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Formerly Utilized Sites Remedial Action Program (FUSRAP)  
Contract No. DE-AC05-81OR20722

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**RADIOLOGICAL CHARACTERIZATION  
REPORT FOR THE MUNICIPAL  
PROPERTY AT J. F. KENNEDY PARK  
(KENNEDY DRIVE)**

**Lodi, New Jersey**

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September 1989



Bechtel National, Inc.

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**RADIOLOGICAL CHARACTERIZATION REPORT**  
**FOR THE MUNICIPAL PROPERTY AT JOHN F. KENNEDY PARK**  
**(KENNEDY DRIVE)**  
**LODI, NEW JERSEY**

**SEPTEMBER 1989**

**Prepared for**

**UNITED STATES DEPARTMENT OF ENERGY**  
**OAK RIDGE OPERATIONS OFFICE**  
**Under Contract No. DE-AC05-81OR20722**

**By**

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## ABBREVIATIONS

cm	centimeter
cm <sup>2</sup>	square centimeter
cpm	counts per minute
dpm	disintegrations per minute
ft	foot
h	hour
in.	inch
km <sup>2</sup>	square kilometer
L	liter
L/min	liters per minute
m	meter
m <sup>2</sup>	square meter
MeV	million electron volts
μR/h	microroentgens per hour
mi	mile
mi <sup>2</sup>	square mile
min	minute
mrad/h	millirad per hour
mrem	millirem
mrem/yr	millirem per year
pCi/g	picocuries per gram
pCi/L	picocuries per liter
WL	working level
yd	yard
yd <sup>3</sup>	cubic yard

## 1.0 INTRODUCTION AND SUMMARY

This section provides a brief description of the history and background of the Maywood site and its vicinity properties. Data obtained from the radiological characterization of this vicinity property are also presented.

### 1.1 INTRODUCTION

The 1984 Energy and Water Appropriations Act authorized the U.S. Department of Energy (DOE) to conduct a decontamination research and development project at four sites, including the site of the former Maywood Chemical Works (now owned by the Stepan Company) and its vicinity properties. The work is being administered under the Formerly Utilized Sites Remedial Action Program (FUSRAP) under the direction of the DOE Division of Facility and Site Decommissioning Projects. Several residential, commercial, and municipal properties in Lodi, New Jersey, are included in FUSRAP as vicinity properties. Figure 1-1 shows the location of the Lodi vicinity properties in relation to the former Maywood Chemical Works.

The U.S. Government initiated FUSRAP in 1974 to identify, clean up, or otherwise control sites where low-activity radioactive contamination (exceeding current guidelines) remains from the early years of the nation's atomic energy program or from commercial operations that resulted in conditions Congress has mandated that DOE remedy (Ref. 1).

FUSRAP is currently being managed by DOE Oak Ridge Operations. As the Project Management Contractor for FUSRAP, Bechtel National, Inc. (BNI) is responsible to DOE for planning, managing, and implementing FUSRAP.

