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May 22, 1990

Mr. C. W. Bickerstaff
Westinghouse Electric Corp.
Westinghouse Building, 16th Floor
11 Stanwix Street
Pittsburgh, PA 15222

Dear Wayne,

Enclosed is a copy of our report on the confirmatory surveys performed at Bloomfield. All areas north of Arlington Avenue have been remediated and are suitable for unrestricted release, according to our survey results.

If you need corrections or additions, please call this office.

Sincerely,

A handwritten signature in cursive script that reads 'Leroy F. Booth'.

Leroy F. Booth, C.H.P.
Manager, Midwest Regional Office

LFB:pd

Enclosure

MAY 23 1990

112591 mcl

DECONTAMINATION CONFIRMATORY
SURVEYS
FOR THE
BLOOMFIELD LAMP PLANT
WESTINGHOUSE ELECTRIC CORPORATION

MAY 1990

INTRODUCTION

In 1986 and 1987, a number of locations at the Bloomfield Lamp Plant were identified as containing radioactive contaminants requiring remediation. In 1989, decontamination and decommissioning of these areas was initiated. By May 1990, all locations between Arlington Avenue and MacArthur Avenue (Buildings 1 through 6, garage, outdoor areas) had been remediated and surveyed for unrestricted release. This report contains the results of the decontamination confirmatory surveys.

METHODS

All decontaminated areas were surveyed for both fixed and removable surface contamination following remediation. Total surface contamination levels were measured with portable survey instruments utilizing both alpha and beta probes. Removable surface contamination was assessed by wiping the surface with a filter paper and counting the wipe in a gas flow proportional counter for alpha and beta activity. Soils, sludges and other bulk materials were analyzed on a high resolution gamma spectroscopy system.

For each remediated area, 60% to 100% of the total surface area was continuously surveyed with portable survey instruments. Surface wipes were taken at locations of intensive remediation work, location where elevated instrument readings were recorded, and other random locations.

Acceptable levels of contamination for unrestricted release are shown in Table 1. In general, efforts were made to reduce all contaminated areas to background levels.

Table 1

Acceptable Concentrations and Contamination Levels

| <u>Surface Contamination</u> | <u>Uranium Natural</u> | <u>Thorium Natural</u> |
|------------------------------|---------------------------------|---------------------------------|
| Average | 5000 dpm/100 cm alpha | 1000 dpm/100 cm |
| Maximum | 15000 dpm/100 cm alpha | 3000 dpm/100 cm |
| Removable | 1000 dpm/100 cm alpha | 200 dpm/100 cm |
| Dose Rate | | |
| Average beta | 0.2 mrad/hr @ 1 cm | 0.2 mrad/hr @ 1 cm |
| Maximum beta | 1.0 mrad/hr @ 1 cm | 1.0 mrad/hr @ 1 cm |
| Soil Concentration | 5 pCi/g (each isotope in chain) | 5 pCi/g (each isotope in chain) |
| Water Concentration | 5 pCi/l (Ra-226) | 15 pCi/l (gross alpha) |
| Soil Concentration | <u>U-238</u> 35 pCi/g | <u>U-235</u> 30 pCi/g |

RESULTS

Results of decontamination confirmatory surveys are shown in the Attachment, for areas north of Arlington Street. Results show that all areas have been decontaminated to levels acceptable for unrestricted release.

A T T A C H M E N T I

Confirmatory Survey Results

CONFIRMATORY SURVEYS

AREAS

GARAGE

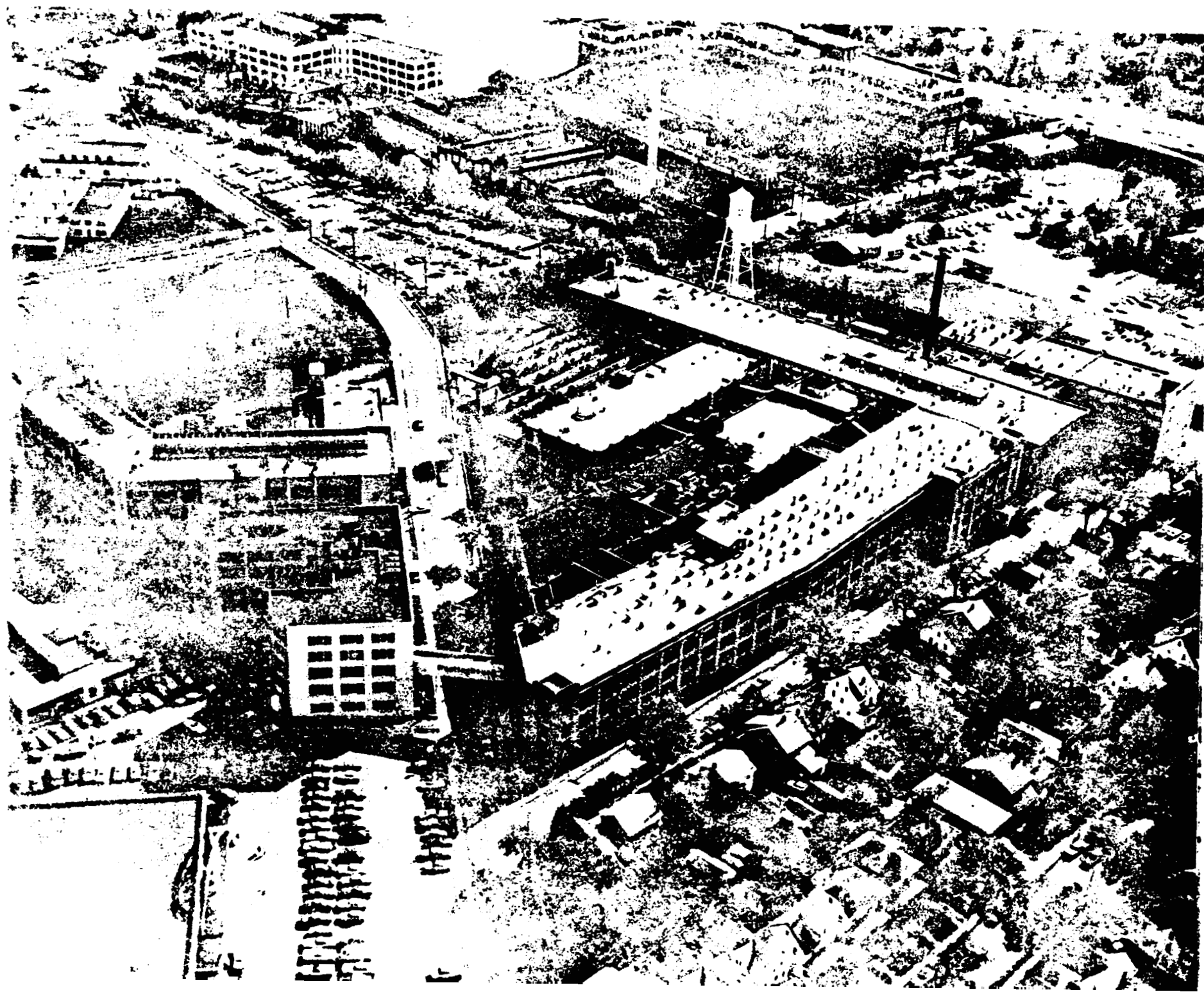
| | |
|--------|--------------------------------------|
| BLDG 2 | Pipe Run, South Wall Exterior |
| BLDG 2 | 1st Floor Beneath Moly Ribbon Room |
| BLDG 2 | 1st Floor Cages Areas |
| BLDG 2 | 2nd Floor Moly Ribbon Room |
| BLDG 2 | 2nd Floor Blower Room |
| BLDG 3 | Sump South Side |
| BLDG 3 | 3rd Floor Caustic Wash Area |
| BLDG 3 | 3rd Floor Hallway Walls |
| BLDG 4 | Loading Dock |
| BLDG 4 | 3rd Floor East Storage Area |
| BLDG 5 | 1st Floor Loading Dock |
| BLDG 5 | 4th Floor |
| BLDG 6 | Second Tungsten Reduction Area Floor |
| BLDG 6 | Fork Lift Ramp Area |
| BLDG 6 | Powder Storage Area |
| BLDG 6 | Doping Area |
| BLDG 6 | Moly Ribbon Area |

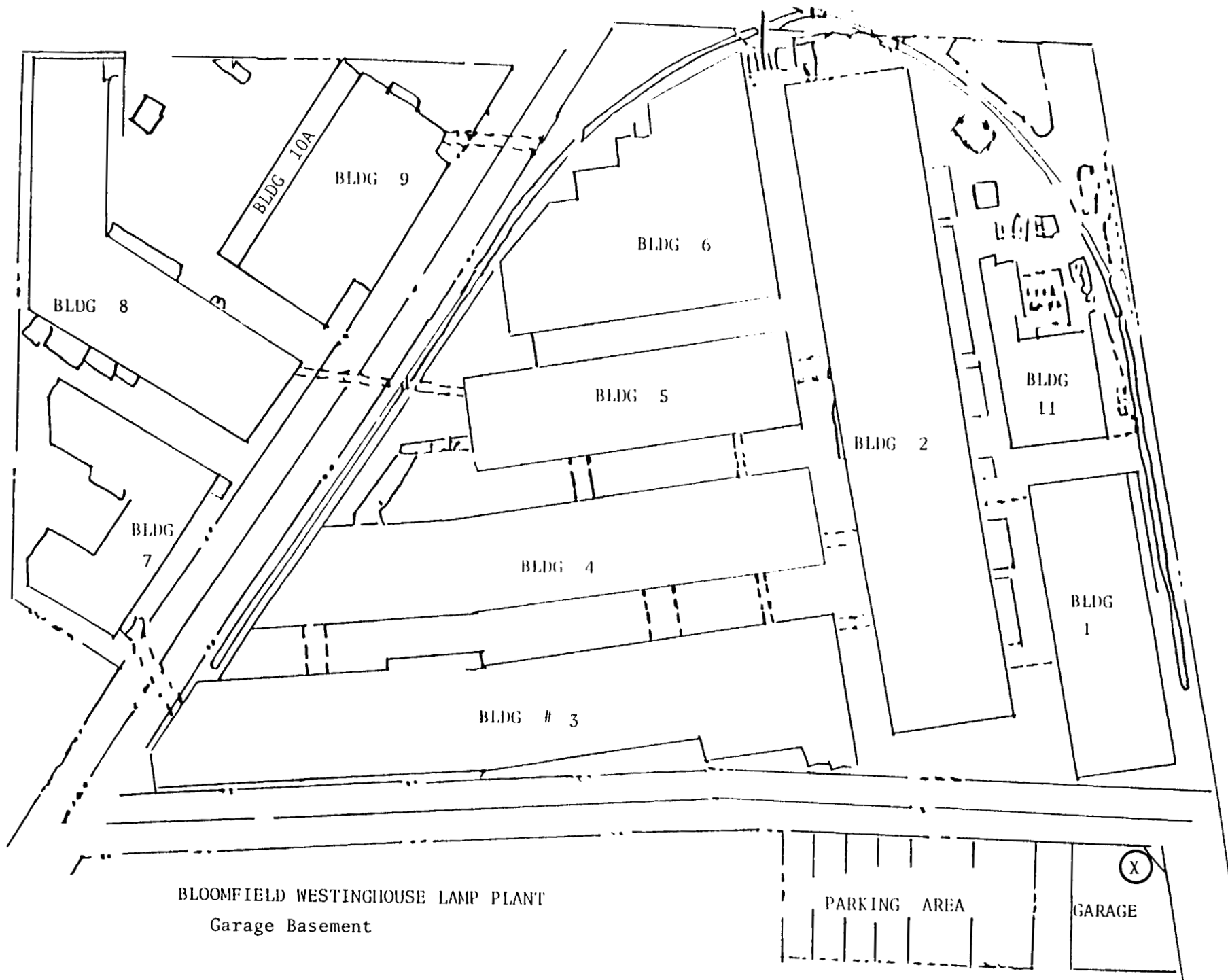
RESERVOIR

RAIL SPUR ADJACENT TO BLDG 4

INCINERATOR

RAIL SPUR ADJACENT OT BLDG 6





DECONTAMINATION CONFIRMATORY SURVEY

GARAGE BASEMENT

SUMMARY OF ACTIVITIES

The furnace and a small water heater were removed, surveyed and cleaned. Asbestos was removed from the furnace. The furnace ash tray was removed and disposed as rad waste as was all material from the rubble pile.

Surveys were performed with an Eberline E120 and HP210 probe for beta activity and a Ludlum 12 and 43-5 probe for alpha activity. Approximately 100% of all decontaminated areas, 80% of remaining floor area, 50% of overhead piping and 30% of walls were surveyed. The location of surface wipes is shown on the diagram. No activities above background were detected.

DECONTAMINATION CONFIRMATORY SURVEY
GARAGE BASEMENT
SURVEY RESULTS

| Sample Location | Alpha | | Beta | | mrad/hr |
|--------------------------|---------------------------------|-------------------------------------|----------------------------------|-------------------------------------|---------|
| | Total DPM/100cm ² | Removable DPM/100cm ² | Total DPM/100 cm ² | Removable DPM/100cm ² | |
| 1 Pipes on wall | < 10 | < 2 | < 200 | < 8 | |
| 2 Pipes on wall | < 10 | < 2 | < 200 | < 8 | |
| 3 Stairway | < 10 | < 2 | < 200 | < 8 | |
| 4 Floor | < 10 | < 2 | < 200 | < 8 | |
| 5 Floor @ Furnace | < 10 | < 2 | < 200 | < 8 | |
| 6 Floor | < 10 | < 2 | < 200 | < 8 | |
| 7 Floor @ rubble pile | < 10 | < 2 | < 200 | < 8 | |
| 8 Floor near pit | < 10 | < 2 | < 200 | < 8 | |
| 9 Overhead pipes | < 10 | < 2 | < 200 | < 8 | |
| 10 Overhead pipes | < 10 | < 2 | < 200 | < 8 | |

All Areas

< 0.01

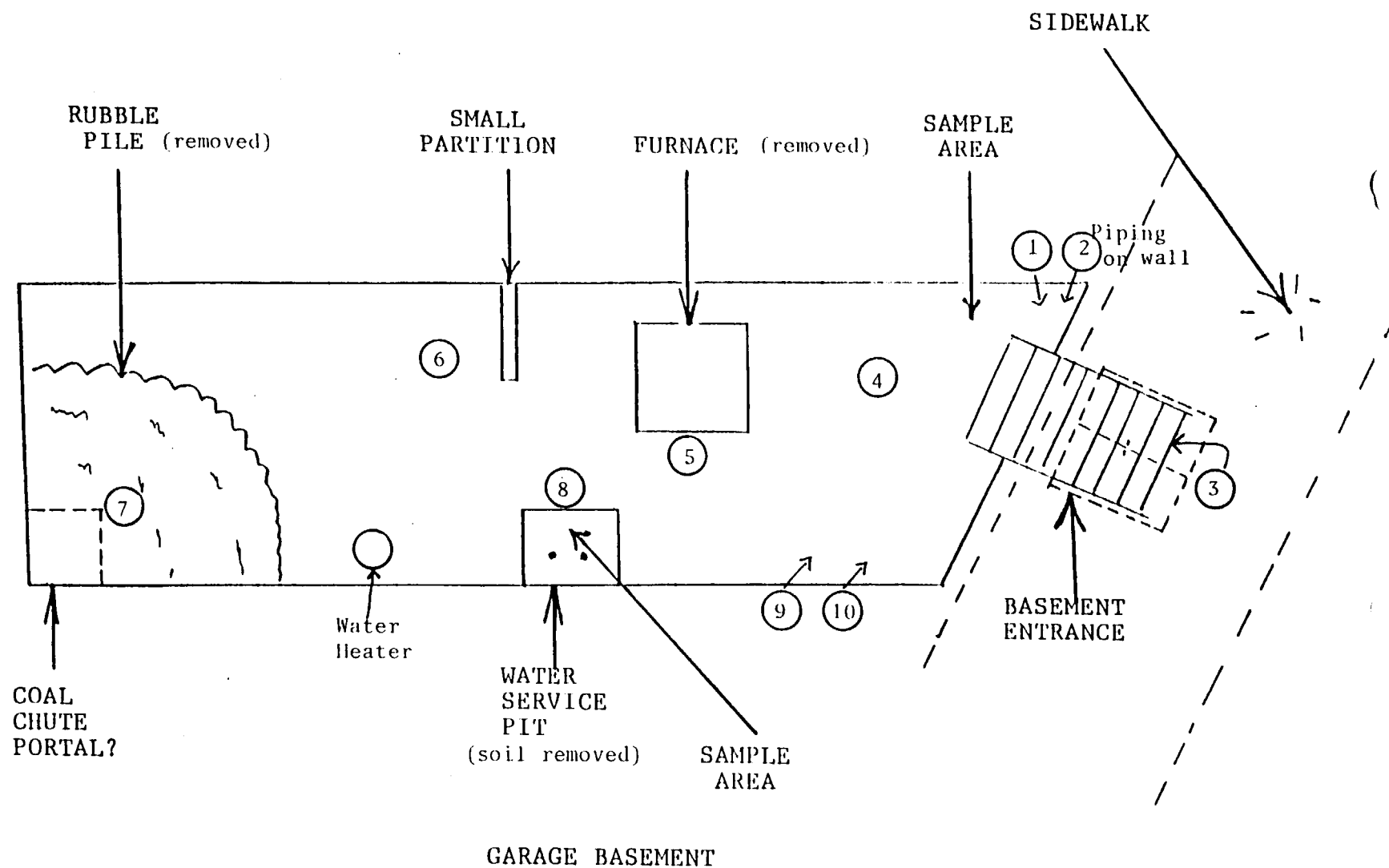
Soil sample from pit sump < 0.9 pCi/g U
 < 0.8 pCi/g Th

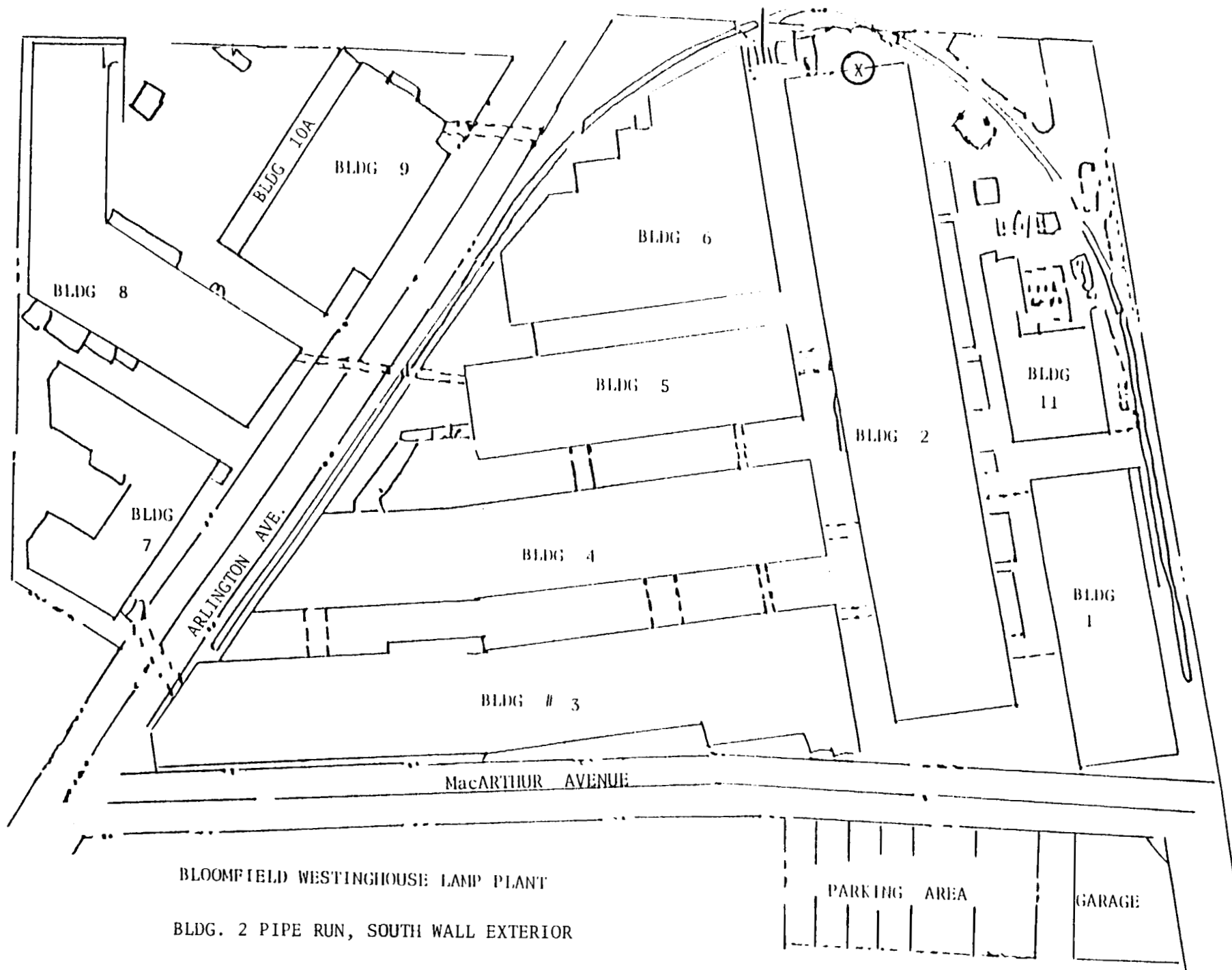
NOTE: All measurements at contact unless otherwise noted.

(x) = smear locations

Survey by: R. Maddox

Date: 20 September 1989





DECONTAMINATION CONFIRMATORY SURVEY
BLDG. 2, PIPE RUN, SOUTH WALL EXTERIOR

Two drainage lines were removed and soil surrounding the pipes shipped as rad waste.

Surveys were performed with a Johnson GSM-10 and GSP-2A NaI detector.

