIONS IN SOIL SAMPLES ST. LOUIS AIRPORT SITE VICINITY PROPERTIES HAZELWOOD AND BERKELEY, MISSOURI

Sample No.	Location[a]	Exposure Rate at 1 m (μR/h)	Radionuclide Concentration (pCi/g)			
			Ra-226	Th-230	Th-232	U-238
1	School Access Road and Harmond Road	10	1.0 ± 0.1[b]	1.31 ± 0.2[c]	1.1 ± 0.1	1.1 ± 0.5
2	Fee Fee Road and Duncombe Drive	10	0.7 ± 0.1		1.0 ± 0.1	0.9 ± 0.5
3	St. Ferdinand Park at St. Pierre Street	9	0.9 ± 0.1		1.1 ± 0.1	1.3 ± 0.4
4	White Birch Park	9	0.8 ± 0.1		1.1 ± 0.1	1.1 ± 0.4
5	Robert Superior Park	9	0.9 ± 0.1		1.1 ± 0.1	1.2 ± 0.4
6	St. Ann Park at St. Ambrose Lane	9	0.8 ± 0.1		1.0 ± 0.1	0.9 ± 0.3

[a]Refer to Figure 3.
[b]Uncertainties represent the 95% confidence level, based only on counting statistics.
[c]Composite of samples 1 through 6. Analyzed by alpha spectrometry.

REFERENCE

U.S. Department of Energy (DOE). Radiation Protection of the Public and Environment. Washington, DC: DOE Order 5400.5; February 1990a.

DOE. Memorandum from J. Fiore to L. Price, "Uranium Cleanup guidelines for St. Louis, MO, FUSRAP sites." November 6, 1990b.

Formerly Utilized Sites Remedial Action Program (FUSRAP)

ADMINISTRATIVE RECORD

for the St. Louis Site, Missouri

U.S. Department of Energy