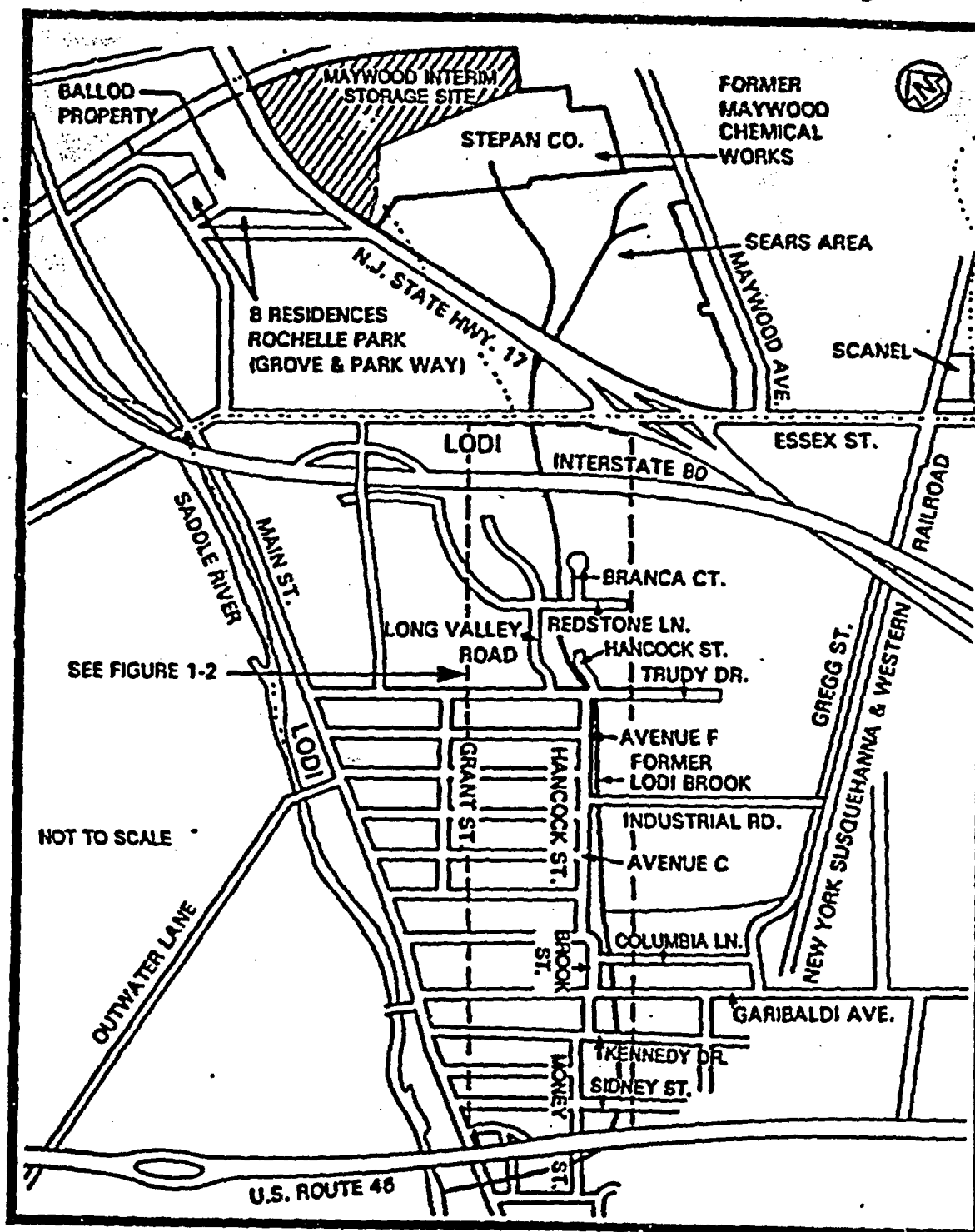


FIGURE 1-1 LOCATION OF LODI VICINITY PROPERTIES



## 1.2 PURPOSE

The purpose of the 1987 survey performed by BNI was to locate the horizontal and vertical boundaries of radionuclide concentrations exceeding remedial action guidelines.

## 1.3 SUMMARY

This report details the procedures and results of the radiological characterization of the property at John F. Kennedy Park (Figure 1-2) in Lodi, New Jersey, which was conducted in November and December 1987. Additional data was obtained in October 1988.

Ultimately, the data generated during the radiological characterization will be used to define the complete scope of remedial action necessary to release the site.

The John F. Kennedy Park is a municipal property that consists of two concrete buildings, an asphalt basketball court, two baseball diamonds, and accompanying dugouts. The property is situated between Kennedy Drive and Sidney Street in a densely populated residential area. It is bordered on the west by Money Street. Another municipal property and a commercial property are located nearby. The primary use of the park is for recreational activities.

This characterization confirmed that thorium-232 is the primary radioactive contaminant at this property. Results of surface soil samples for John F. Kennedy Park showed maximum concentrations of thorium-232 and radium-226 to be 11.6 and less than 2.3 pCi/g, respectively. The maximum concentration of uranium-238 in surface soil samples was less than 7.7 pCi/g.