DECONTAMINATION CONFIRMATORY SURVEY
BURIED DRAIN PIPE ALONG SOUTH WALL, BLDG. 2

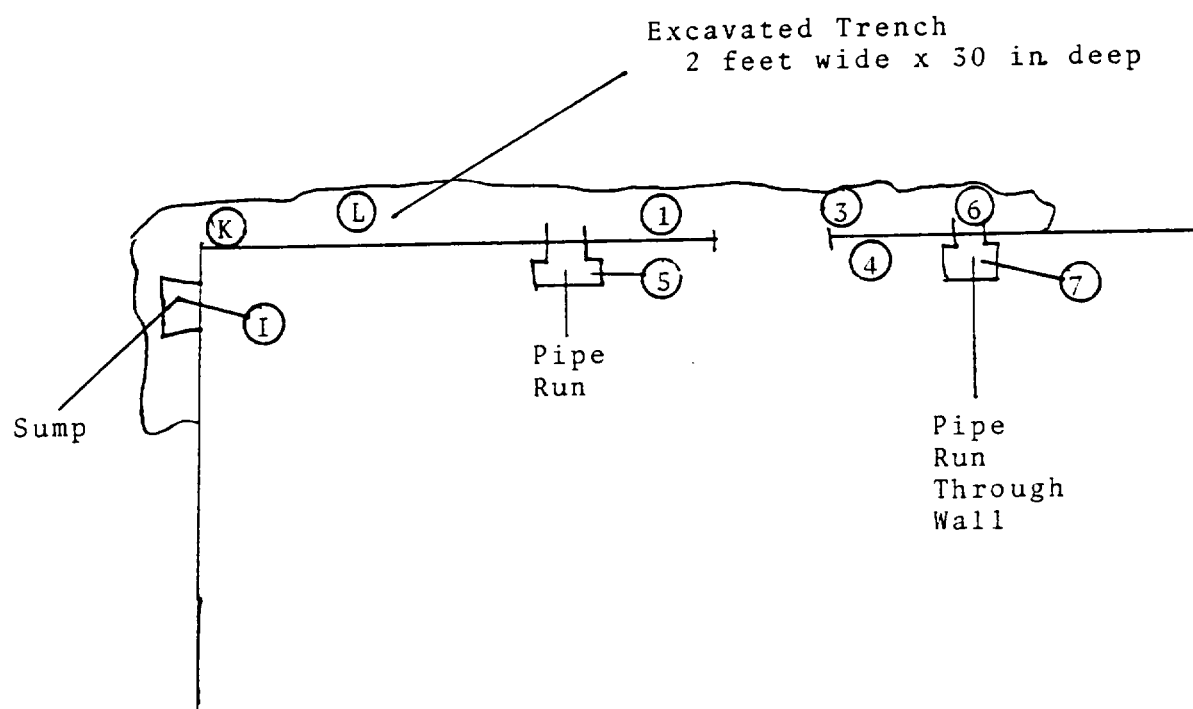
| <u>Sample Location</u> | <u>Soil Analysis Results Activity</u> | <u>Nuclide</u> |
|--|--|---------------------------|
| "1" Outside at pipe removal | 1.5 pCi/g + 21% 1.0 pCi/g ± 38% | Th-232 Ra-226 |
| "3" Outside at pipe removal | < 1. pCi/g < 1. pCi/g | Th-232 Ra-226 |
| "L" Outside at pipe removal | 1.5 pCi/g ± 20% | Th-232 |
| "4" Inside, right side of doorway Bldg 2, So. Wall | 2.0 pCi/g + 15% 1.0 pCi/g ± 35% | Th-232 Ra-226 |
| "5" Inside, left side of doorway Bldg 2, So. Wall | 1.75 pCi/g ± 14% | Th-232 |
| "6" Pipe exiting Bldg 2 Outside of wall | < 5 pCi/g < 1.0 pCi/g | Th-232 Ra-226 |
| "7" Pipe exiting Bldg 2 Inside wall | 1.5 pCi/g ± 20% | Th-232 |
| Sample "I" | 11.0 pCi/g + 18% 1.0 pCi/g ± 20% 1.0 pCi/g ± 33% | U-238 Th-232 Ra-226 |
| Sample "K" | 1.0 pCi/g ± 20% | Th-232 |

DECONTAMINATION CONFIRMATORY SURVEY
BURIED DRAIN PIPE ALONG SOUTH WALL BLDG. 2

| Sample Location | Alpha | | Beta | | mrad/hr |
|--------------------|---------------------------------|--|---------------------------------|--|---------|
| | Total DPM/100cm ² | Removable ₂ DPM/100cm ² | Total DPM/100cm ² | Removable ₂ DPM/100cm ² | |
| 1 Pipe | * | < 2 | * | < 10 | < 0.02 |
| 2 Pipe | * | < 2 | * | < 10 | < 0.02 |
| 3 Pipe | * | < 2 | * | < 10 | < 0.02 |
| 4 Pipe | * | < 2 | * | < 10 | < 0.02 |

* unable to fit probe into pipe

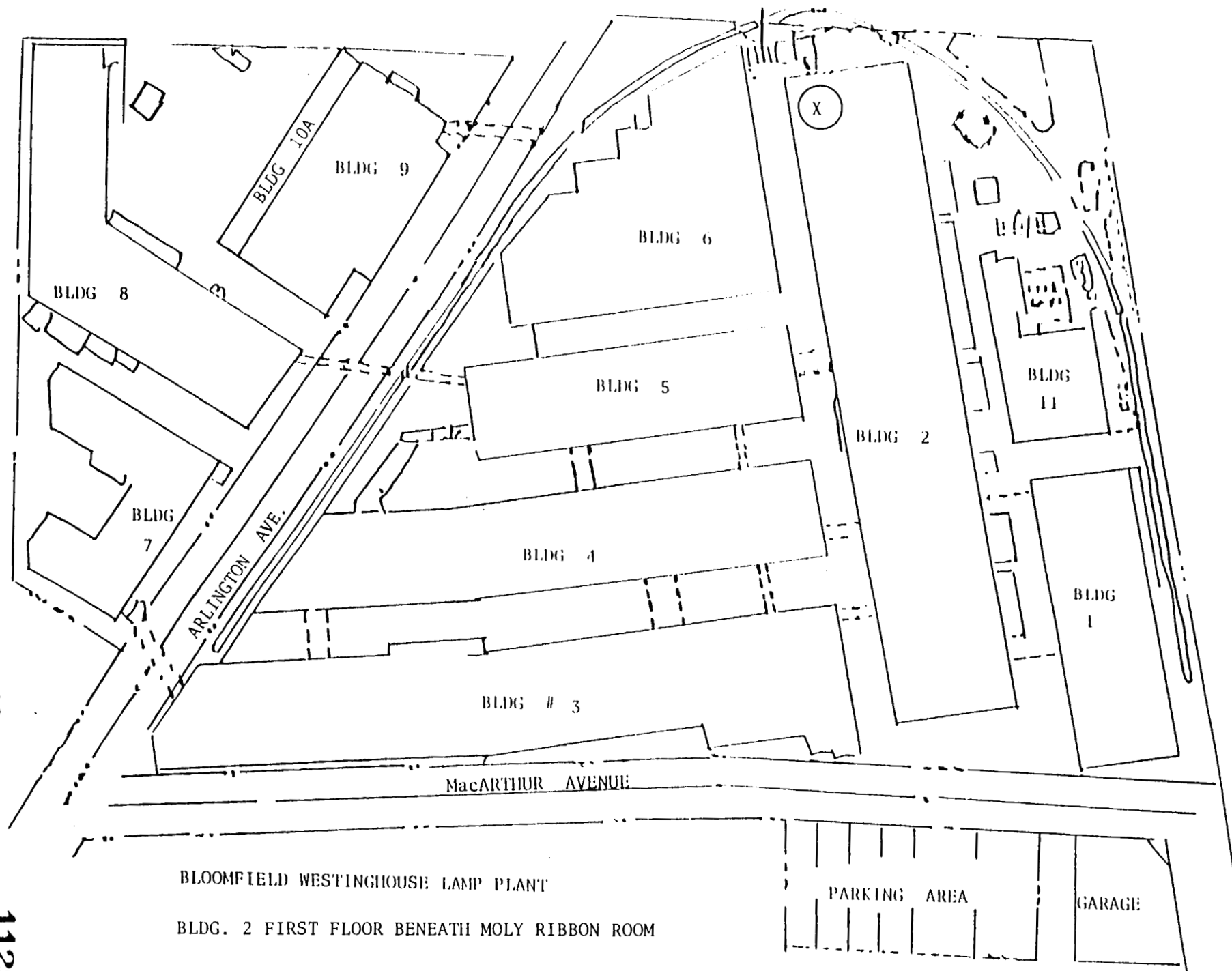
DECONTAMINATION CONFIRMATORY SURVEY
BLDG. 2, PIPE RUN, SOUTH WALL EXTERIOR



(X) = Soil Sample Location

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DECONTAMINATION CONFIRMATORY SURVEY

BLDG. 2 FIRST FLOOR BENEATH MOLY RIBBON ROOM

SUMMARY OF ACTIVITIES

Overhead pipes from the moly ribbon room drains were removed to points where they exited the building. Holding sumps were cleaned. Small volumes of soils around pipes and sumps were excavated and disposed of. Brick flooring was vacuumed. Approximately 90% of areas were surveyed with alpha or beta probes.

DECONTAMINATION CONFIRMATORY SURVEY
BLDG 2 FIRST FLOOR BENEATH MOLY RIBBON ROOM

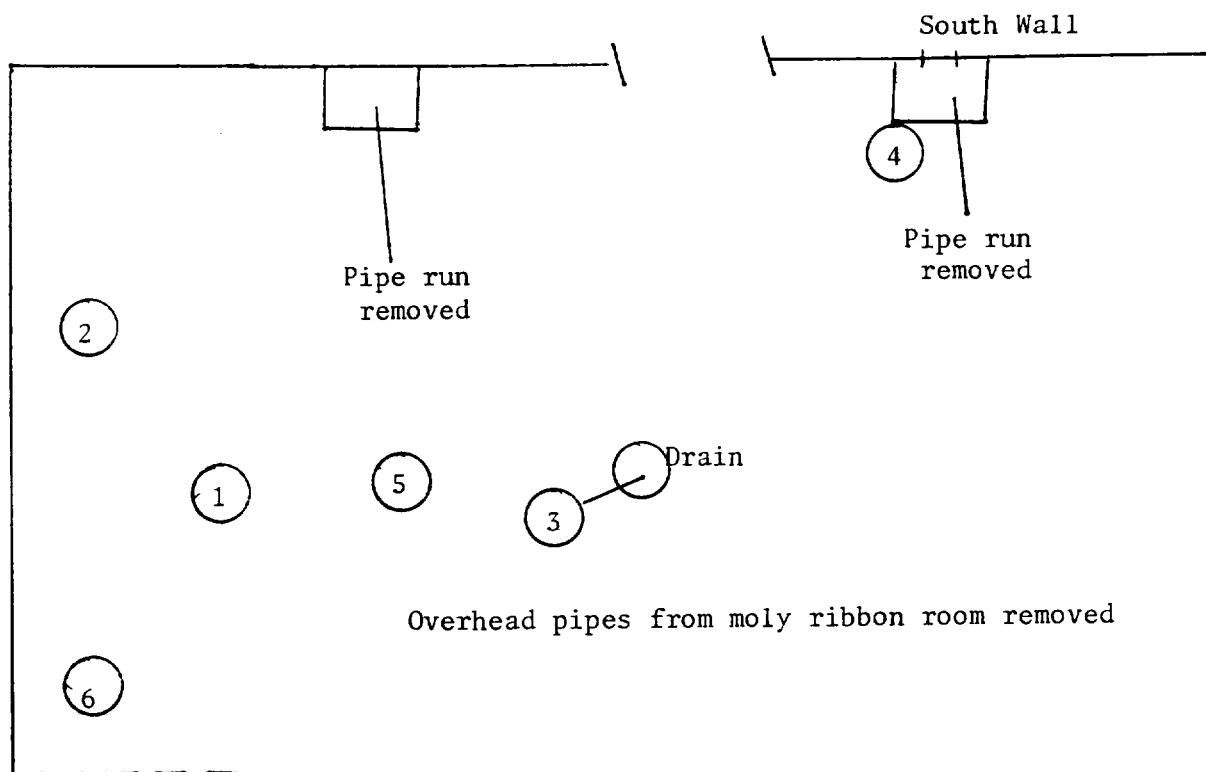
| Sample Location | Alpha | | Beta | |
|-----------------|---------------------------------|--|---------------------------------|--|
| | Total DPM/100cm ² | Removable ₂ DPM/100cm ² | Total DPM/100cm ² | Removable ₂ DPM/100cm ² |
| 1 | < 10 | < 2 | < 200 | < 7 |
| 2 | < 10 | 4 | 2200 | 5 |
| 3 | < 10 | < 2 | < 200 | < 7 |
| 4 | < 10 | 101 | < 200 | 254 |
| 5 | < 10 | < 2 | < 200 | < 7 |
| 6 | < 10 | < 2 | < 200 | < 7 |

All other areas

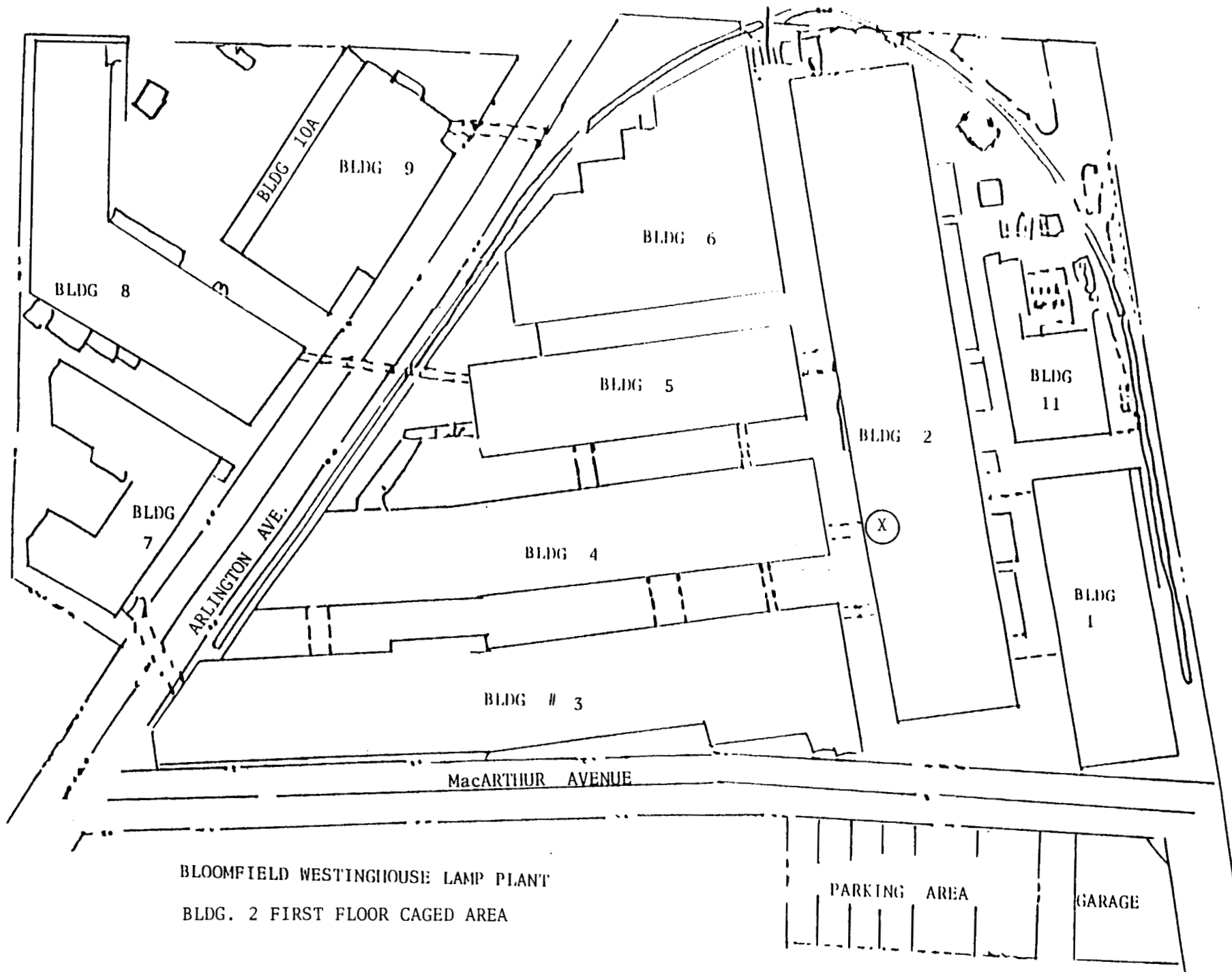
50 to 1100

DECONTAMINATION CONFIRMATORY SURVEY

BLDG. 2 FIRST FLOOR BENEATH MOLY RIBBON ROOM



(X) = Smear Locations



BLOOMFIELD WESTINGHOUSE LAMP PLANT

BLDG. 2 FIRST FLOOR CAGED AREA

DECONTAMINATION CONFIRMATORY SURVEY

BLDG 2 FIRST FLOOR CAGED AREA

SUMMARY OF ACTIVITIES

Two small drums containing radioactive samples and waste were removed from this storage area and disposed of as rad waste. All locations were surveyed with no additional remediation required except for one piece of contaminated tubing, which was disposed of.

DECONTAMINATION CONFIRMATORY SURVEY

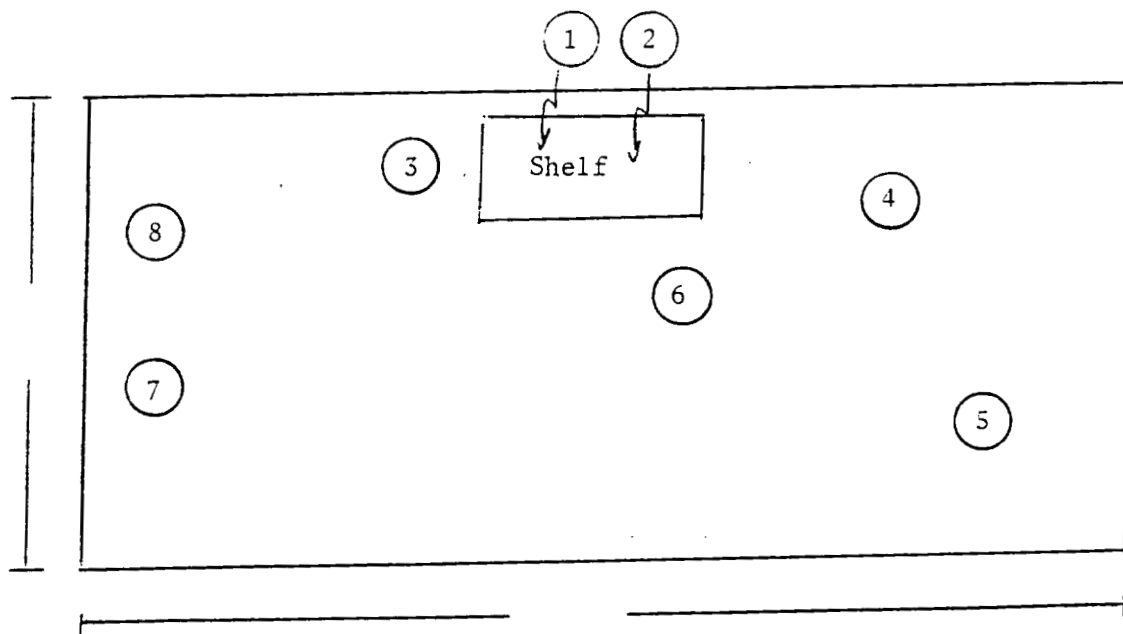
BLDG 2 FIRST FLOOR CAGED AREA

SURVEY RESULTS

| Sample Location | ALPHA | | BETA | | <u>mrad/hr</u> |
|--------------------|---------------------------------|-------------------------------------|---------------------------------|-------------------------------------|----------------|
| | Total DPM/100cm ² | Removable DPM/100cm ² | Total DPM/100cm ² | Removable DPM/100cm ² | |
| 1 Shelf | < 10 | < 3 | < 200 | < 10 | < 0.020 |
| 2 Shelf | < 10 | < 3 | < 200 | < 10 | < 0.020 |
| 3 | < 10 | < 3 | < 200 | < 10 | < 0.020 |
| 4 | < 10 | < 3 | < 200 | < 10 | < 0.020 |
| 5 | < 10 | < 3 | < 200 | < 10 | < 0.020 |
| 6 | < 10 | < 3 | < 200 | < 10 | < 0.020 |
| 7 | < 10 | < 3 | < 200 | < 10 | < 0.020 |
| 8 | < 10 | < 3 | < 200 | < 10 | < 0.020 |
| All Other Areas | < 10 | not taken | < 200 | not taken | < 0.020 |

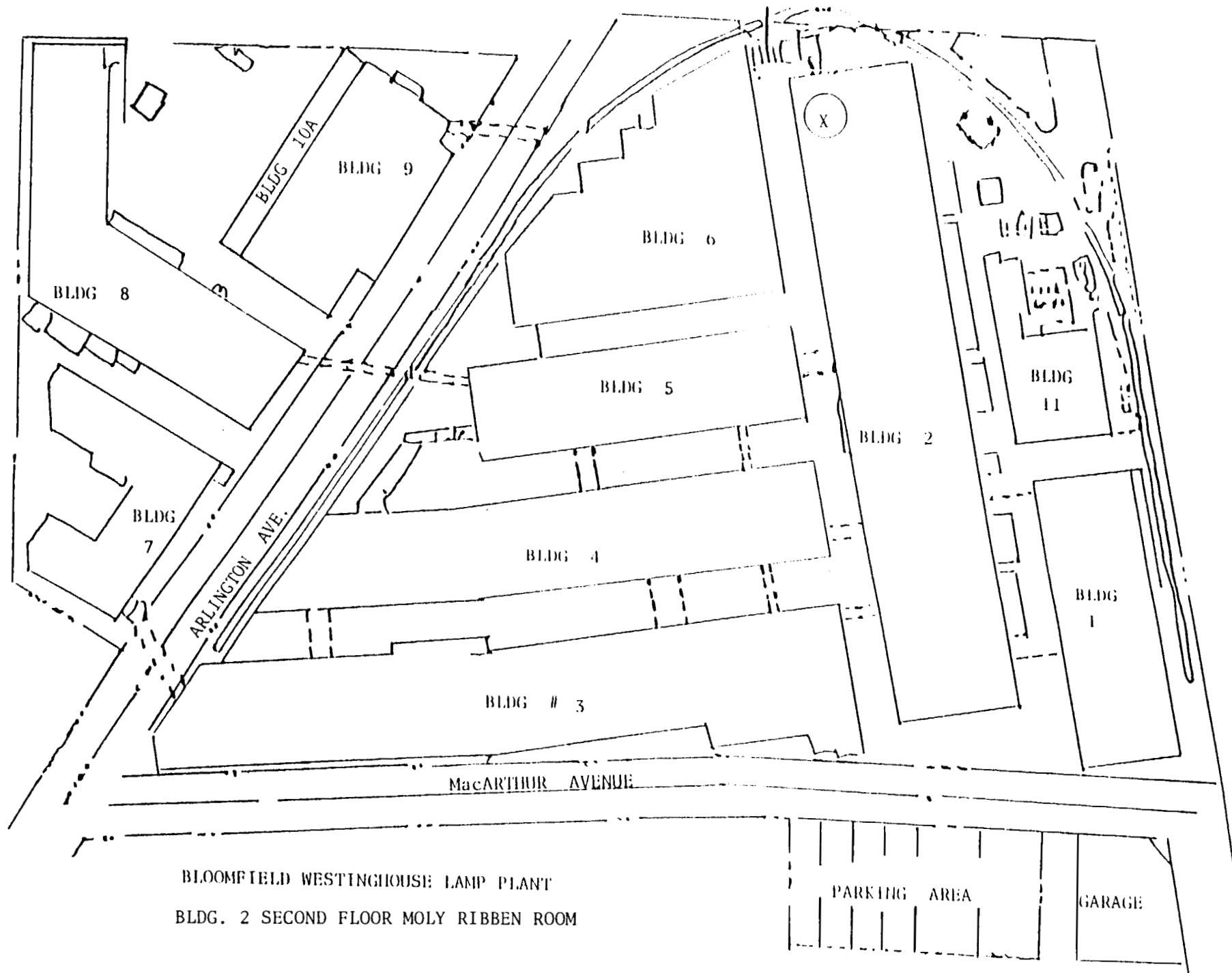
DECONTAMINATION CONFIRMATORY SURVEY

BLDG 2 FIRST FLOOR CAGED AREA



(X) = smear locations

All areas surveyed with Ludlum 12 meter and 44-9 beta
and 43-5 alpha probes



DECONTAMINATION CONFIRMATORY SURVEY
BLDG 2, SECOND FLOOR, MOLY RIBBON ROOM
SUMMARY OF ACTIVITIES

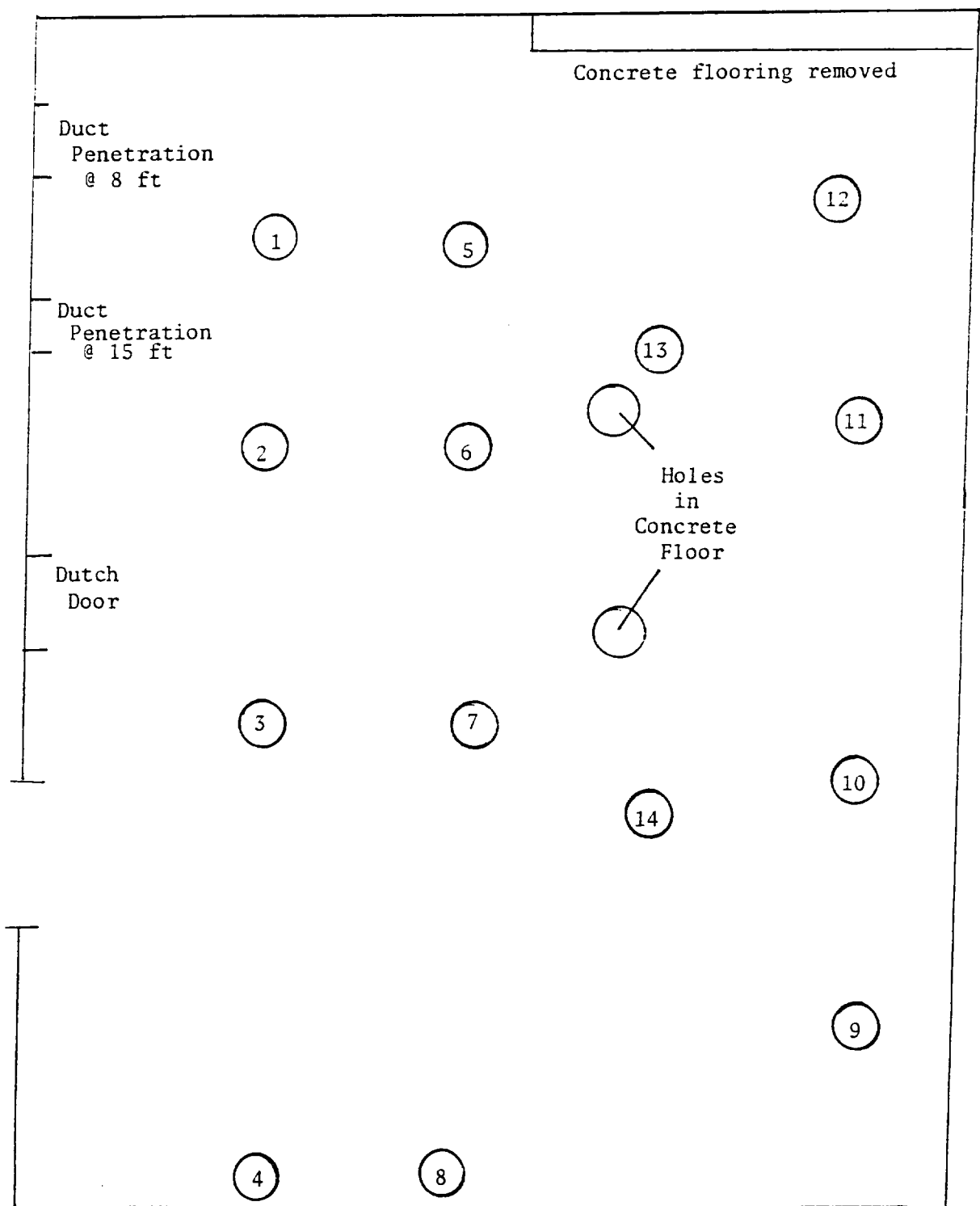
In the moly ribbon room, overhead ductwork leading to the blower room was removed. All floor tile was removed and the concrete beneath the floor was chipped and scabbled to remove fixed contamination. Approximately 90% of floor area was surveyed with a Ludlum 44-9 probe for beta activity and 50% of the floor with a Ludlum 43-5 alpha probe.

DECONTAMINATION CONFIRMATORY SURVEY

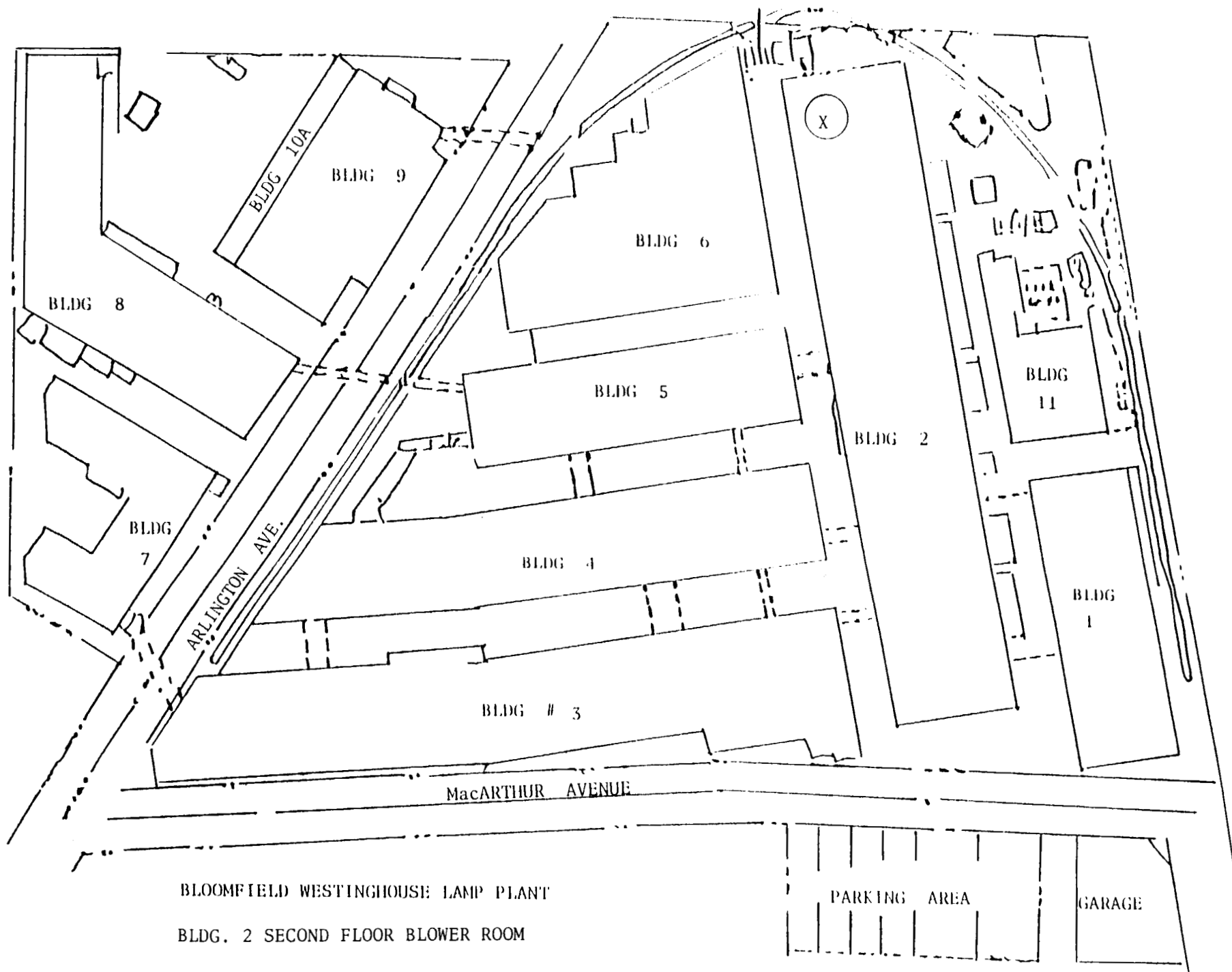
BLDG 2, SECOND FLOOR, MOLY RIBBON ROOM

| Sample Location | Alpha | | Beta | | mrad/hr |
|-----------------|---------------------------------|--|---------------------------------|--|---------|
| | Total DPM/100cm ² | Removable ₂ DPM/100cm ² | Total DPM/100cm ² | Removable ₂ DPM/100cm ² | |
| 1 | < 10 | 3 | < 200 | < 7 | < 0.020 |
| 2 | < 10 | < 3 | < 200 | < 7 | < 0.020 |
| 3 | < 10 | 3 | < 200 | 6 | < 0.020 |
| 4 | < 10 | < 3 | < 200 | < 7 | < 0.020 |
| 5 | < 10 | 4 | < 200 | < 7 | < 0.020 |
| 6 | < 10 | < 3 | < 200 | < 7 | < 0.020 |
| 7 | < 10 | < 3 | < 200 | < 7 | < 0.020 |
| 8 | < 10 | < 3 | < 200 | < 7 | < 0.020 |
| 9 | < 10 | < 3 | < 200 | < 7 | < 0.020 |
| 10 | < 10 | < 3 | < 200 | < 7 | < 0.020 |
| 11 | < 10 | < 3 | < 200 | < 7 | < 0.020 |
| 12 | < 10 | < 3 | < 200 | < 7 | < 0.020 |
| 13 | < 10 | < 3 | < 200 | 7 | < 0.020 |
| 14 | < 10 | < 3 | < 200 | < 7 | < 0.020 |

BLDG 2 SECOND FLOOR MOLY RIBBON ROOM



(X) = Smear Locations



DECONTAMINATION CONFIRMATORY SURVEY

BLDG 2 SECOND FLOOR BLOWER ROOM

SUMMARY OF ACTIVITIES

The area adjacent to the moly ribbon room contained an air handling/ventillation system. The blower unit, filters and duct work were removed and disposed of as rad waste. The tile floor was removed and parts of the underlying wood floor cleaned. The surface of a concrete slab was scabbled.

Approximately 90% of the area was surveyed for beta activity and 50% for alpha activity.

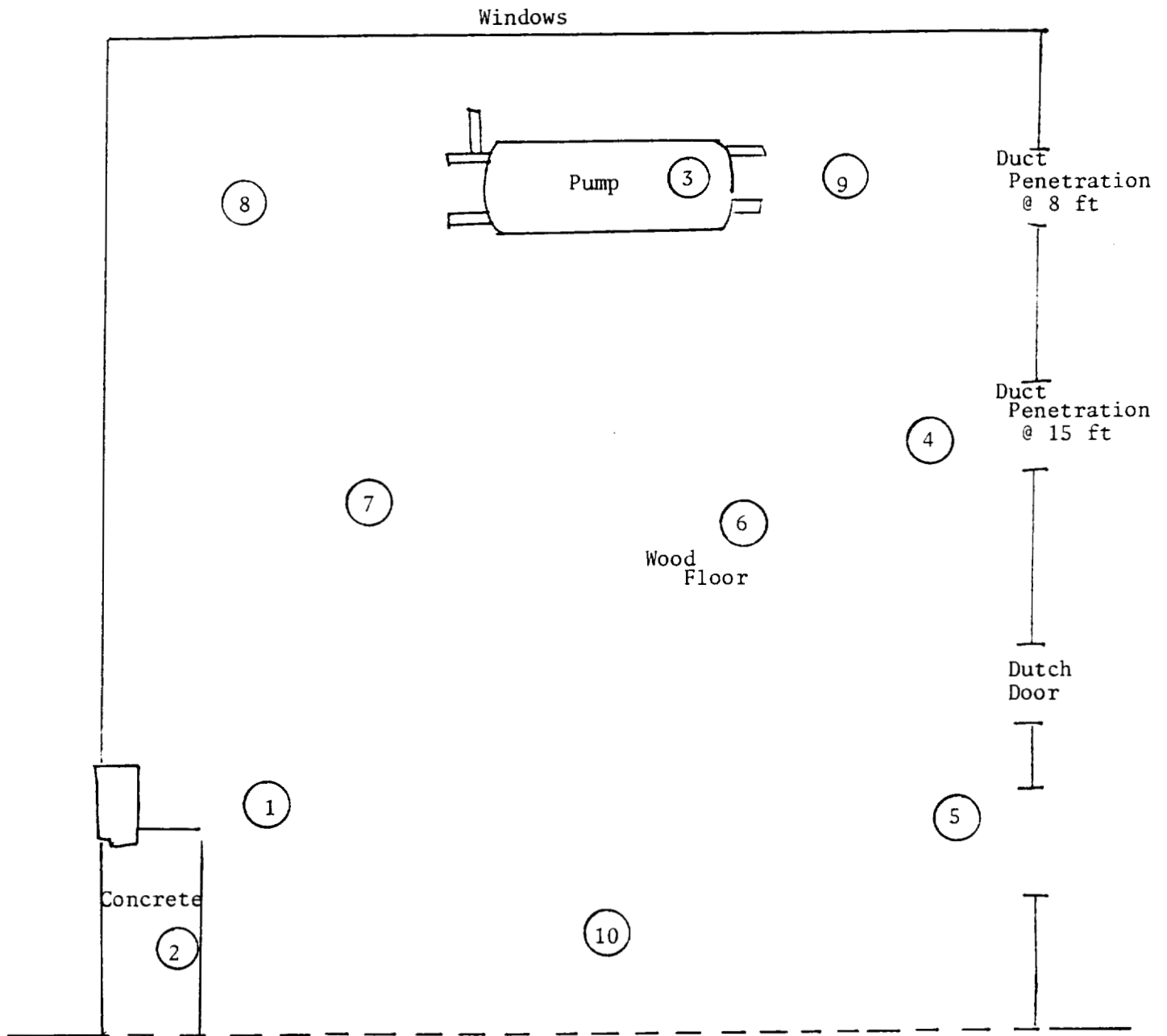
DECONTAMINATION CONFIRMATORY SURVEY

BLDG 2, SECOND FLOOR, BLOWER ROOM

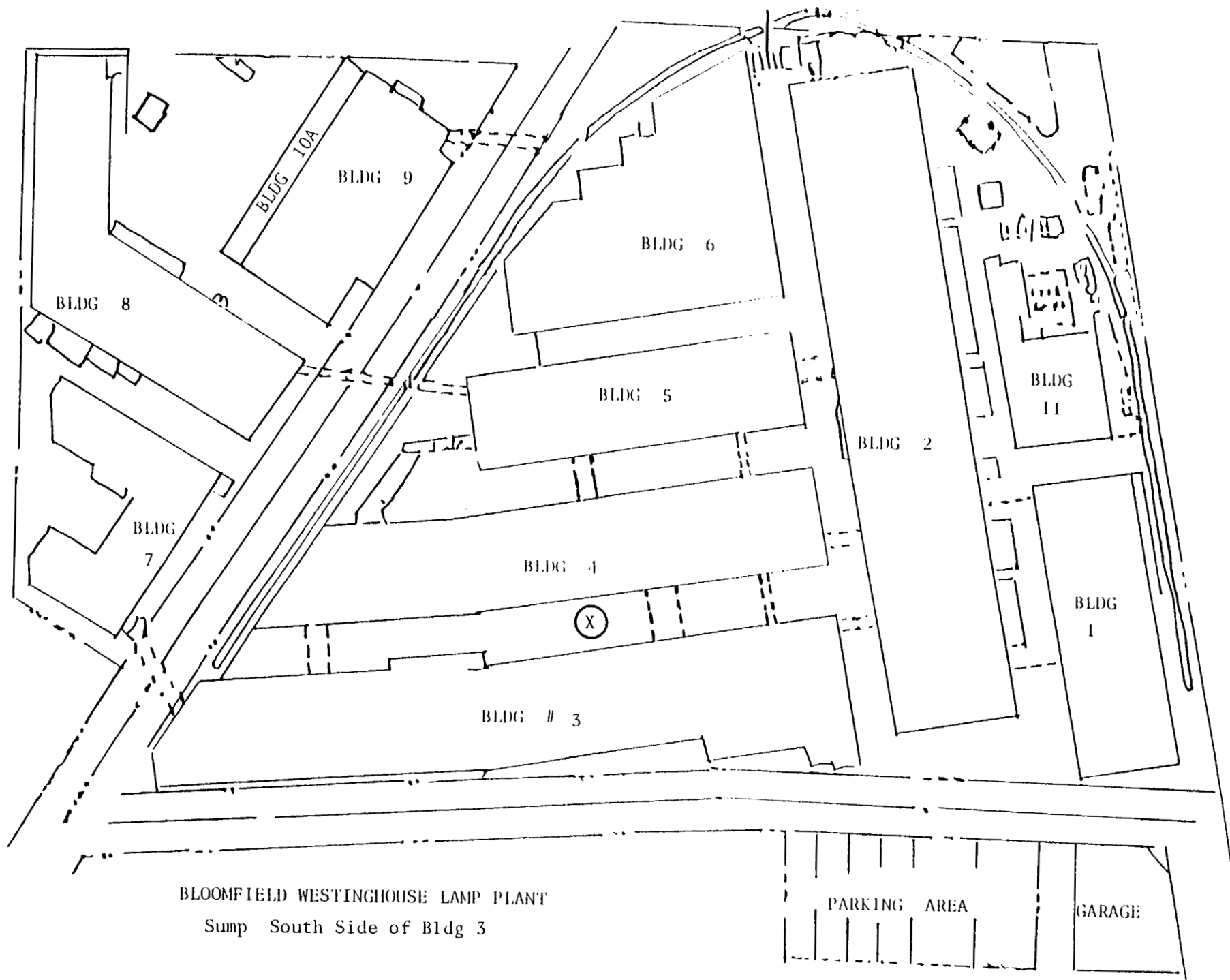
| Sample Location | Alpha | | Beta | | mrad/hr |
|-----------------|---------------------------------|-------------------------------------|---------------------------------|-------------------------------------|---------|
| | Total DPM/100cm ² | Removable DPM/100cm ² | Total DPM/100cm ² | Removable DPM/100cm ² | |
| 1 | < 10 | < 2 | < 200 | < 8 | < 0.020 |
| 2 | < 10 | < 2 | < 200 | < 8 | < 0.020 |
| 3 | < 10 | < 2 | < 200 | < 8 | < 0.020 |
| 4 | < 10 | < 2 | < 200 | < 8 | < 0.020 |
| 5 | < 10 | < 2 | < 200 | < 8 | < 0.020 |
| 6 | < 10 | < 2 | < 200 | < 8 | < 0.020 |
| 7 | < 10 | < 2 | < 200 | < 8 | < 0.020 |
| 8 | < 10 | < 2 | < 200 | < 8 | < 0.020 |
| 9 | < 10 | < 2 | < 200 | < 8 | < 0.020 |
| 10 | < 10 | < 2 | < 200 | < 8 | < 0.020 |

Other isolated
areas to
800 dpm/100cm² (total fixed)

BLDG. 2 SECOND FLOOR BLOWER ROOM



⊗ = Smear locations



DECONTAMINATION CONFIRMATORY SURVEY

SUMP SOUTH SIDE BLDG. 3

SUMMARY OF ACTIVITIES

All surfaces inside the sump were steam cleaned along with abrasive removal techniques used on the sump ledge.

Surveys were performed with a Ludlum model 12 with a 44-9 probe for beta activity and a 43-5 probe for alpha activity. Drain pipes were steam cleaned and flushed with water to collect an aliquot for analysis. Smears and sample locations are shown on the diagram.

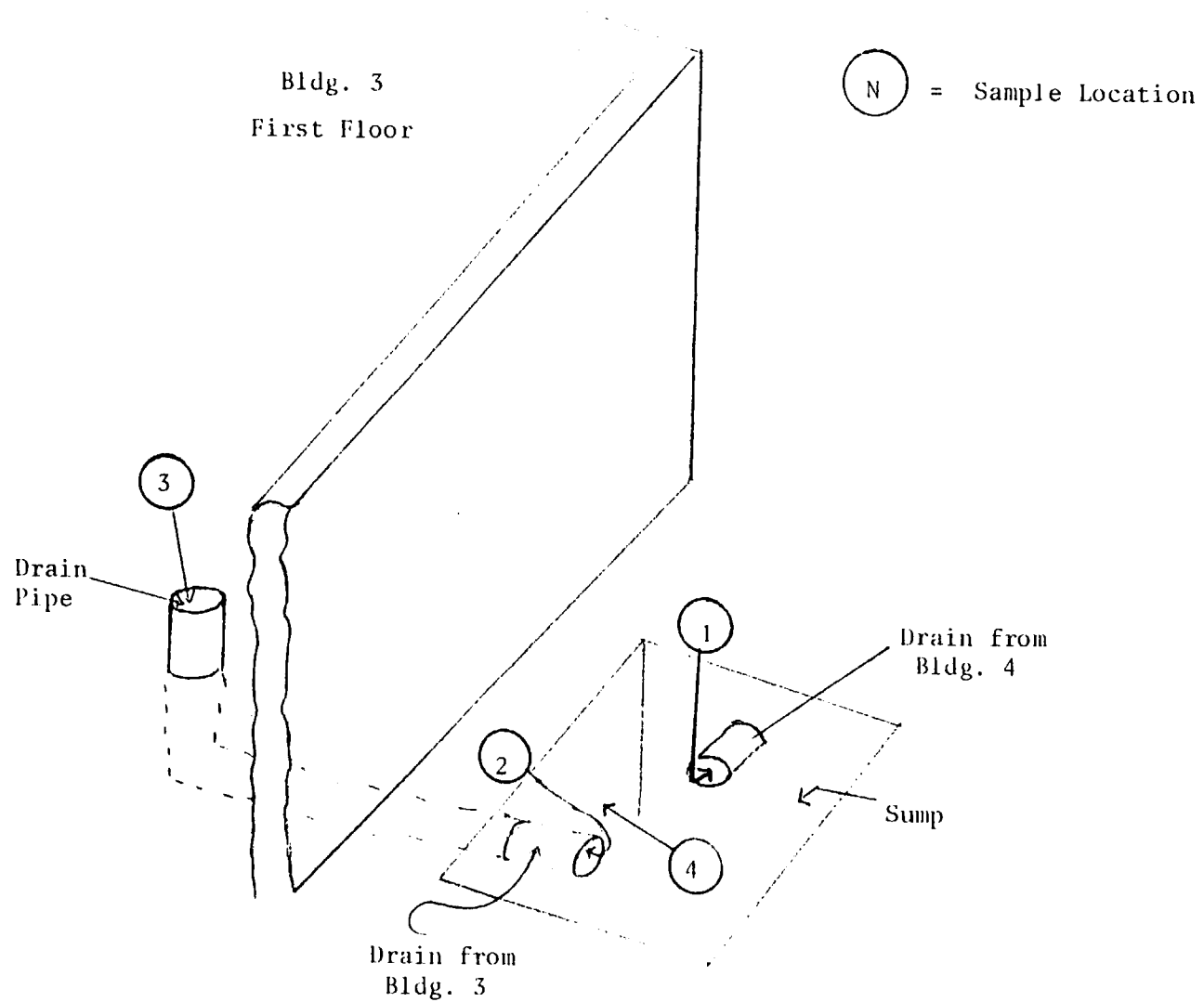
DECONTAMINATION CONFIRMATORY SURVEY

BLDG 3 SUMP, SOUTH SIDE

| Sample Location | Alpha | | Beta | | urad/hr |
|------------------------------------|--|-------------------------------------|---------------------------------|-------------------------------------|---------|
| | Total DPM/100cm ² | Removable DPM/100cm ² | Total DPM/100cm ² | Removable DPM/100cm ² | |
| 1 Inner pipe surface | * | 39 | 3400 | 47 | .070 |
| 2 Inner pipe surface | * | 23 | 2600 | 46 | .030 |
| 3 Inner pipe surface | * | 20 | 3100 | 29 | .050 |
| One liter water sample from sump | < 250 pCi/l < 100 pCi/l | | Th 232 Ra 226 | | |
| Wipe from tile surface inside sump | < 300 dpm/100cm ² < 280 dpm/100cm ² | | Th 232 U 235 | | |
| Wipe from inside sump | < 220 dpm/100cm ² | | Th 232 | | |
| Soil from location near sump cover | < 0.5 pCi/g < 0.8 pCi/g | | Th 232 Ra 226 | | |
| Gravel and sludge from sump | 2.3 ± 0.4 pCi/g < 1 pCi/g | | Th 232 Ra 226 | | |