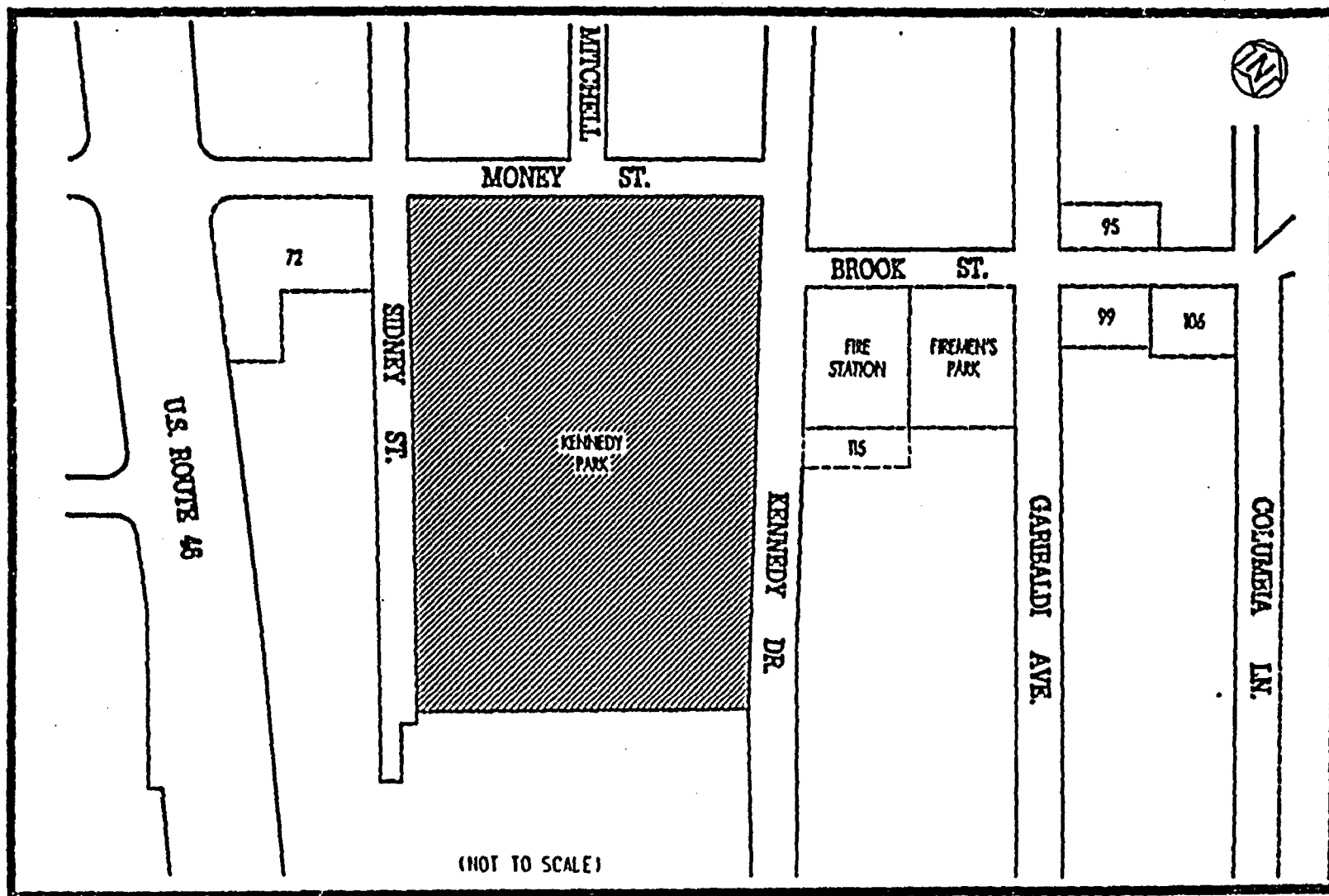


FIGURE 1-2 LOCATION OF KENNEDY PARK

Subsurface soil sample concentrations ranged from less than 0.4 to 93.1 pCi/g for thorium-232 and from less than 0.3 to 5.3 pCi/g for radium-226. The average background level in this area for both radium-226 and thorium-232 is 1.0 pCi/g. The concentrations of uranium-238 in subsurface soil samples ranged from less than 0.7 to less than 24.0 pCi/g. Because the major contaminants at the vicinity properties are thorium and radium, the decontamination guidelines provide the appropriate guidance for the cleanup activities. DOE believes that these guidelines are conservative for considering potential adverse health effects that might occur in the future from any residual contamination. The dose contributions from uranium and any other radionuclides not numerically specified in these guidelines are not expected to be significant following decontamination. In addition, the vicinity properties will be decontaminated in a manner so as to reduce future doses to levels that are as low as reasonably achievable (ALARA) (Ref. 2).

Soil analysis data for this property indicated surface contamination. Subsurface investigation by gamma logging indicated contamination to a depth of 2.28 m (7.5 ft).

Exterior gamma radiation exposure rates ranged from 5 to 22  $\mu$ R/h, including background.

Restricted access to the park buildings prohibited the taking of indoor measurements.

All data tables for this property appear at the end of this report.