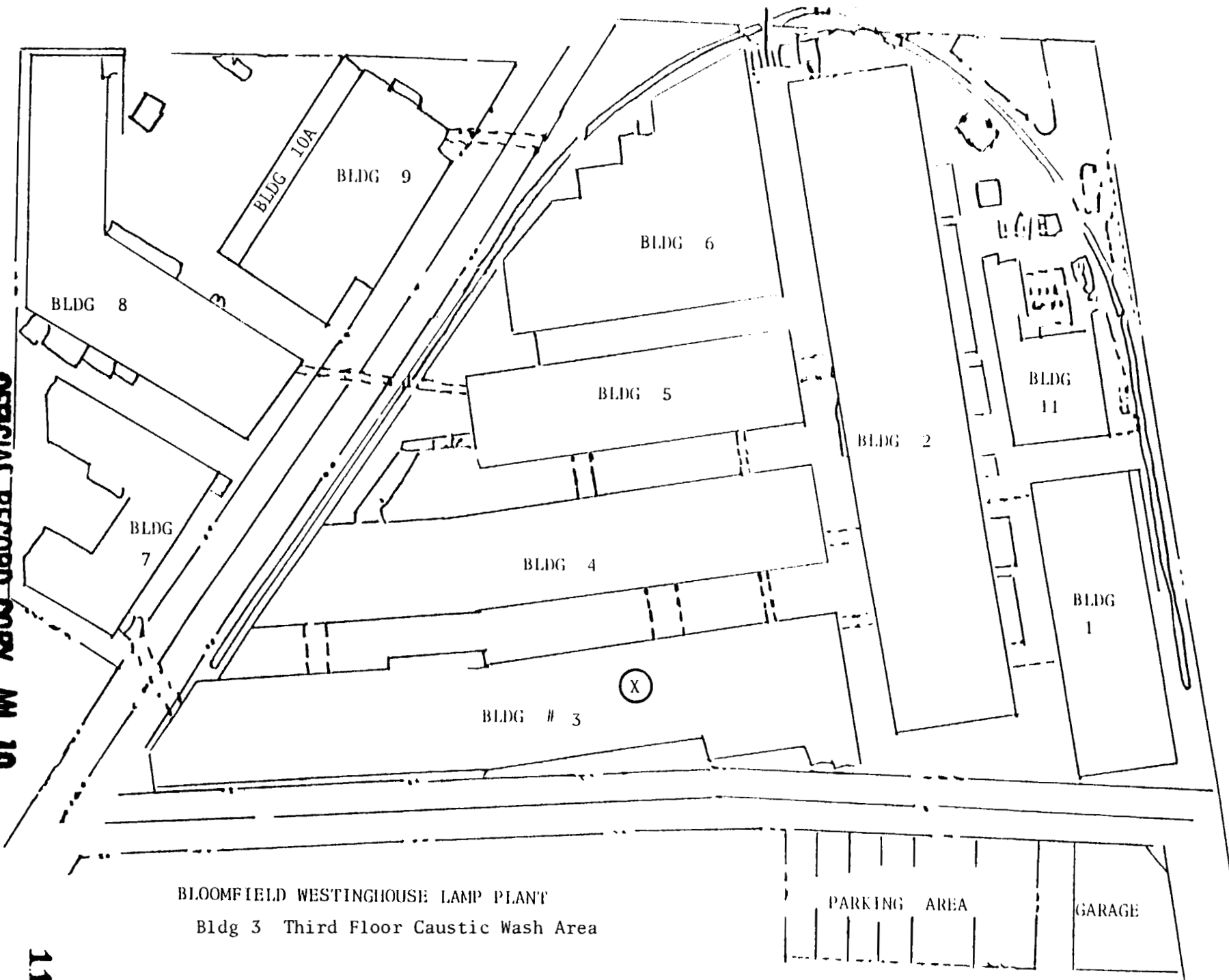
* unable to fit alpha probe into pipe

BLDG. 3 SUMP SOUTH SIDE



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BLOOMFIELD WESTINGHOUSE LAMP PLANT
Bldg 3 Third Floor Caustic Wash Area

DECONTAMINATION CONFIRMATORY SURVEY

BLDG. 3, 3rd FLOOR

SUMMARY OF ACTIVITIES

The brick flooring and sub-floor below it were removed and disposed as rad waste, as was drain piping exiting from the caustic wash area.

Surveys were performed with a Johnson GSM-10 with a pancake, PPA-2 probe for beta activity and a Ludlum model 12 and a 43-5 probe for alpha activity.

Approximately 80% of flooring, 60% of wall surfaces were surveyed. The location of surface swipes is shown on the diagram. No activities above background were detected.

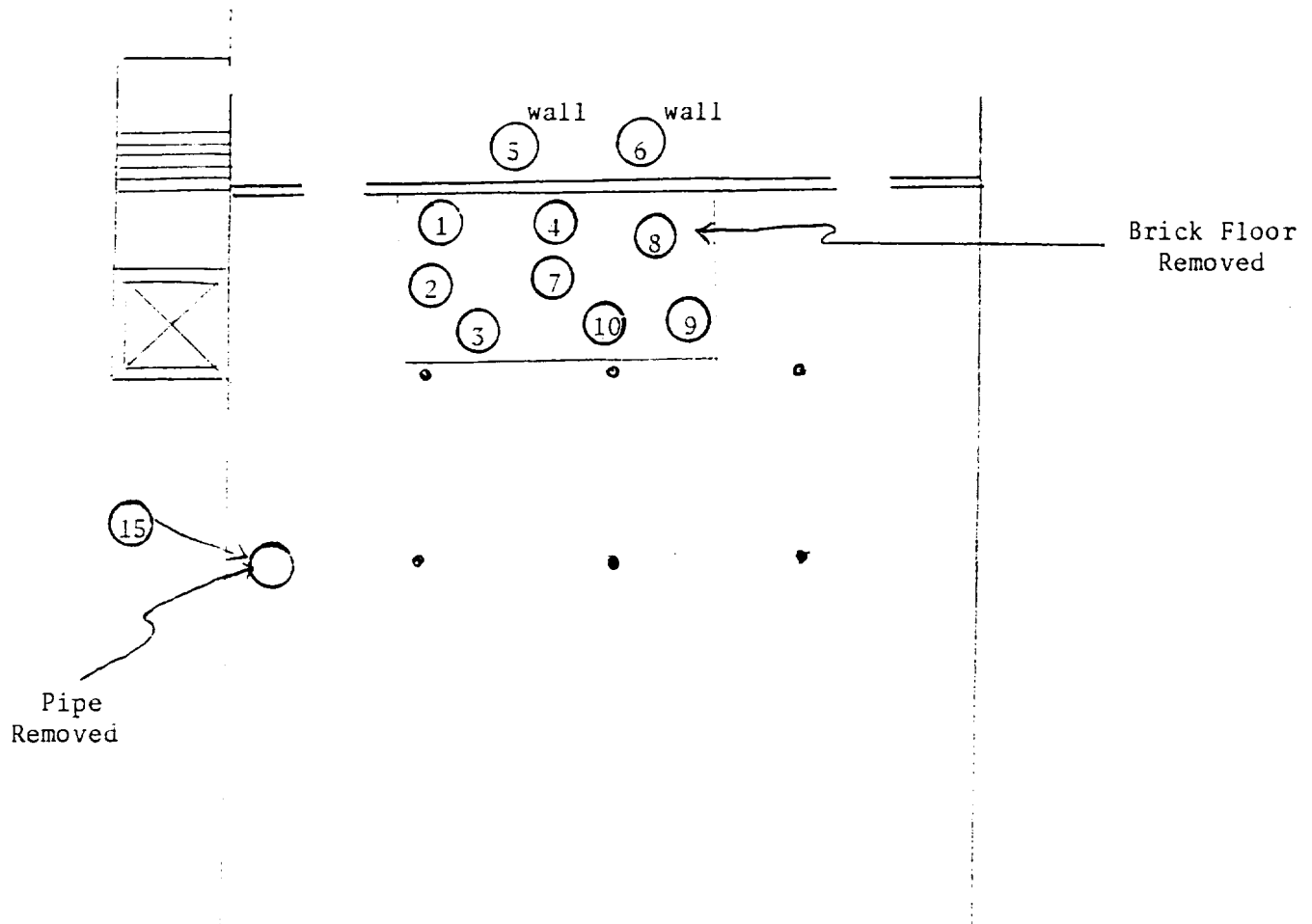
DECONTAMINATION CONFIRMATORY SURVEY

BLDG 3 THIRD FLOOR CAUSTIC WASH AREA

| Sample Location | Alpha | | Beta | | mrad/hr |
|---------------------------------------|---------------------------------|-------------------------------------|---------------------------------|-------------------------------------|---------|
| | Total DPM/100cm ² | Removable DPM/100cm ² | Total DPM/100cm ² | Removable DPM/100cm ² | |
| 1 Caustic wash floor (bricks removed) | < 10 | < 2 | < 200 | < 7 | < 0.010 |
| 2 Caustic wash floor (bricks removed) | < 10 | < 2 | < 200 | < 7 | < 0.010 |
| 3 Caustic wash floor (bricks removed) | < 10 | < 2 | < 200 | < 7 | < 0.010 |
| 4 Caustic wash floor (bricks removed) | < 10 | < 2 | < 200 | < 7 | < 0.010 |
| 5 Caustic wash wall | < 10 | < 4 | < 200 | < 7 | < 0.010 |
| 6 Caustic wash wall | < 10 | 3 | < 200 | < 7 | < 0.010 |
| 7 Caustic wash floor | < 10 | < 2 | < 200 | < 7 | < 0.010 |
| 8 Caustic wash floor | < 10 | < 2 | < 200 | < 7 | < 0.010 |
| 9 Caustic wash floor | < 10 | < 2 | < 200 | < 7 | < 0.010 |
| 10 Caustic wash floor | < 10 | < 2 | < 200 | < 7 | < 0.010 |

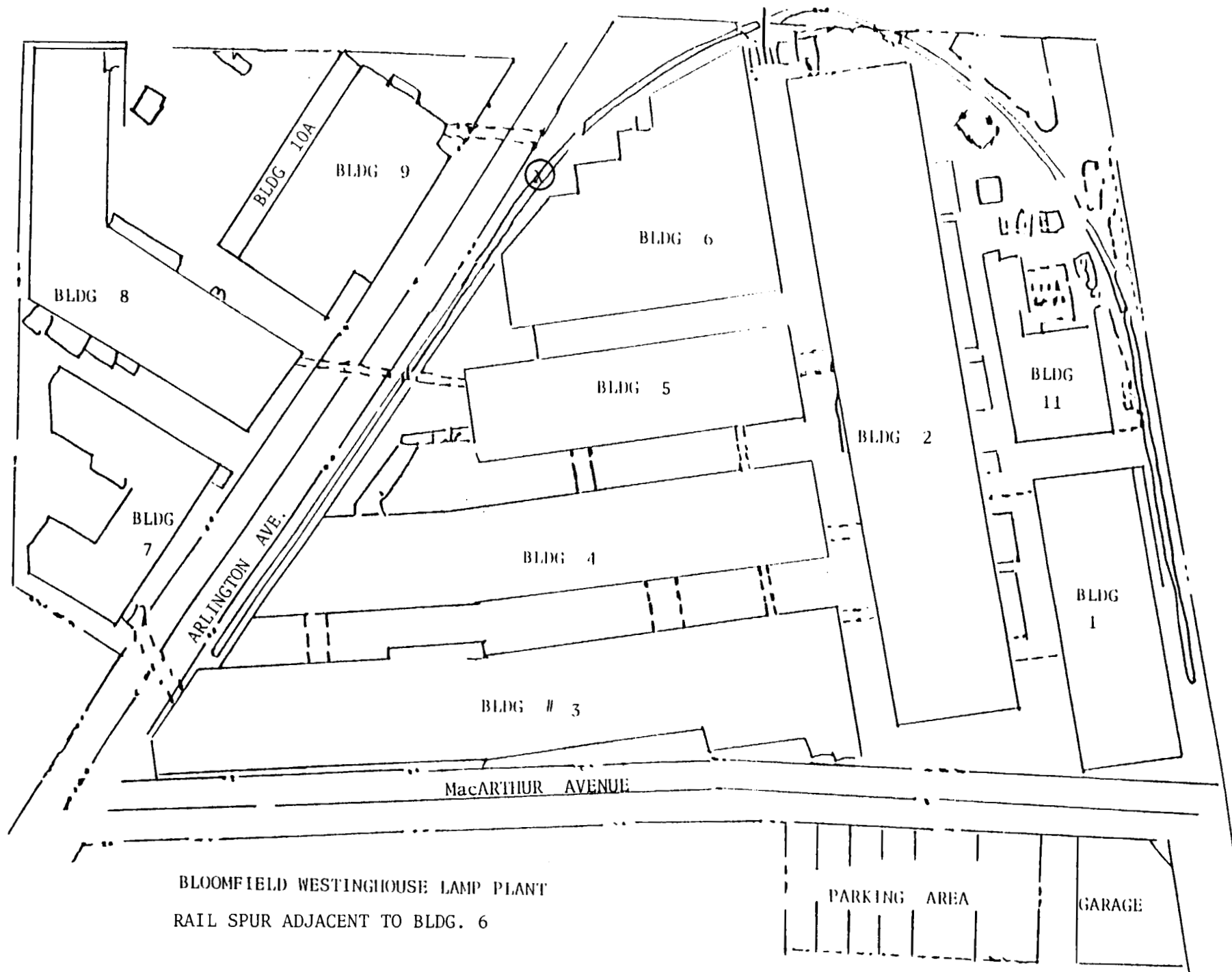
| Sample Location | Alpha | | Beta | | mrad/hr |
|-----------------------------------|---------------------------------|--|---------------------------------|--|---------|
| | Total DPM/100cm ² | Removable ₂ DPM/100cm ² | Total DPM/100cm ² | Removable ₂ DPM/100cm ² | |
| 11 2nd Floor walls | < 10 | < 2 | < 200 | < 7 | < 0.010 |
| 12 2nd Floor walls | < 10 | < 2 | < 200 | < 7 | < 0.010 |
| 13 2nd Floor walls | < 10 | < 2 | < 200 | < 7 | < 0.010 |
| 14 2nd Floor walls | < 10 | < 2 | < 200 | < 7 | < 0.010 |
| 15 Pipe hole | < 10 | < 2 | < 200 | < 7 | < 0.010 |
| 16 2nd Floor wall under pipe hole | < 10 | < 2 | < 200 | < 7 | < 0.010 |
| 17 1st Floor - floor under pipe | < 10 | < 2 | < 200 | < 7 | < 0.010 |
| 18 1st Floor - wall under pipe | < 10 | 2 | < 200 | < 7 | < 0.010 |
| 19 1st Floor - existing pipe | < 10 | < 2 | < 200 | < 7 | < 0.010 |
| 20 1st Floor - existing pipe | < 10 | 8 | < 200 | < 6 | < 0.010 |

BLDG. 3 THIRD FLOOR CAUSTIC WASH AREA



(N) = Smear Location

Smear Locations 11-14, 16 on second floor
17-20 on first floor



BLOOMFIELD WESTINGHOUSE LAMP PLANT
RAIL SPUR ADJACENT TO BLDG. 6

DECONTAMINATION CONFIRMATORY SURVEY

RAIL SPUR ADJACENT TO BLDG. 6

SOIL ANALYSIS RESULTS

| <u>Sample Location</u> | <u>Activity</u> | <u>Nuclide</u> |
|------------------------|------------------------------------|------------------|
| "A" | 1.3 + 0.7 pCi/g < 1.0 pCi/g | Th-232 Ra-226 |
| "B" | 1.5 + 0.7 pCi/g < 1.0 pCi/g | Th-232 Ra-226 |
| "C" | 2.5 + 1.4 pCi/g 2.0 + 1.8 pCi/g | Th-232 Ra-226 |
| "D" | 3.0 + 1.5 pCi/g 3.0 + 2.1 pCi/g | Th-232 Ra-226 |
| "E" | 2.7 + 1.3 pCi/g | Th-232 |
| "F" | 3.0 + 1.5 pCi/g | Th-232 |
| "G" | < 1.0 pCi/g 5.5 + 2.1 pCi/g | U-238 Th-232 |
| "H" | 1.5 + 0.8 pCi/g | Th-232 |
| "I" | 3.0 + 1.5 pCi/g < 1 pCi/g | Th-232 Th-232 |
| "J" | 3.5 + 1.6 pCi/g 1.2 + 1.0 pCi/g | Th-232 Ra-226 |
| "K" | 2.5 + 1.2 pCi/g | Th-232 |
| "L" | 3.0 + 1.5 pCi/g | Th-232 |
| "M" | 2.0 + 1.0 pCi/g | Th-232 |
| "N" | 2.5 + 1.2 pCi/g | Th-232 |
| "O" | 2.5 + 1.2 pCi/g | Th-232 |
| "P" | 1.5 + 0.8 pCi/g 1.0 + 0.9 pCi/g | Th-232 Ra-226 |

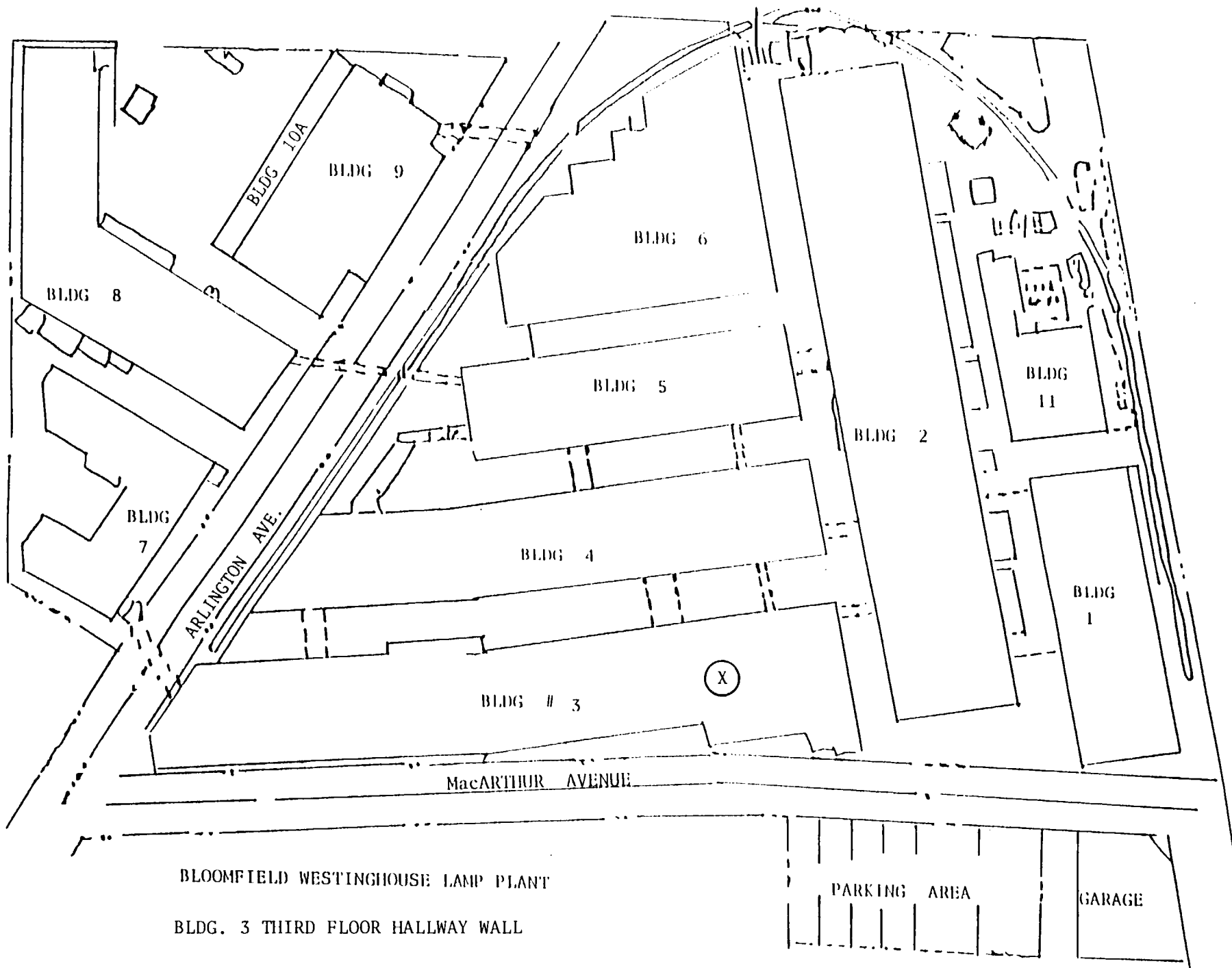
DECONTAMINATION CONFIRMATORY SURVEY

RAIL SPUR ADJACENT TO BLDG. 6

SUMMARY OF ACTIVITIES

Surface soil was removed from an area 17.5 feet x 80 feet, and shipped as rad waste. The ties and rails were removed and pressure washed.

Surveys were performed with a Johnson GSM-10 and GSP-2A NaI detector. The readings shown on the diagram were taken on contact. Soil samples were analyzed utilizing the gamma spectroscopy system, consisting of an EG&G Ortec intrinsic germanium detector and a Tracor Northern multi-channel analyzer. No activities significantly above background were detected.



DECONTAMINATION CONFIRMATORY SURVEY

BLDG. 3, THIRD FLOOR HALLWAY WALL

SUMMARY OF ACTIVITIES

Slightly elevated exposure rates (0.1 mR/hr) were measured on contact with the hallway wall. Samples from the wall showed the material to contain naturally occurring Ra-226 and daughters, below release criteria. Smears showed no removable contamination. No remediation was performed.

DECONTAMINATION CONFIRMATORY SURVEY

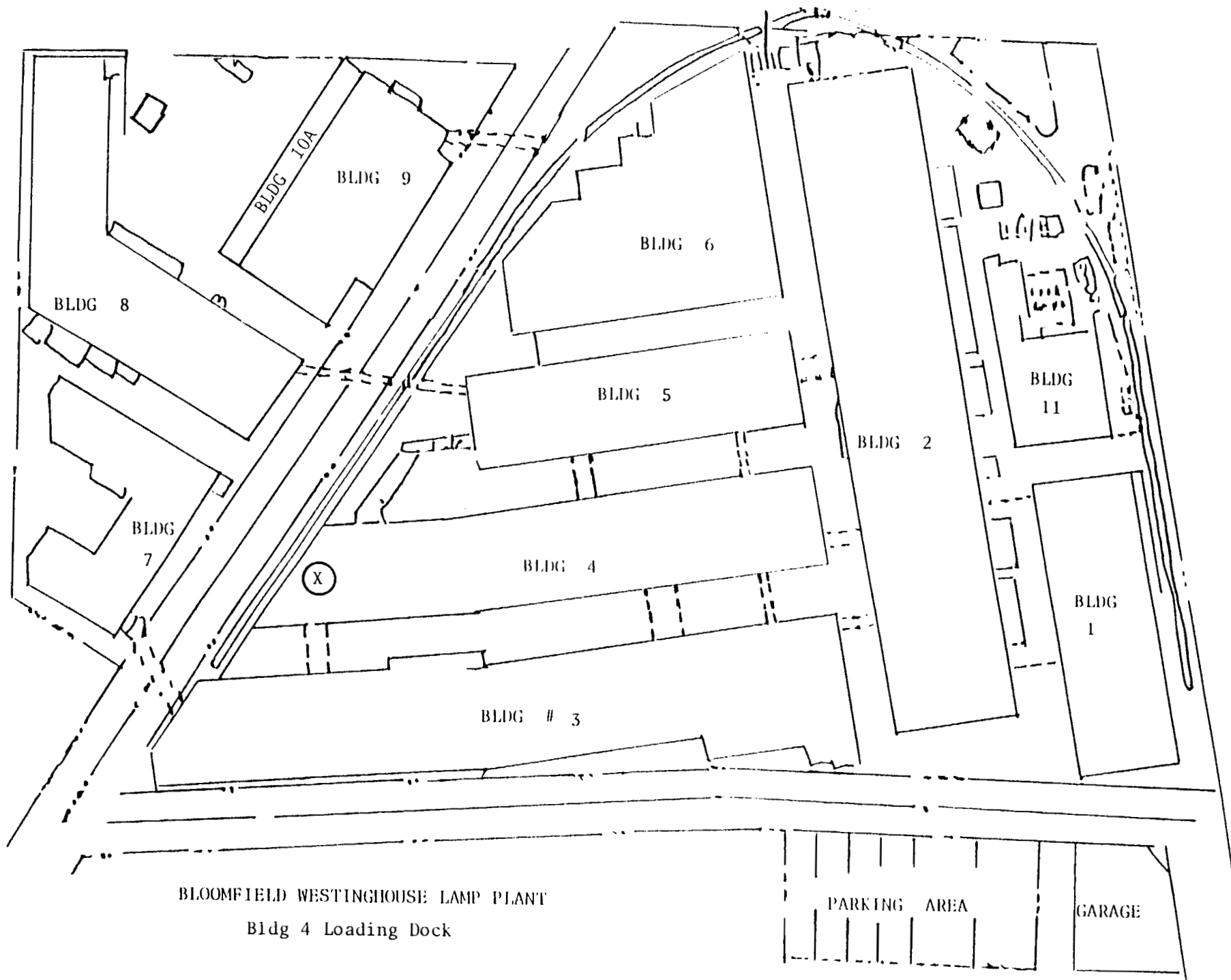
BLDG. 3 THIRD FLOOR HALLWAY WALL

SURVEY RESULTS

| <u>Sample Location</u> | ALPHA | | BETA | | <u>mrad/hr</u> |
|----------------------------|--|--|--|--|----------------|
| | <u>Total DPM/100cm²</u> | <u>Removable DPM/100cm²</u> | <u>Total DPM/100cm²</u> | <u>Removable DPM/100cm²</u> | |
| 1 | not taken | < 2 | not taken | < 10 | < 0.12 |
| 2 | not taken | < 2 | not taken | < 10 | < 0.12 |
| 3 | not taken | < 2 | not taken | < 10 | < 0.12 |
| 4 | not taken | < 2 | not taken | < 10 | < 0.12 |
| 5 | not taken | < 2 | not taken | < 10 | < 0.12 |
| 6 | not taken | < 2 | not taken | < 10 | < 0.12 |
| 7 | not taken | < 2 | not taken | < 10 | < 0.12 |
| 8 | not taken | < 2 | not taken | < 10 | < 0.12 |

Wall Material Sample 2.7 \pm 1.0 pCi/g Ra-226

Note - No area diagram for this location



DECONTAMINATION CONFIRMATORY SURVEY

BLDG. 4 LOADING DOCK

SUMMARY OF ACTIVITIES

Tile was removed and the concrete floor beneath the tile was scabbled to remove contamination that was fixed within the concrete.

Surveys were performed with a Ludlum Model 12 and 44-9 probe for beta activity, and a 43-5 probe for alpha activity. Approximately 80% of floor area was covered. The location of surface swipes is shown on the diagram. No activities significantly above background were detected.

DECONTAMINATION CONFIRMATORY SURVEY

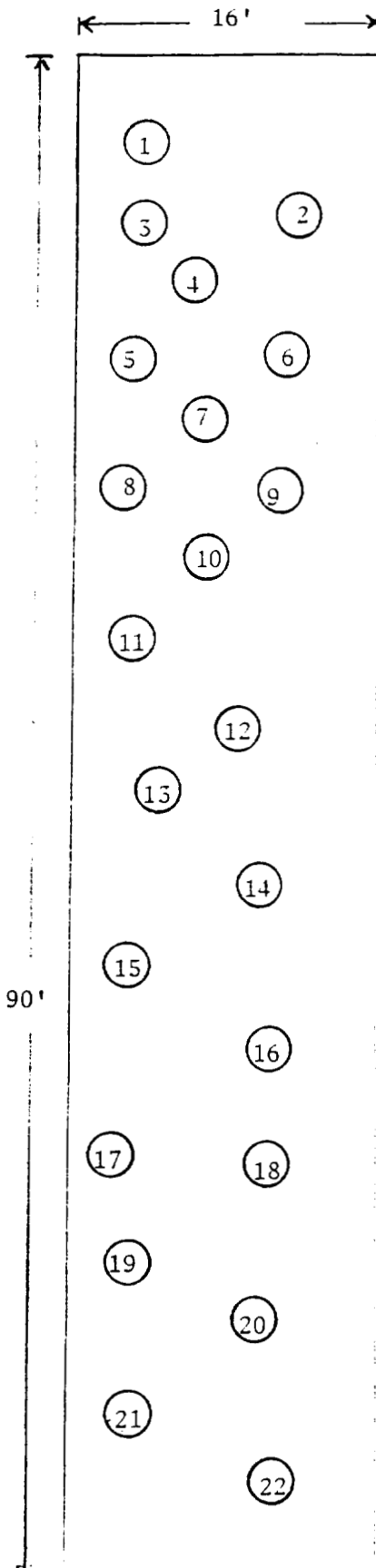
BLDG 4 LOADING DOCK

| Sample Location | Alpha | | Beta | | mrad/hr |
|-------------------|---------------------------------|--|---------------------------------|--|---------|
| | Total DPM/100cm ² | Removable ₂ DPM/100cm ² | Total DPM/100cm ² | Removable ₂ DPM/100cm ² | |
| 1 Concrete Floor | < 10 | < 4 | < 200 | < 10 | < 0.010 |
| 2 Concrete Floor | < 10 | < 4 | < 200 | < 10 | < 0.010 |
| 3 Concrete Floor | < 10 | < 4 | < 200 | < 10 | < 0.010 |
| 4 Concrete Floor | < 10 | < 4 | < 200 | < 10 | < 0.010 |
| 5 Concrete Floor | < 10 | < 4 | < 200 | < 10 | < 0.010 |
| 6 Concrete Floor | < 10 | < 4 | < 200 | < 10 | < 0.010 |
| 7 Concrete Floor | < 10 | < 4 | < 200 | < 10 | < 0.010 |
| 8 Concrete Floor | < 10 | < 4 | < 200 | < 10 | < 0.010 |
| 9 Concrete Floor | < 10 | < 4 | < 200 | < 10 | < 0.010 |
| 10 Concrete Floor | < 10 | < 4 | < 200 | < 10 | < 0.010 |
| 11 Concrete Floor | < 10 | < 4 | < 200 | < 10 | < 0.010 |
| 12 Concrete Floor | < 10 | < 4 | < 200 | < 10 | < 0.010 |
| 13 Concrete Floor | < 10 | < 4 | < 200 | < 10 | < 0.010 |
| 14 Concrete Floor | < 10 | < 4 | < 200 | < 10 | < 0.010 |
| 15 Concrete Floor | < 10 | < 4 | < 200 | < 10 | < 0.010 |

| Sample Location | Alpha | | Beta | | mrad/hr |
|-------------------|---------------------------------|--|---------------------------------|--|---------|
| | Total DPM/100cm ² | Removable ₂ DPM/100cm ² | Total DPM/100cm ² | Removable ₂ DPM/100cm ² | |
| 16 Concrete Floor | < 10 | < 4 | < 200 | < 10 | < 0.010 |
| 17 Concrete Floor | < 10 | < 4 | < 200 | < 10 | < 0.010 |
| 18 Concrete Floor | < 10 | < 4 | < 200 | < 10 | < 0.010 |
| 19 Concrete Floor | < 10 | < 4 | < 200 | < 10 | < 0.010 |
| 20 Concrete Floor | < 10 | < 4 | < 200 | < 10 | < 0.010 |
| 21 Concrete Floor | < 10 | < 4 | < 200 | < 10 | < 0.010 |
| 22 Concrete Floor | < 10 | < 4 | < 200 | < 10 | < 0.010 |

BUILDING 4

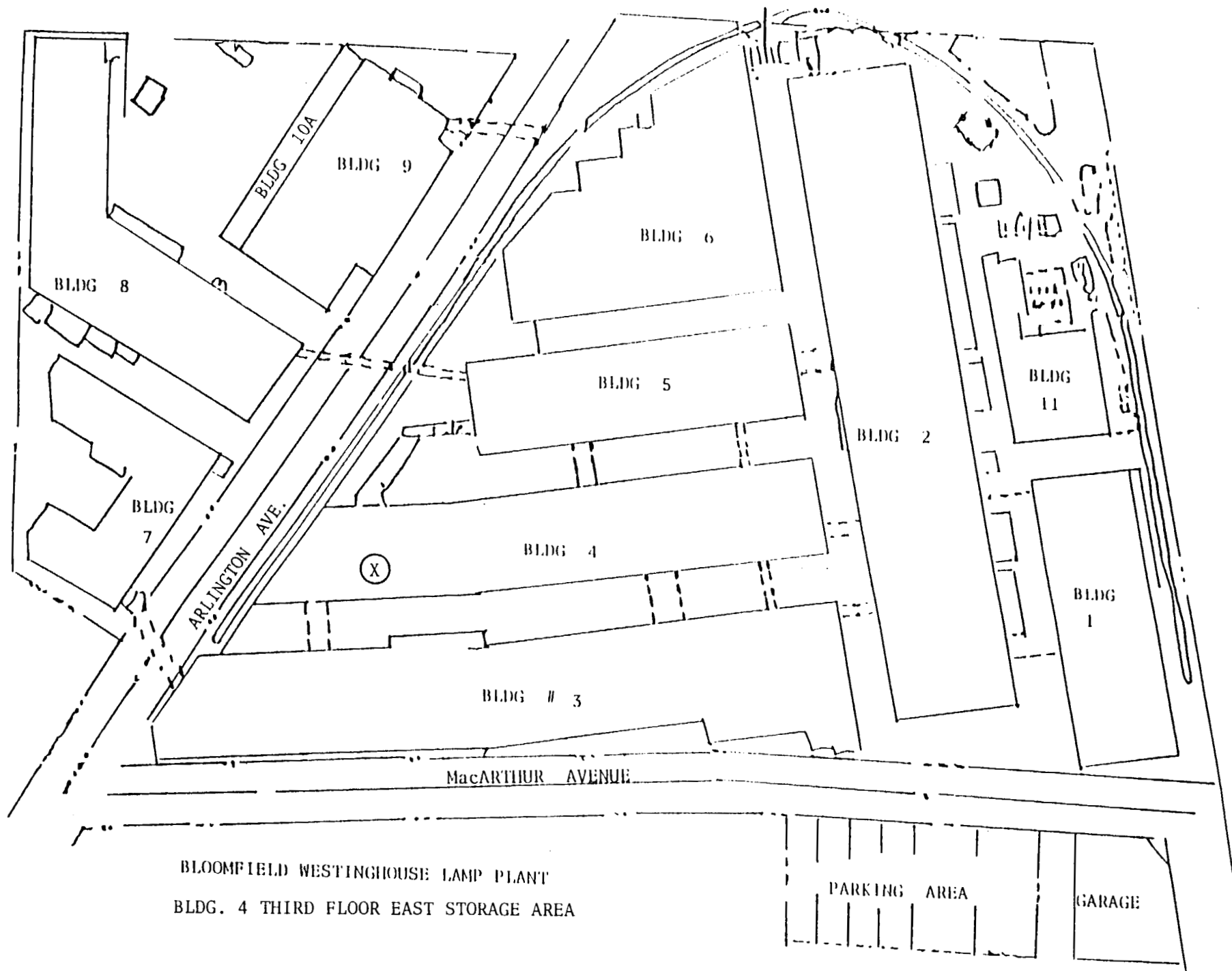
LOADING DOCK



(N) = Smear Locations

All alpha-beta survey
instrument readings
background

BLDG 4



DECONTAMINATION CONFIRMATORY SURVEY

BLDG 4 THIRD FLOOR EAST STORAGE AREA

SUMMARY OF ACTIVITIES

The entire wood and tile floor surfaces were removed in a 130 foot by 40 foot area and disposed of. Concrete below the flooring was scabbled in numerous locations. Portions of the room wall near the floor were removed and disposed. Isolated spots on the west wall were removed by scrapping. All areas were vacuumed. Isolated spots on pillars were removed with hand grinding and scraping.

DECONTAMINATION CONFIRMATORY SURVEY

BLDG 4 THIRD FLOOR EAST STORAGE AREA

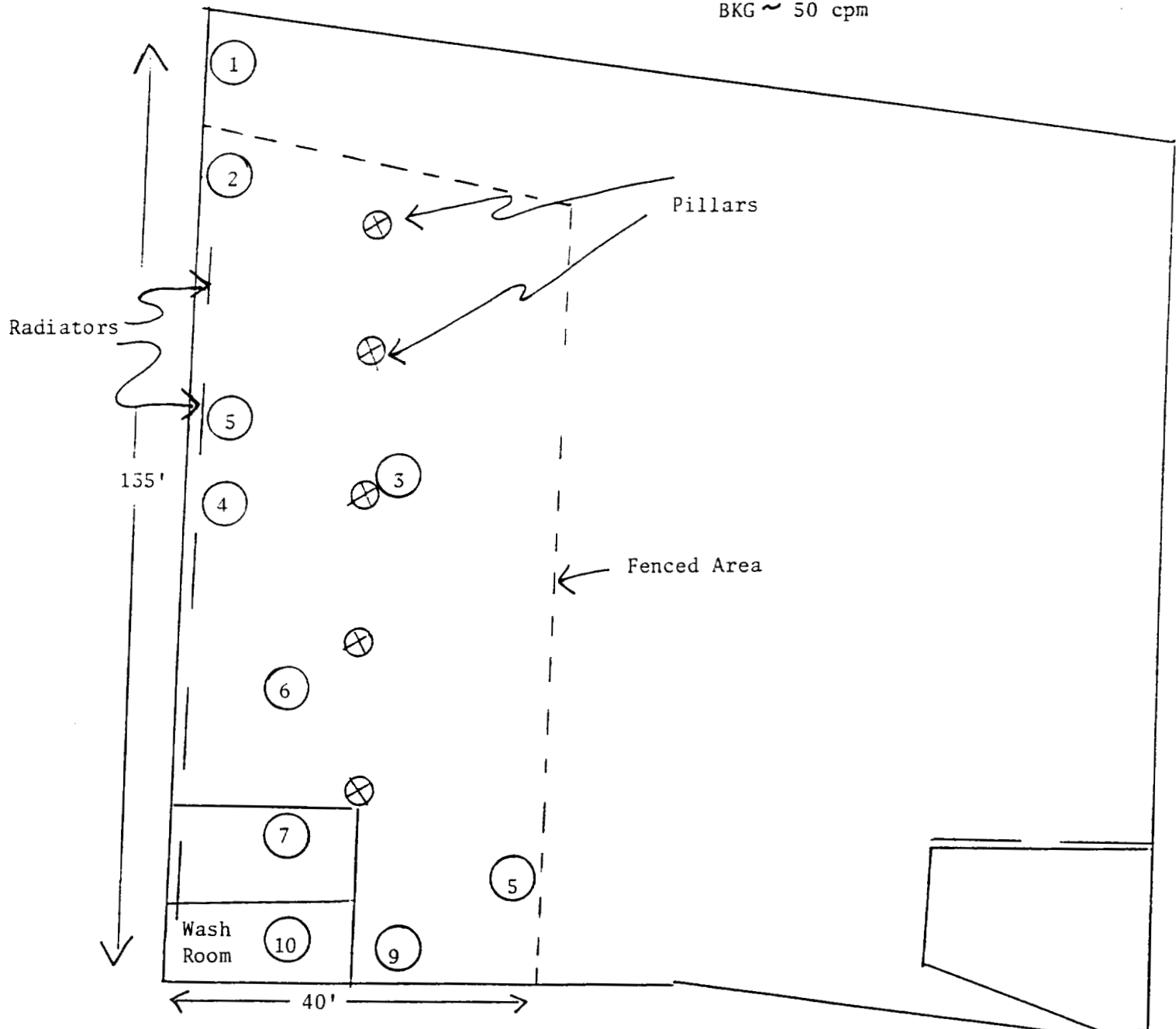
SURVEY RESULTS

| <u>Sample Location</u> | ALPHA | | BETA | | <u>mrads/hr</u> |
|----------------------------|--|--|---|--|-----------------|
| | <u>Total DPM/100cm²</u> | <u>Removable DPM/100cm²</u> | <u>Total DPM/100cm²</u> | <u>Removable DPM/100cm²</u> | |
| 1 | < 10 | < 2 | < 200 | < 10 | < 0.020 |
| 2 | < 10 | < 2 | < 200 | < 10 | < 0.020 |
| 3 | < 10 | < 2 | < 200 | < 10 | < 0.020 |
| 4 | < 10 | < 2 | < 200 | < 10 | < 0.020 |
| 5 | < 10 | 18 | < 200 | 12 | < 0.020 |
| 6 | < 10 | < 2 | < 200 | 19 | < 0.020 |
| 7 | < 10 | < 2 | < 200 | < 10 | < 0.020 |
| 8 | < 10 | < 2 | < 200 | < 10 | < 0.020 |
| 9 | < 10 | < 2 | < 200 | < 10 | < 0.020 |
| 10 | < 10 | < 2 | < 200 | < 10 | < 0.020 |
| All Other Areas | < 10 | not taken | < 200 except as noted on survey map | not taken | < 0.020 |

DECONTAMINATION CONFIRMATORY SURVEY
BLDG 4 THIRD FLOOR EAST STORAGE AREA

Floor Survey (N) = smear locations

60% of floor surveyed with Ludlum 12 meter
and 44-9 beta probe. All readings $< 200 \text{ dpm}/100\text{cm}^2$
BKG $\sim 50 \text{ cpm}$

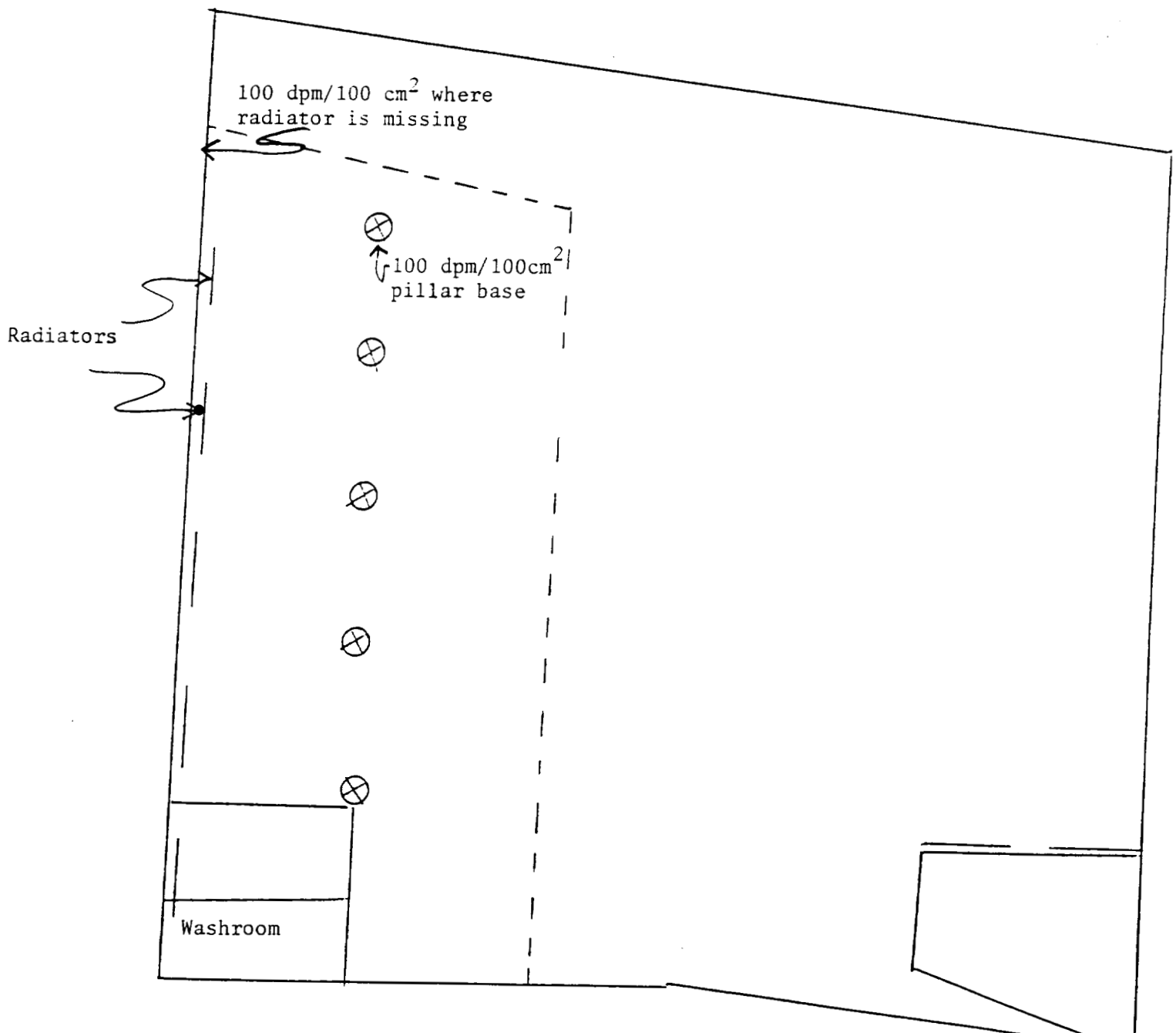


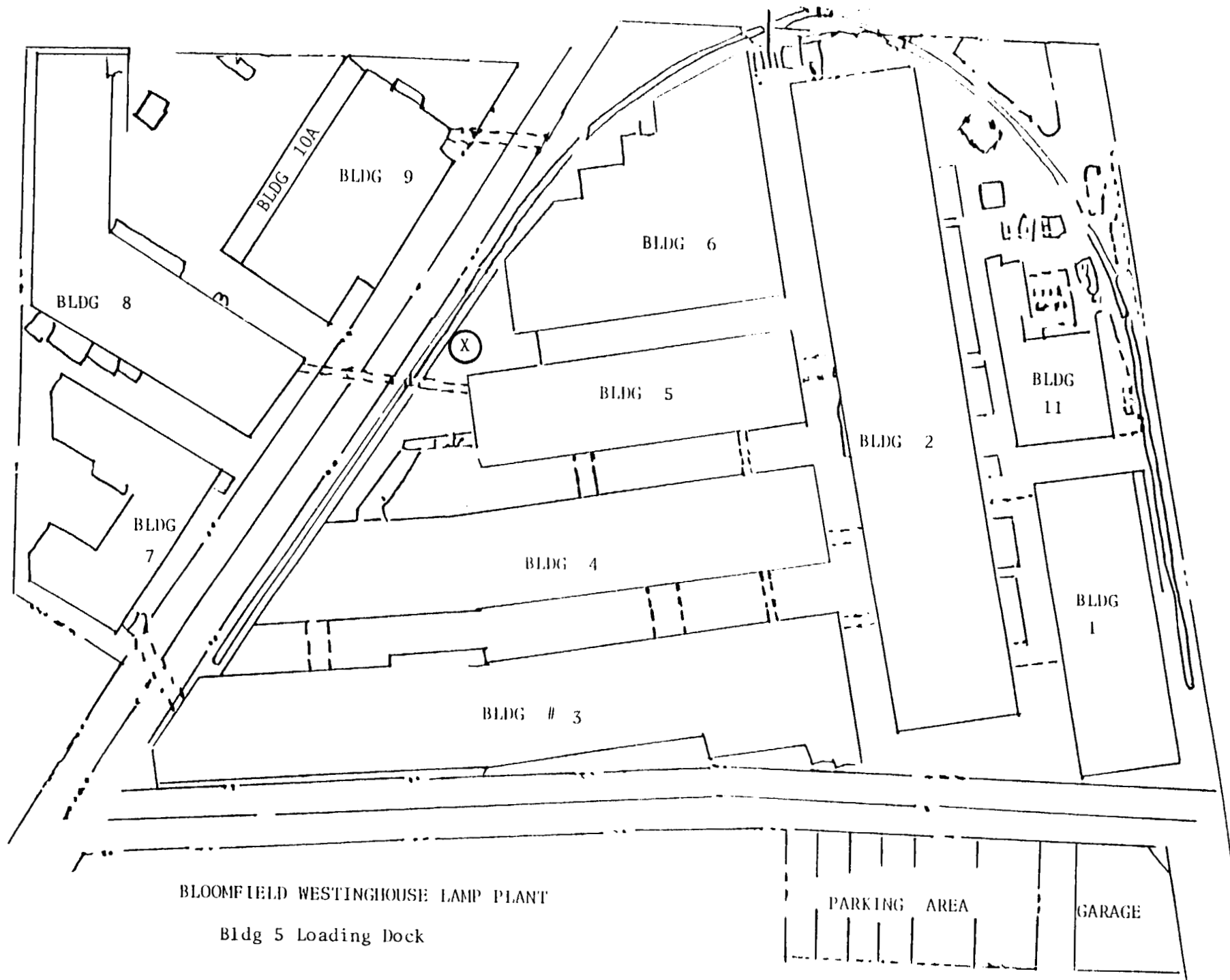
DECONTAMINATION CONFIRMATORY SURVEY

Bldg. 4 Third Floor East Storage Area

Wall and pillar survey

All areas to ~7 feet surveyed with Ludlum 12 meter and 44-9 beta probe. All readings < 200 dpm/100cm² except where noted





DECONTAMINATION CONFIRMATORY SURVEY

BLDG. 5, 1ST FLOOR LOADING DOCK

SUMMARY OF ACTIVITIES

A pallet with contaminated oil containers was removed and the surrounding floor was surveyed for release. The containers of oil were shipped out as rad waste.

Surveys were performed with a Ludlum model 12 and 44-9 probe for beta activity; 43-5 probe for alpha activity. Approximately 90% of pallet and 40% of floor adjacent to pallet were surveyed. Surface swipes were taken and no activities above background were detected.

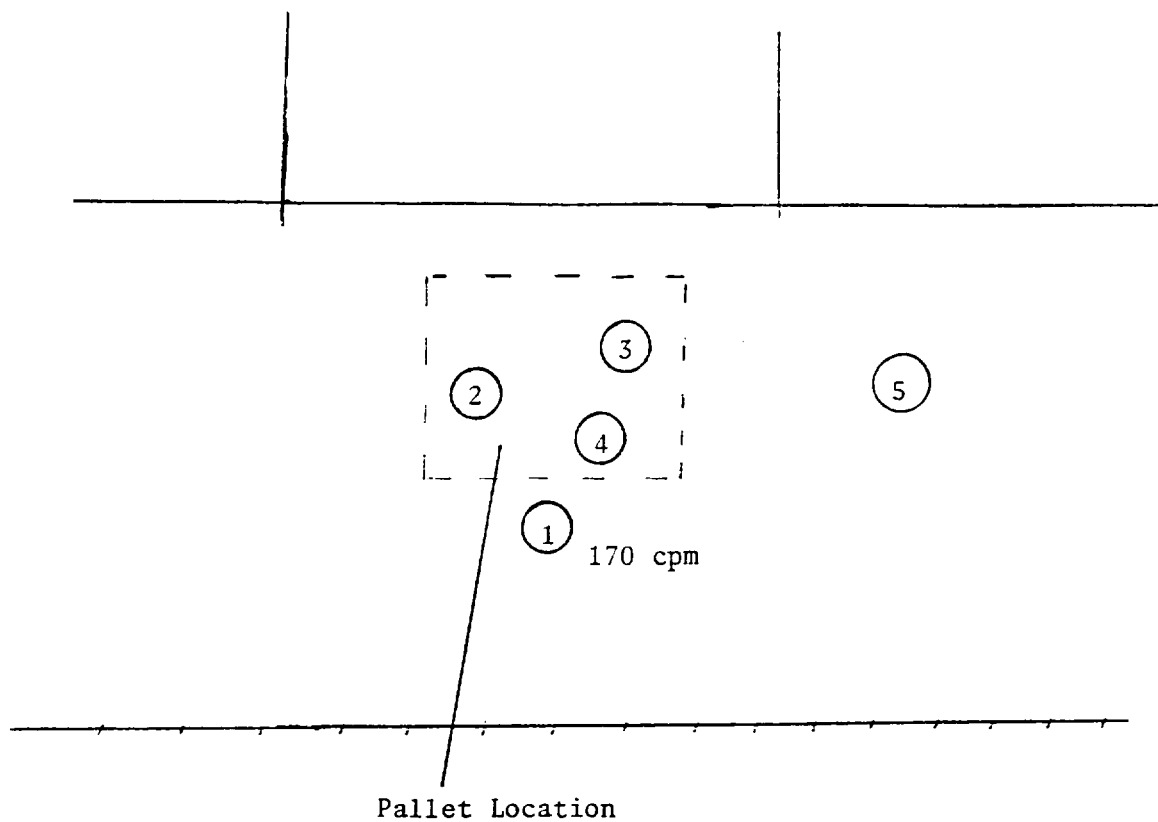
DECONTAMINATION CONFIRMATORY SURVEY

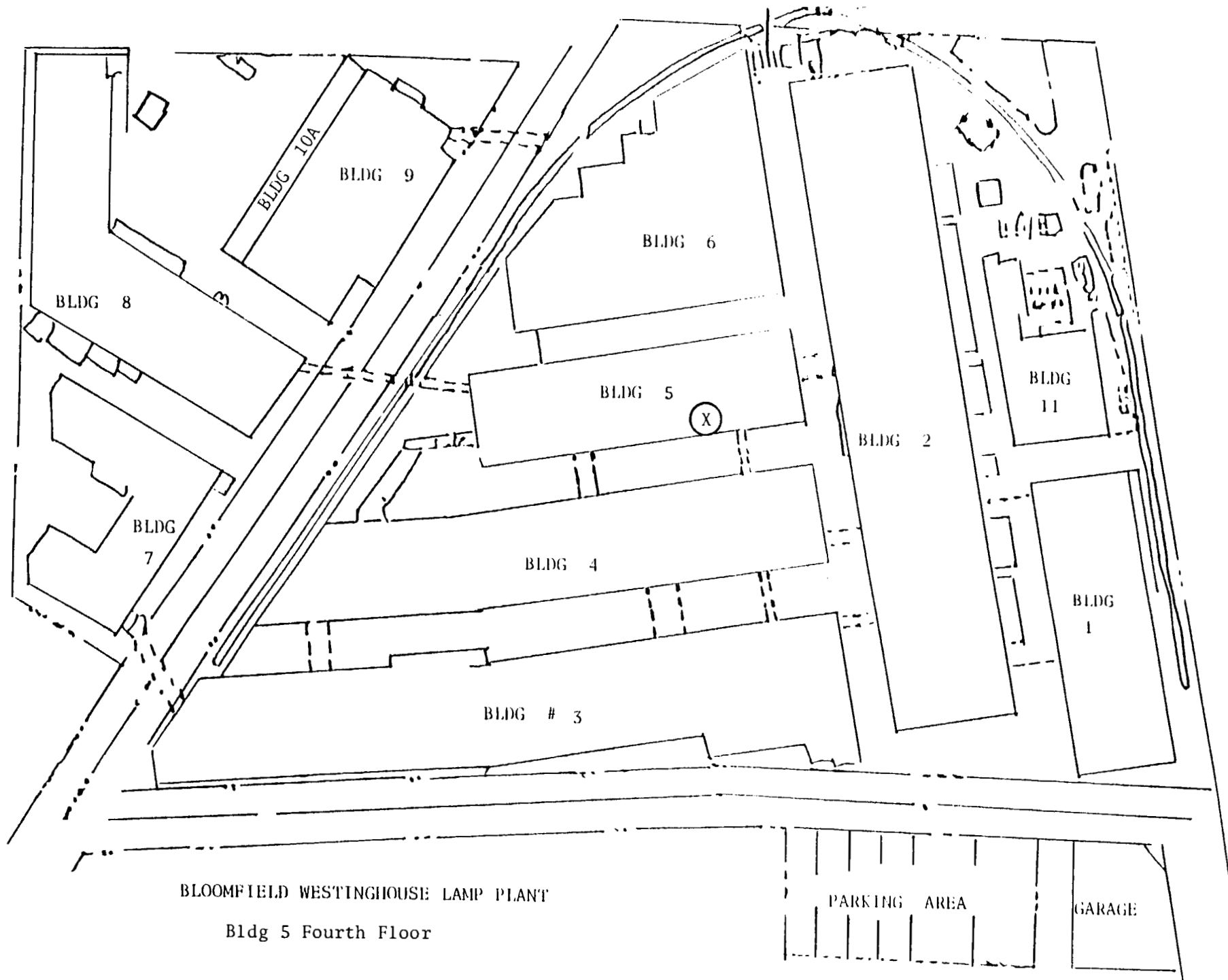
BLDG 5 LOADING DOCK

| Sample Location | Alpha | | Beta | | mrad/hr |
|-----------------|---------------------------------|--|---------------------------------|--|---------|
| | Total DPM/100cm ² | Removable ₂ DPM/100cm ² | Total DPM/100cm ² | Removable ₂ DPM/100cm ² | |
| 1 Loading Dock | < 10 | < 3 | 1200 | < 10 | 0.025 |
| 2 Loading Dock | < 10 | < 3 | < 200 | < 10 | < 0.010 |
| 3 Loading Dock | < 10 | < 3 | < 200 | < 10 | < 0.010 |
| 4 Loading Dock | < 10 | < 3 | < 200 | < 10 | < 0.010 |
| 5 Hallway | < 10 | < 3 | < 200 | < 10 | < 0.010 |

BLDG 5 First Floor Loading Dock

(N) = smear location





DECONTAMINATION CONFIRMATORY SURVEY

BLDG. 5, 4th FLOOR WEST

SUMMARY OF ACTIVITIES

A container with bricks was removed and shipped as rad waste. The floor where the bricks were located was surveyed for release.

Surveys were performed with a Ludlum model 12 and 44-9 probe for beta activity; 43-5 probe for alpha activity. Approximately 605 of surrounding floor area was surveyed. Surface swipes were taken and no activities above background were detected.

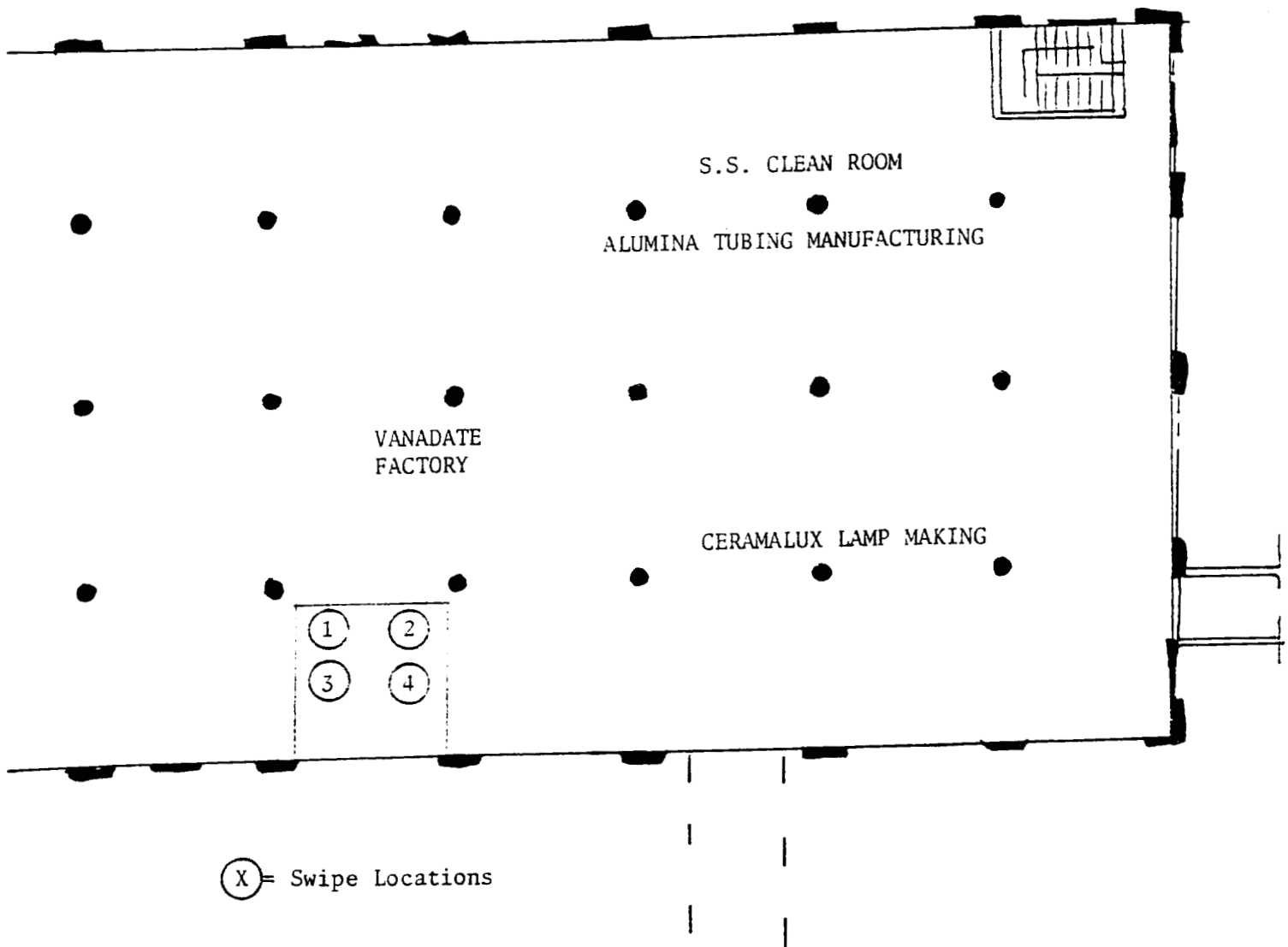
DECONTAMINATION CONFIRMATORY SURVEY

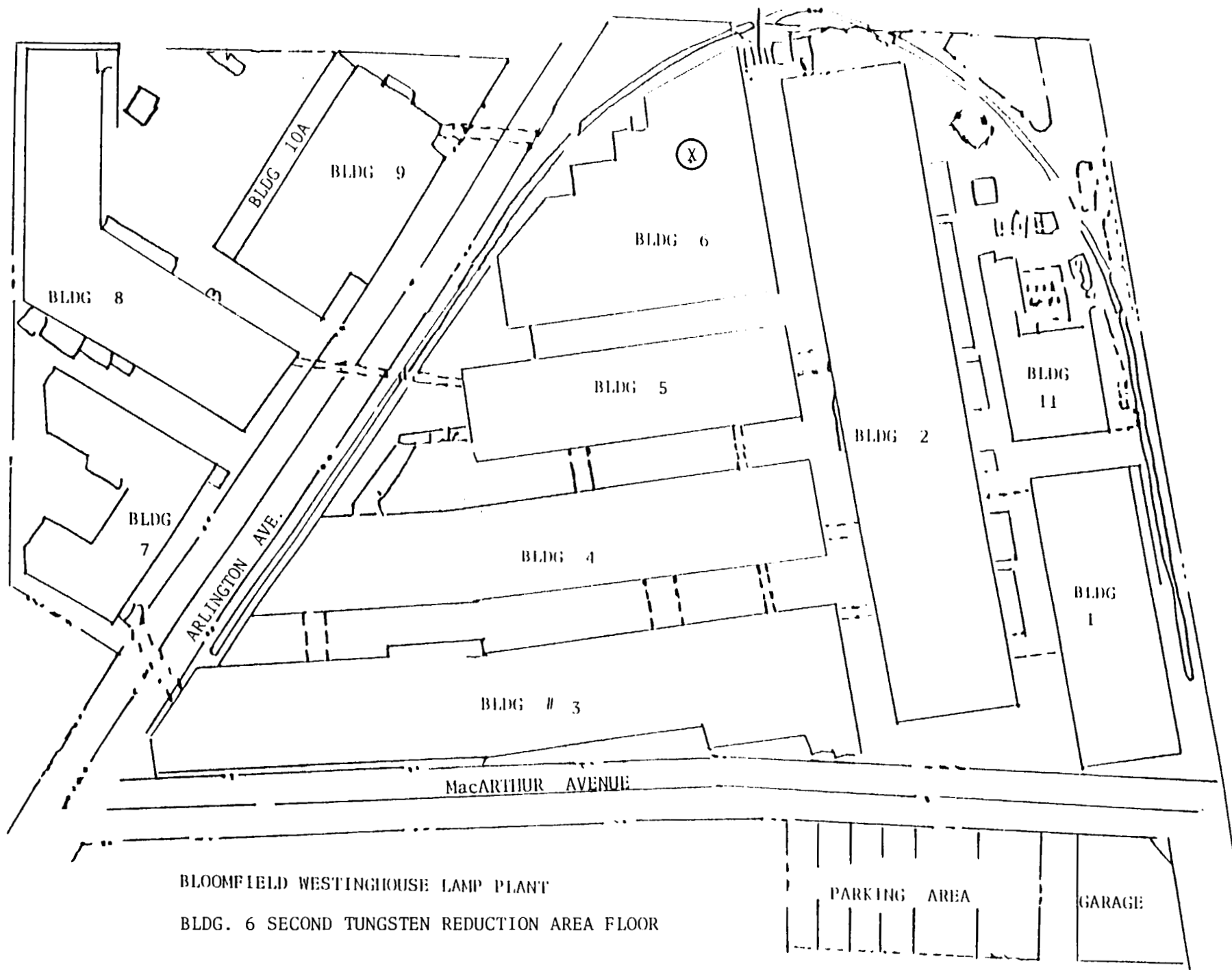
BLDG 5 FOURTH FLOOR WEST

| Sample Location | Alpha | | Beta | | mrad/hr |
|--|---------------------------------|--|---------------------------------|--|---------|
| | Total DPM/100cm ² | Removable ₂ DPM/100cm ² | Total DPM/100cm ² | Removable ₂ DPM/100cm ² | |
| 1 Floor where container was stored | < 10 | < 4 | < 200 | < 40 | < 0.010 |
| 2 Floor where container was stored | < 10 | < 4 | < 200 | < 40 | < 0.010 |
| 3 Floor where container was stored | < 10 | < 4 | < 200 | < 40 | < 0.010 |
| 4 Floor where container was stored | < 10 | < 4 | < 200 | < 40 | < 0.010 |

BLDG 5

FOURTH FLOOR WEST





DECONTAMINATION CONFIRMATORY SURVEY
BLDG 6 SECOND TUNGSTEN REDUCTION AREA FLOOR
SUMMARY OF ACTIVITIES

Contaminated concrete, wood and soil was removed from an open 4 foot by 4 foot area on the concrete floor of the second tungsten reduction area. Remaining wood and concrete surfaces were vacuumed. All materials were disposed of as rad waste.

The entire excavated area was surveyed with a Ludlum 43-5 alpha probe and a Ludlum 44-9 beta probe, and four smears were taken on accessible surfaces.

DECONTAMINATION CONFIRMATORY SURVEY

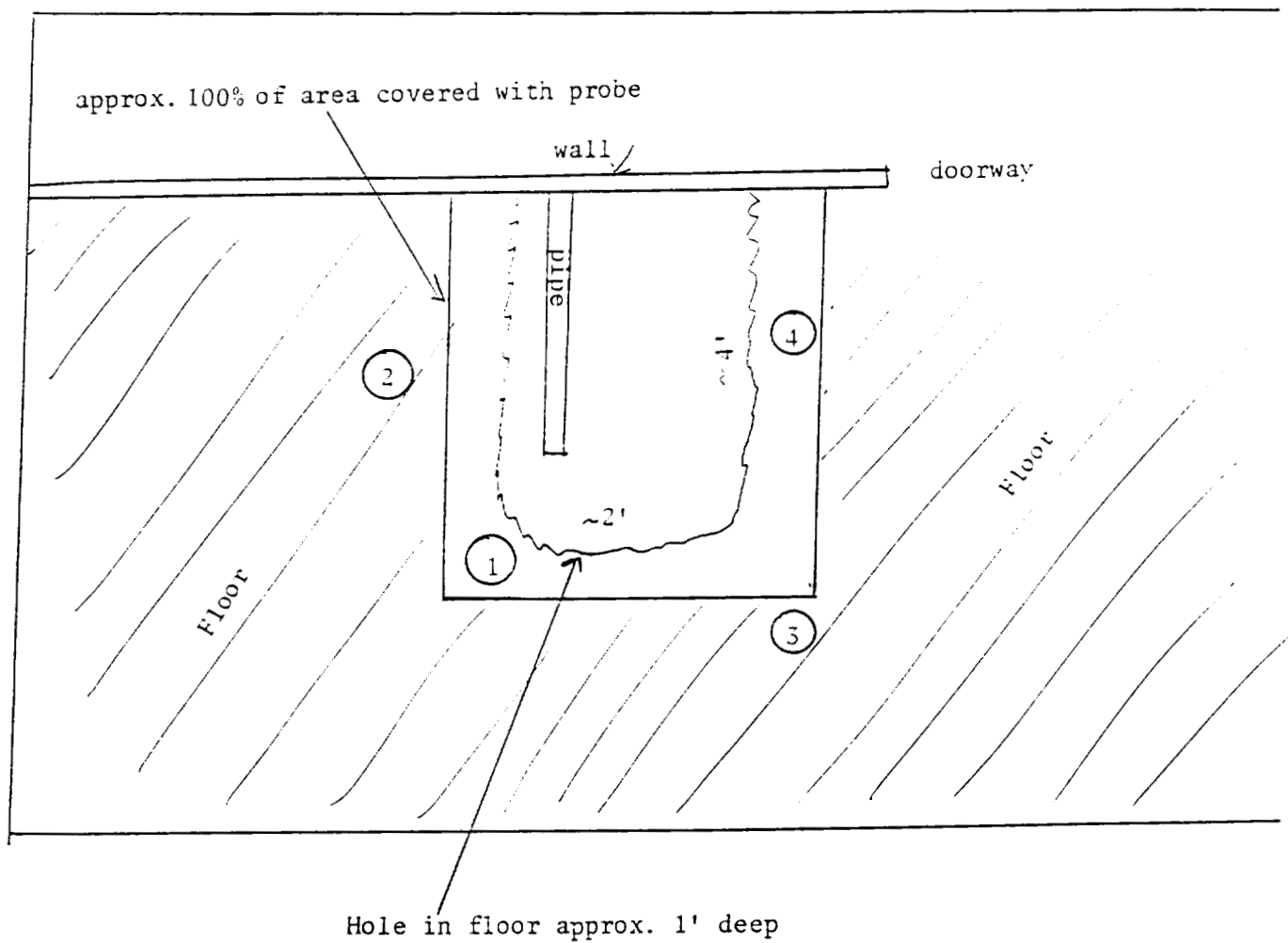
BLDG. 6 SECOND TUNGSTEN REDUCTION AREA FLOOR

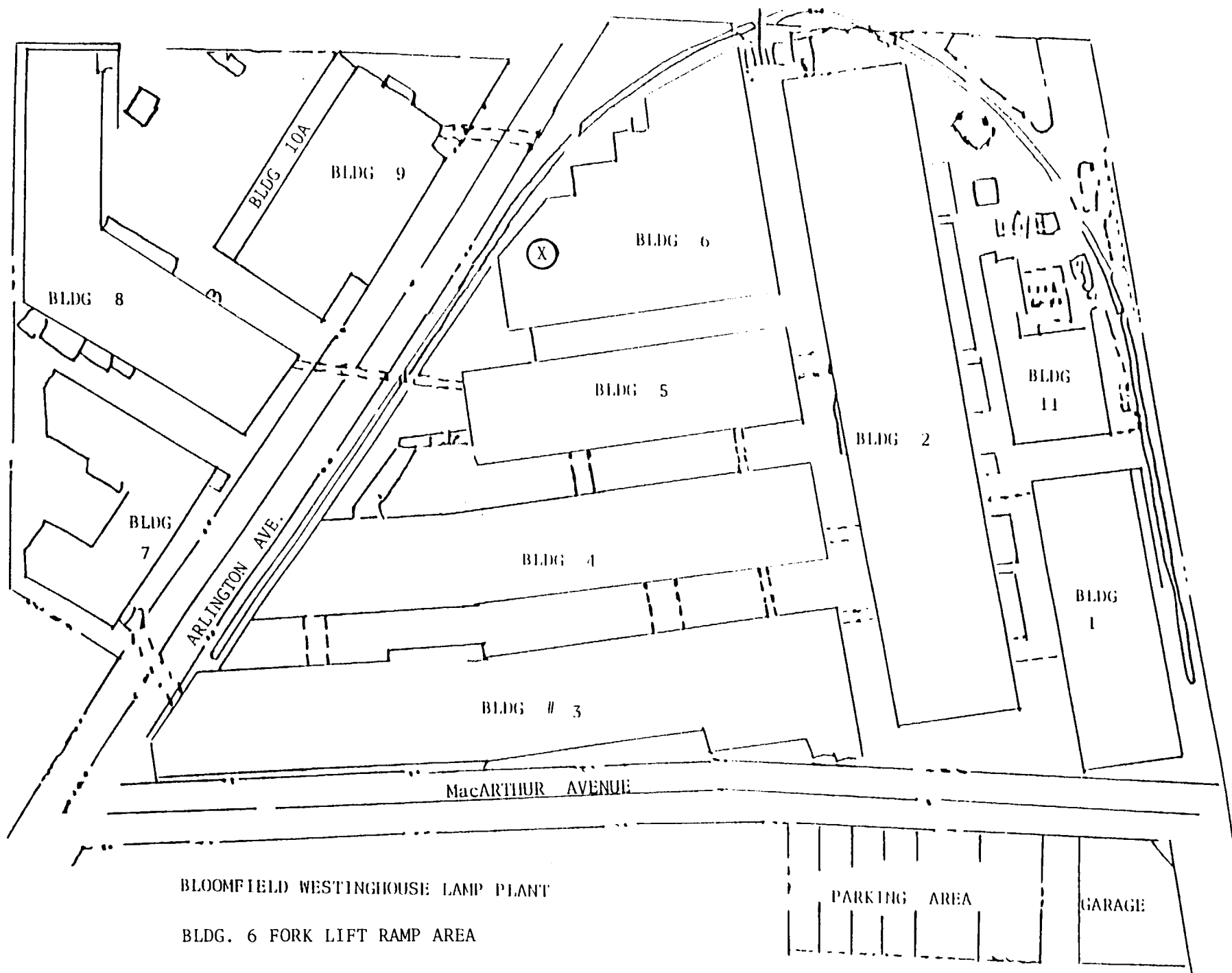
SURVEY RESULTS

| Sample Location | ALPHA | | BETA | | mrad/hr |
|------------------------|---------------------------------|--|---------------------------------|--|---------|
| | Total DPM/100cm ² | Removable ₂ DPM/100cm ² | Total DPM/100cm ² | Removable ₂ DPM/100cm ² | |
| 1 | < 10 | < 3 | < 200 | < 10 | < 0.020 |
| 2 | < 10 | < 3 | < 200 | < 10 | < 0.020 |
| 3 | < 10 | < 3 | < 200 | 8 | < 0.020 |
| 4 | < 10 | < 3 | < 200 | < 10 | < 0.020 |
| All other Locations | < 10 | not taken | < 200 | not taken | < 0.020 |

DECONTAMINATION CONFIRMATORY SURVEY
BLDG. 6 TUNGSTEN REDUCTION AREA FLOOR

(X) = Smear locations





BLOOMFIELD WESTINGHOUSE LAMP PLANT

BLDG. 6 FORK LIFT RAMP AREA

DECONTAMINATION CONFIRMATORY SURVEY

BLDG 6 FORK LIFT RAMP AREA

SUMMARY OF ACTIVITIES

Slightly elevated readings on floor beneath fork lift ramp were determined to be due to subsurface activity when surface cleaning failed to reduce readings. Portions of the fork lift ramp were removed to provide access to contaminated areas. Concrete flooring and soil, to depths of about 3 feet, were removed to expose a contaminated five inch diameter pipe. Approximately 50 feet of pipe and surrounding soils were removed and disposed of as rad waste.

DECONTAMINATION CONFIRMATORY SURVEY

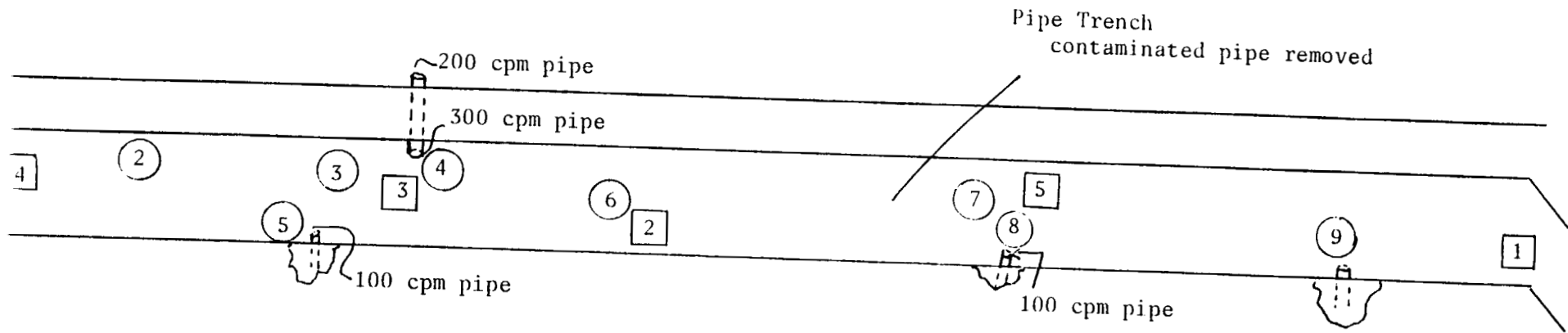
BLDG 6 FORK LIFT RAMP AREA

SURVEY RESULTS

| Sample Location | ALPHA | | BETA | | <u>mrads/hr</u> |
|---|--|--|--|--|-----------------|
| | <u>Total DPM/100cm²</u> | <u>Removable DPM/100cm²</u> | <u>Total DPM/100cm²</u> | <u>Removable DPM/100cm²</u> | |
| 1 | not taken | < 2 | < 200 | 10 | < 0.020 |
| 2 | not taken | < 2 | < 200 | < 10 | < 0.020 |
| 3 | not taken | < 2 | < 200 | < 10 | < 0.020 |
| 4 | not taken | < 2 | < 200 | < 10 | < 0.020 |
| 5 | not taken | < 2 | < 200 | < 10 | < 0.020 |
| 6 | not taken | < 2 | < 200 | < 10 | < 0.020 |
| 7 | not taken | < 2 | < 200 | 8 | < 0.020 |
| 8 | not taken | < 2 | < 200 | < 10 | < 0.020 |
| 9 | not taken | < 2 | < 200 | < 10 | < 0.020 |
| All Other Areas except where noted | | | < 200 | | < 0.020 |

| <u>Soil Sample Locations</u> | <u>Concentration</u> | <u>Nuclide</u> |
|------------------------------|------------------------------|------------------|
| 1 | 1.8 + pCi/g < 1 pCi/g | Th-232 Ra-226 |
| 2 | < 1 pCi/g < 1 pCi/g | Th-232 Ra-226 |
| 3 | < 1 pCi/g < 1 pCi/g | Th-232 Ra-226 |
| 4 | 1.4 + 0.5 pCi/g < 1 pCi/g | Th-232 Ra-226 |
| 5 | 1.5 + 0.6 pCi/g < 1 pCi/g | Th-232 Ra-226 |

DECONTAMINATION CONFIRMATORY SURVEY BLDG 6 FORK LIFT RAMP

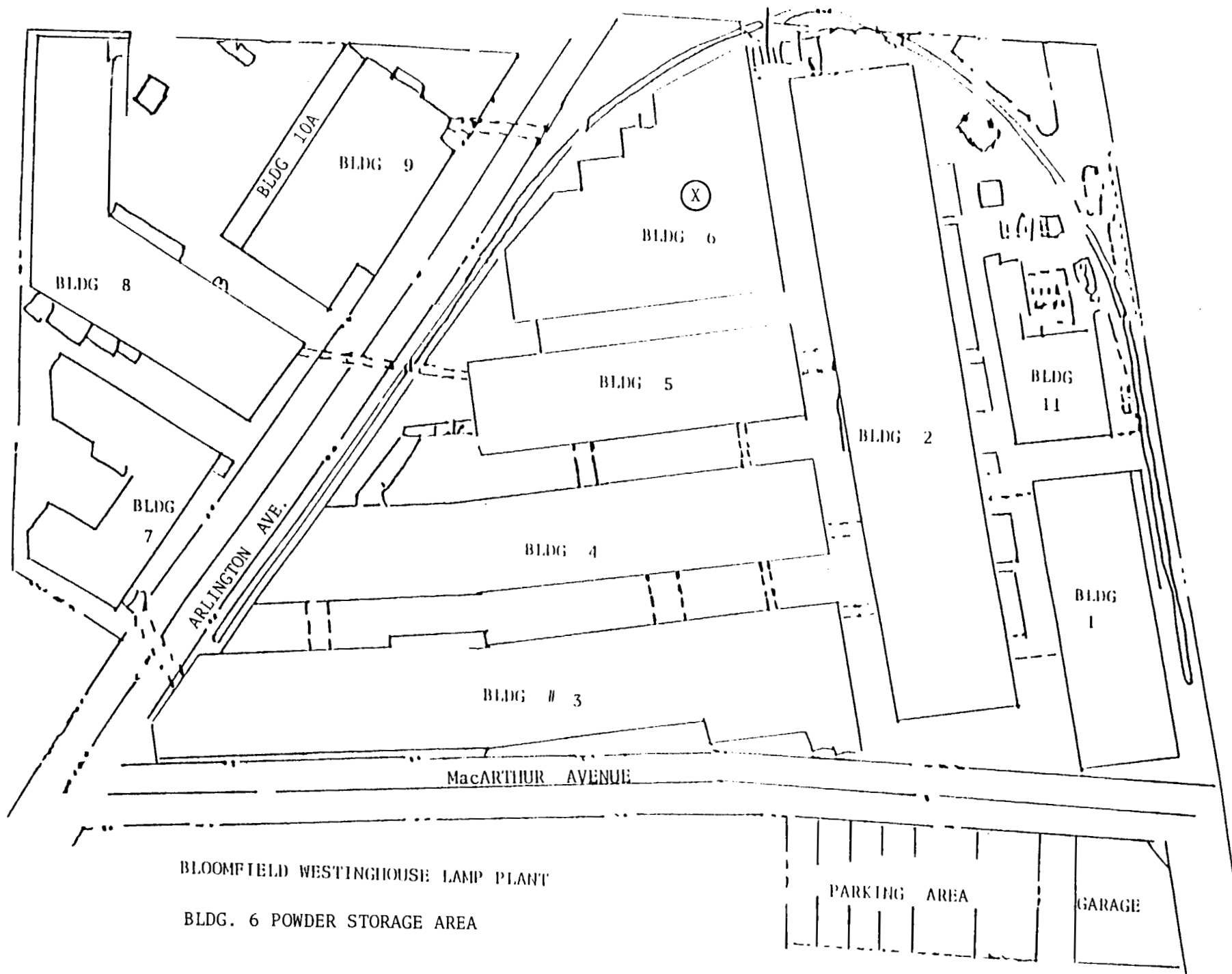


(X) = smear locations

[X] = soil sample locations

Entire trench surveyed with Ludlum 12 meter and 44-9 beta probe BKG = 60 cpm

All levels background except for interior of pipes entering trench



DECONTAMINATION CONFIRMATORY SURVEY

BLDG. 6 POWDER STORAGE AREA

SUMMARY OF ACTIVITIES

A number of empty cans used to store thorium powder were removed, cleaned by wiping or disposed of as rad waste. The area where cans were stored was surveyed, with no additional remediation required.

DECONTAMINATION CONFIRMATORY SURVEY

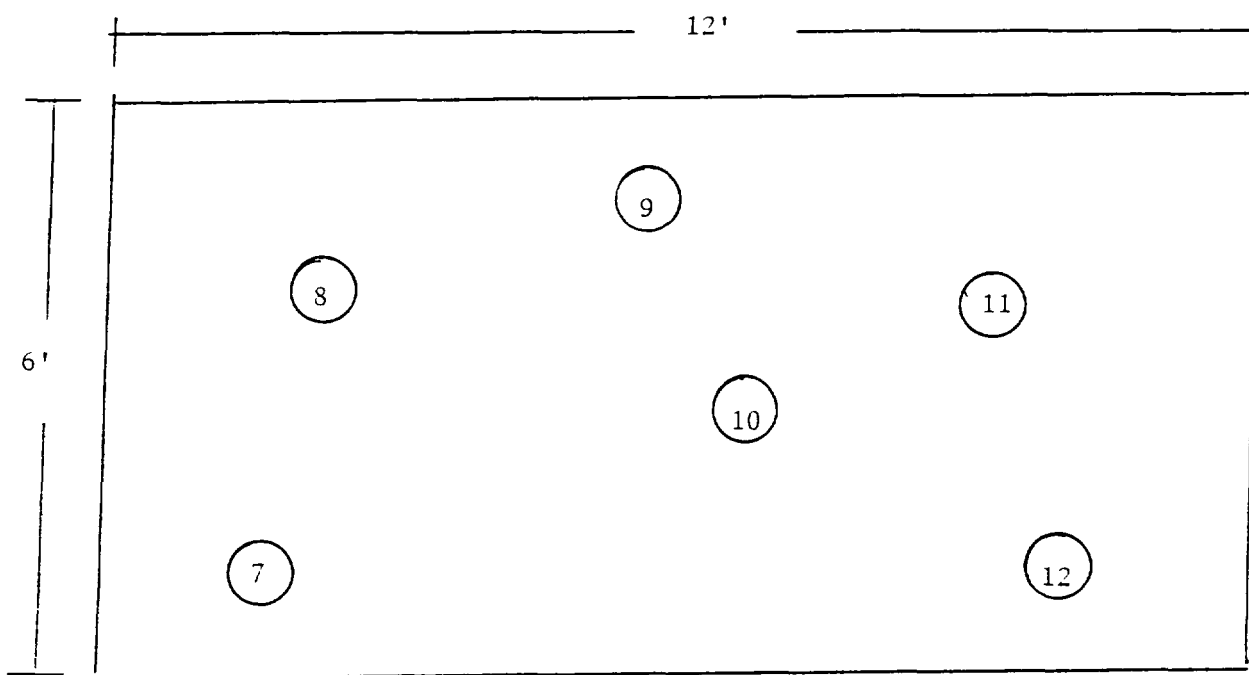
BLDG. 6 POWDER STORAGE AREA

SURVEY RESULTS

| <u>Sample Location</u> | ALPHA | | BETA | | <u>mrads/hr</u> |
|----------------------------|--|--|--|--|-----------------|
| | <u>Total DPM/100cm²</u> | <u>Removable DPM/100cm²</u> | <u>Total DPM/100cm²</u> | <u>Removable DPM/100cm²</u> | |
| 7 | < 10 | < 2 | < 200 | < 8 | < 0.020 |
| 8 | < 10 | < 2 | < 200 | < 8 | < 0.020 |
| 9 | < 10 | < 2 | < 200 | < 8 | < 0.020 |
| 10 | < 10 | < 2 | < 200 | < 5 | < 0.020 |
| 11 | < 10 | 9 | < 200 | 7 | < 0.020 |
| 12 | < 10 | < 2 | < 200 | < 8 | < 0.020 |
| All Other Areas | < 10 | not taken | < 200 | not taken | < 0.020 |

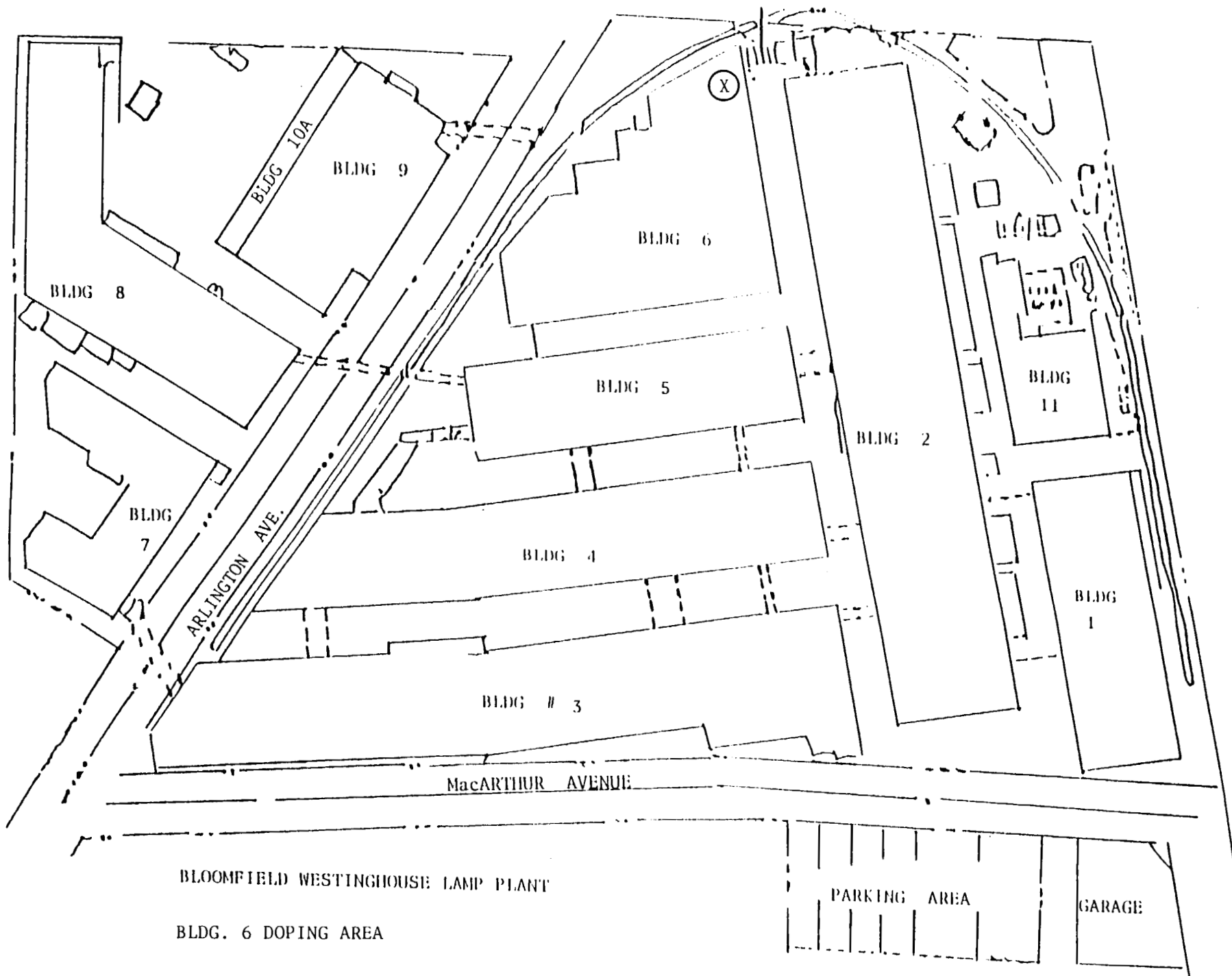
DECONTAMINATION CONFIRMATORY SURVEY

BLDG. 6 POWDER STORAGE AREA



(X) = smear locations

All areas surveyed with Johnson GSM-10 meter and
PPA-2 GM beta probe



DECONTAMINATION CONFIRMATORY SURVEY

BLDG. 6 DOPING AREA

SUMMARY OF ACTIVITIES

A single drum of debris was removed from the doping area and disposed of as rad waste. Isolated spots on the floor in the vicinity of the drum were cleaned by chipping and vacuuming. A second location in the doping area, along a seam in the concrete, was scraped and vacuumed to clean.

Both areas were surveyed with a Ludlum 44-9 beta probe. In addition, five smears for removable contamination were taken. All readings were within background levels.

DECONTAMINATION CONFIRMATORY SURVEY

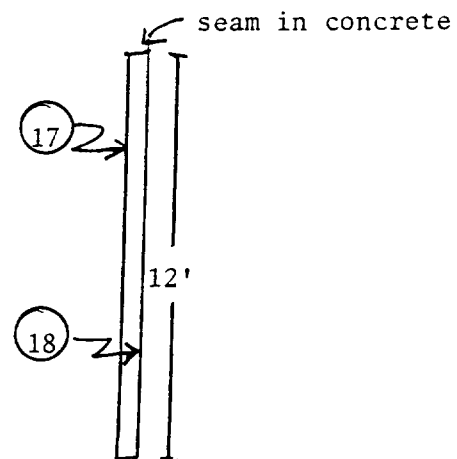
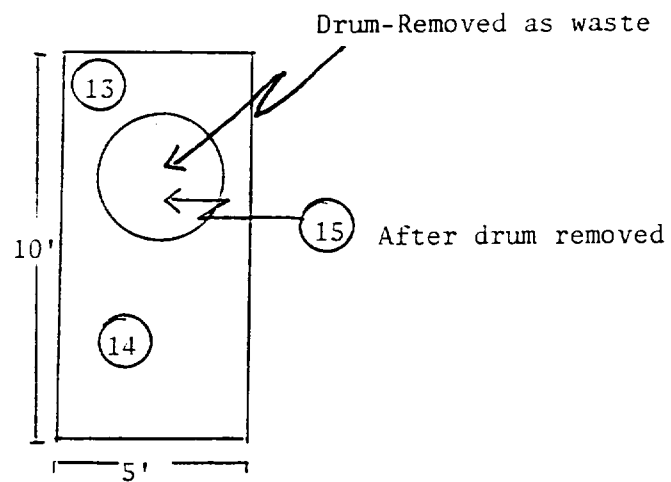
BLDG. 6 DOPING AREA

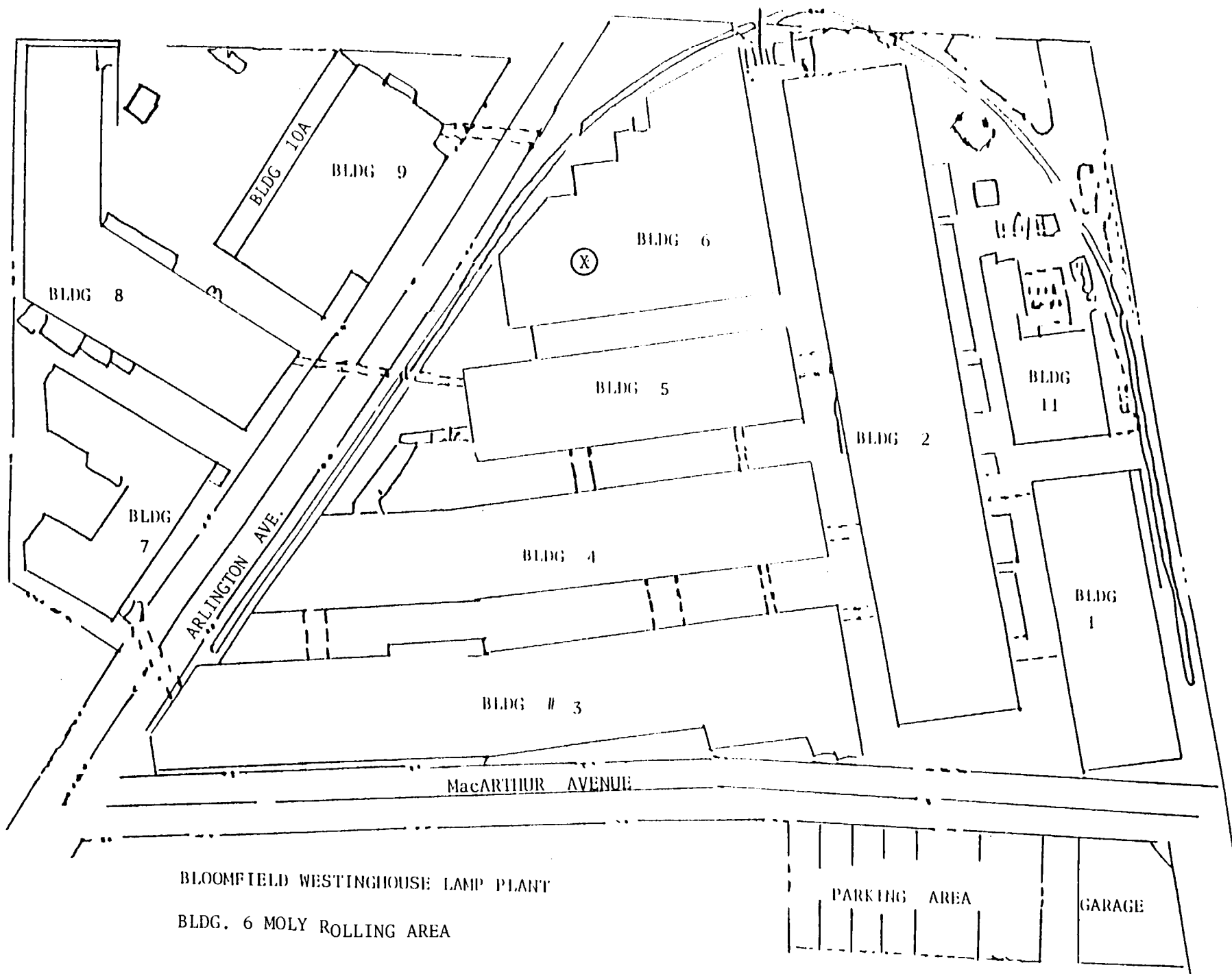
| Sample Location | ALPHA | | BETA | | mrad/hr |
|--------------------|---------------------------------|--|---------------------------------|--|---------|
| | Total DPM/100cm ² | Removable ₂ DPM/100cm ² | Total DPM/100cm ² | Removable ₂ DPM/100cm ² | |
| 13 | not taken | 4 | < 200 | < 5 | < 0.020 |
| 14 | not taken | < 2 | < 200 | < 5 | < 0.020 |
| 15 | not taken | < 2 | < 200 | < 5 | < 0.020 |
| 16 | not taken | 4 | < 200 | < 5 | < 0.020 |
| 17 | not taken | < 2 | < 200 | < 5 | < 0.020 |
| All other Areas | not taken | not taken | < 200 | not taken | < 0.020 |

DECONTAMINATION CONFIRMATORY SURVEY

BLDG. 6 DOPING AREA

(X) = smear locations





DECONTAMINATION CONFIRMATORY SURVEY

BLDG. 6 MOLY ROLLING AREA

SUMMARY OF ACTIVITIES

One bucket of contaminated debris was removed and isolated contaminated spots on the floor cleaned via chipping and vacuuming.

All areas were surveyed with the Johnson GSM-10 meter and PPA-2 beta probe. No readings above background were detected.

DECONTAMINATION CONFIRMATORY SURVEY

BLDG. 6 MOLY ROLLING AREA

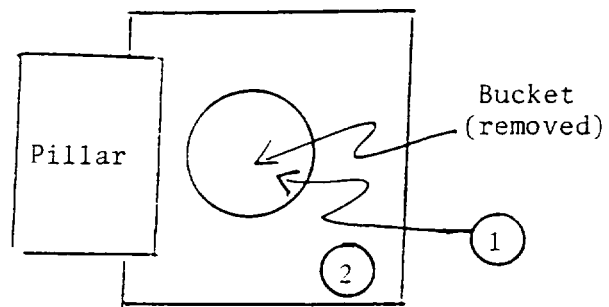
SURVEY RESULTS

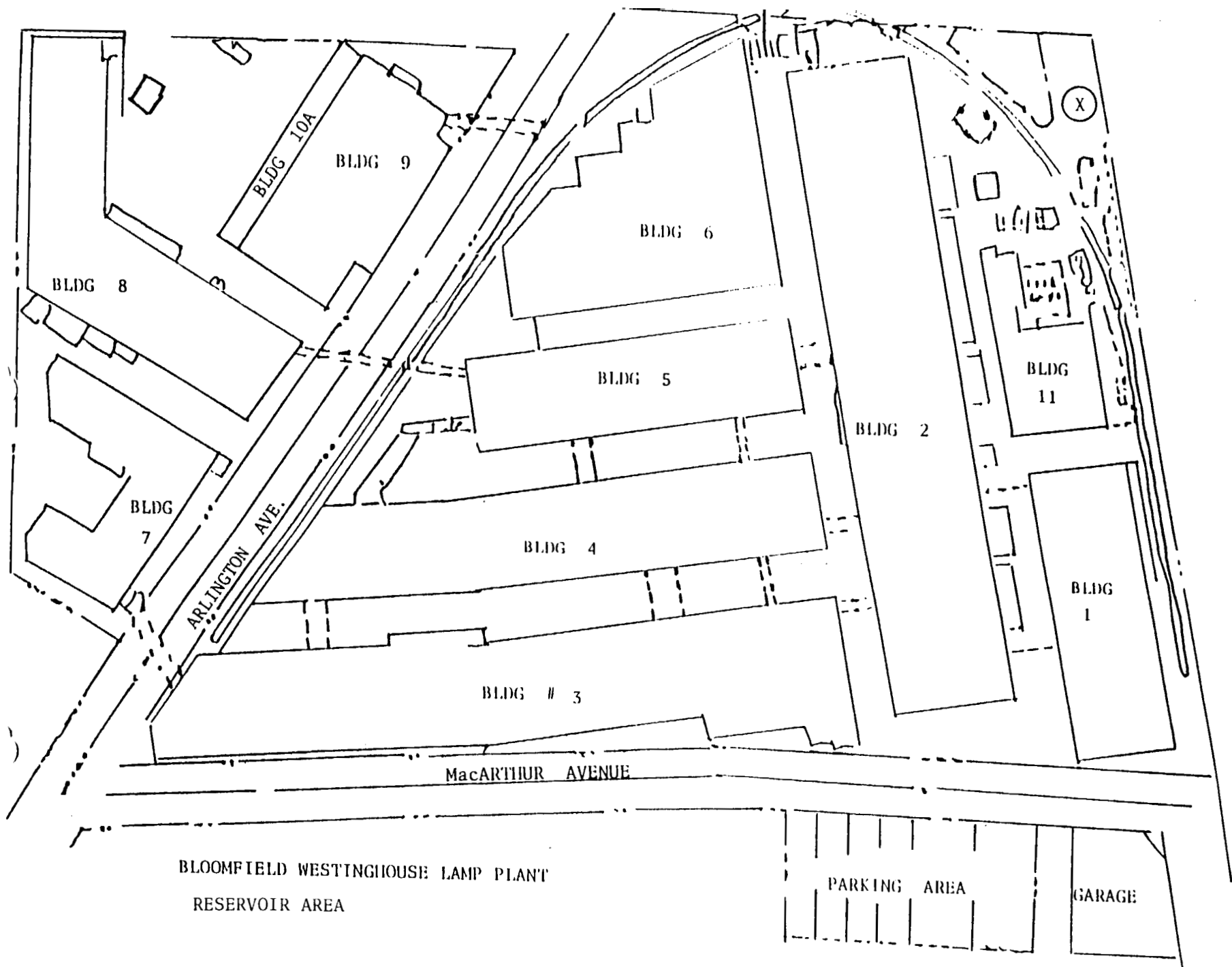
| Sample Location | ALPHA | | BETA | | <u>mrads/hr</u> |
|--------------------|---------------------------------------|---|---------------------------------------|---|-----------------|
| | Total <u>DPM/100cm²</u> | Removable <u>DPM/100cm²</u> | Total <u>DPM/100cm²</u> | Removable <u>DPM/100cm²</u> | |
| 1 | < 10 | < 2 | < 200 | < 5 | < 0.020 |
| 2 | < 10 | 6 | < 200 | < 5 | < 0.020 |
| All other Areas | < 10 | not taken | < 200 | not taken | < 0.020 |

DECONTAMINATION CONFIRMATORY SURVEY

BLDG. 6 MOLY ROLLING AREA

(X) = Smear location





DECONTAMINATION CONFIRMATORY SURVEY

RESERVOIR

SUMMARY OF ACTIVITIES

Areas delineated on original survey were investigated, and soil removal was required in five areas of the reservoir.

Surveys were performed with a Johnson GSM-10 and GSP-2A NaI probe. Readings shown on diagram were taken on contact and are in gross counts per minute.

Discreet soil samples were taken to a depth of 15 cm in areas where remediation was performed. Samples were dried, sieved, sealed in a 200 ml aluminum sample can and counted on the HPGe gamma spectroscopy system.

DECONTAMINATION CONFIRMATORY SURVEY
RESERVOIR
SOIL ANALYSIS RESULTS

| <u>Sample Location</u> | <u>Activity pCi/g \pm 2σ</u> | <u>Nuclide</u> |
|------------------------|---|---------------------------|
| "F ₁ " | 1.0 pCi/g \pm 42% 3.0 pCi/g \pm 17% | Th-232 Ra-226 |
| "G" | 4.0 pCi/g \pm 21% | Ra-226 |
| "H" | 1.5 pCi/g \pm 31% | Th-232 |
| "I" | 2.0 pCi/g \pm 23% | Ra-226 |
| "N" | 1.0 pCi/g \pm 26% | Th-232 |
| "O" | 12.0 pCi/g \pm 25% <1.0 pCi/g 2.0 pCi/g \pm 45% | U-238 Th-232 Ra-226 |
| "P" | 6.0 pCi/g \pm 31% 1.0 pCi/g \pm 41% 3.0 pCi/g \pm 21% | U-238 Th-232 Ra-226 |
| "Q" | 12.0 pCi/g \pm 25% <1.0 pCi/g 3.0 pCi/g \pm 20% | U-238 Th-232 Ra-226 |
| "R" | 1.0 pCi/g \pm 40% | Ra-226 |
| "S" | 2.0 pCi/g \pm 14% | Th-232 |
| "J & K" Composit | 6.0 pCi/g \pm 15% | Th-232 |

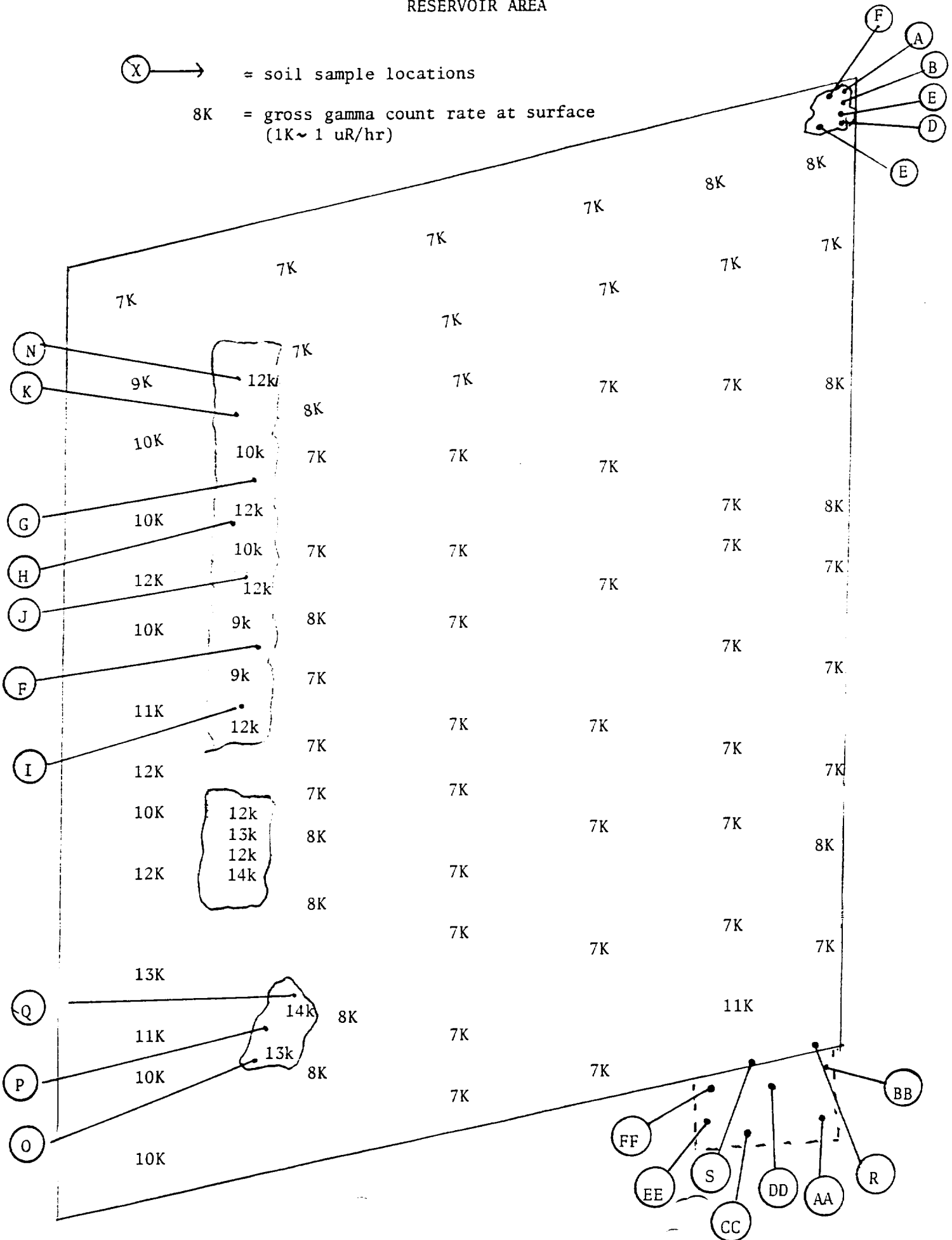
DECONTAMINATION CONFIRMATORY SURVEY
RESERVOIR
SOIL ANALYSIS RESULTS

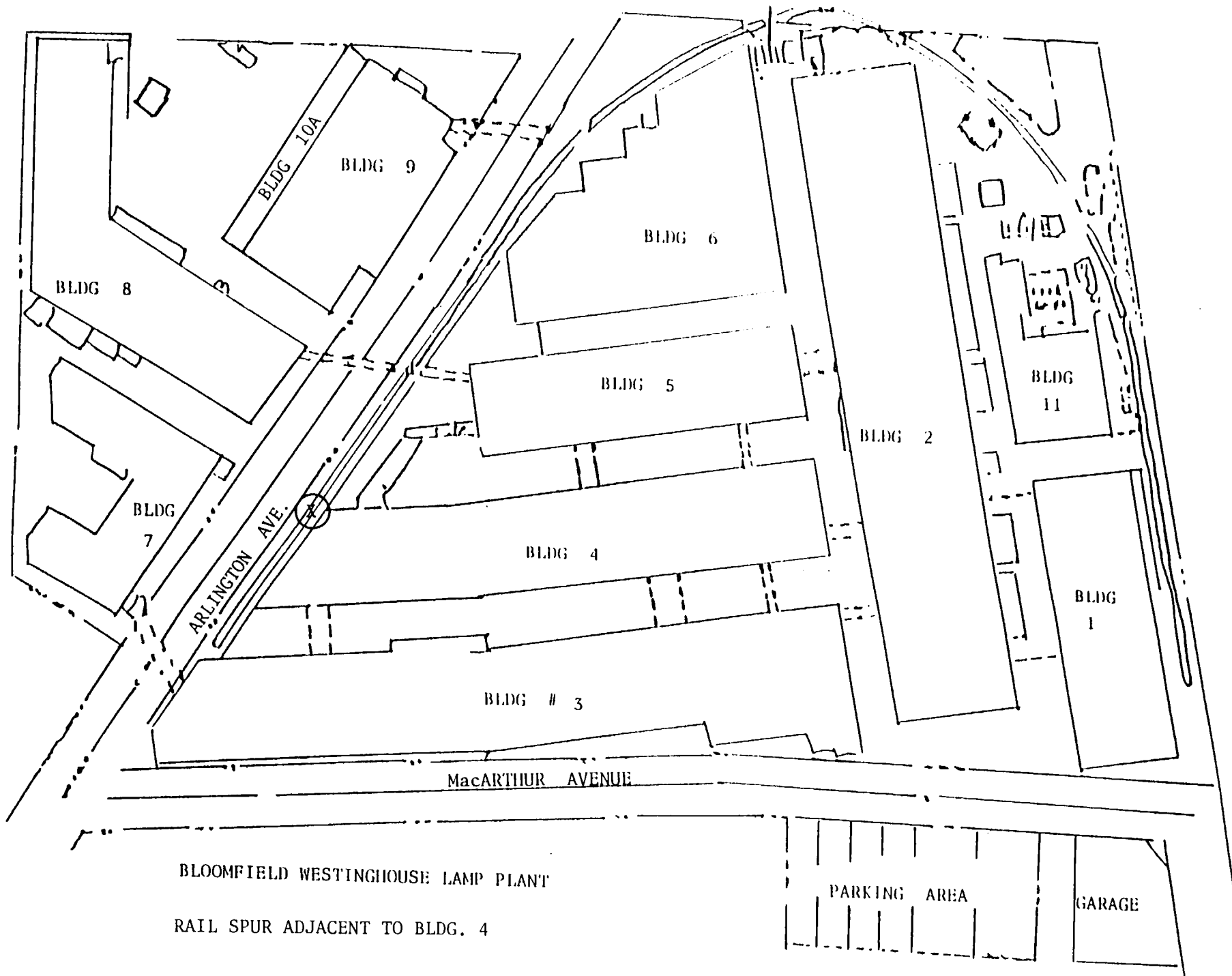
| <u>Sample Location</u> | <u>Activity pCi/g \pm 2σ</u> | <u>Nuclide</u> |
|------------------------|---|----------------|
| "A" | 2.0 pCi/g \pm 22% | Th-232 |
| "B" | 1.5 pCi/g \pm 24% | Ra-226 |
| "C" | 1.0 pCi/g \pm 63% | Th-232 |
| | 2.0 pCi/g \pm 18% | Ra-226 |
| "D" | 1.0 pCi/g \pm 41% | Th-232 |
| "E" | <1.0 pCi/g | Th-232 |
| "F" | <1.0 pCi/g | Th-232 |
| "AA" | 1.0 pCi/g \pm 42% | Th-232 |
| "BB" | 2.0 pCi/g \pm 20% | Th-232 |
| | 1.5 pCi/g \pm 39% | Ra-226 |
| "CC" | 1.0 pCi/g \pm 20% | Th-232 |
| "DD" | 1.5 pCi/g \pm 18% | Th-232 |
| "EE" | 2.0 pCi/g \pm 19% | Th-232 |
| "FF" | <1.0 pCi/g | Th-232 |

RESERVOIR AREA

(X) → = soil sample locations

8K = gross gamma count rate at surface
(1K ~ 1 uR/hr)





BLOOMFIELD WESTINGHOUSE LAMP PLANT

RAIL SPUR ADJACENT TO BLDG. 4

DECONTAMINATION CONFIRMATORY SURVEY

RAIL SPUR ADJACENT TO BLDG. 4

SUMMARY OF ACTIVITIES

Surface soil was removed from an area 17.5 x 60 feet, and shipped as rad waste. A concrete pad was scabbled to remove surface contamination and then vacuumed. The ties and rails were removed and pressure washed.

Surveys were performed with a Johnson GSM-10 and GSP-2A NaI detector. The readings shown on the diagram were taken on contact. Soil samples were taken and analyzed, utilizing the gamma spectroscopy system consisting of an EG&G Ortec intrinsic germanium detector and a Tracor Northern multi-channel analyzer. No activities significantly above background were detected.

DECONTAMINATION CONFIRMATORY SURVEY

RAIL SPUR ADJACENT TO BLDG. 4

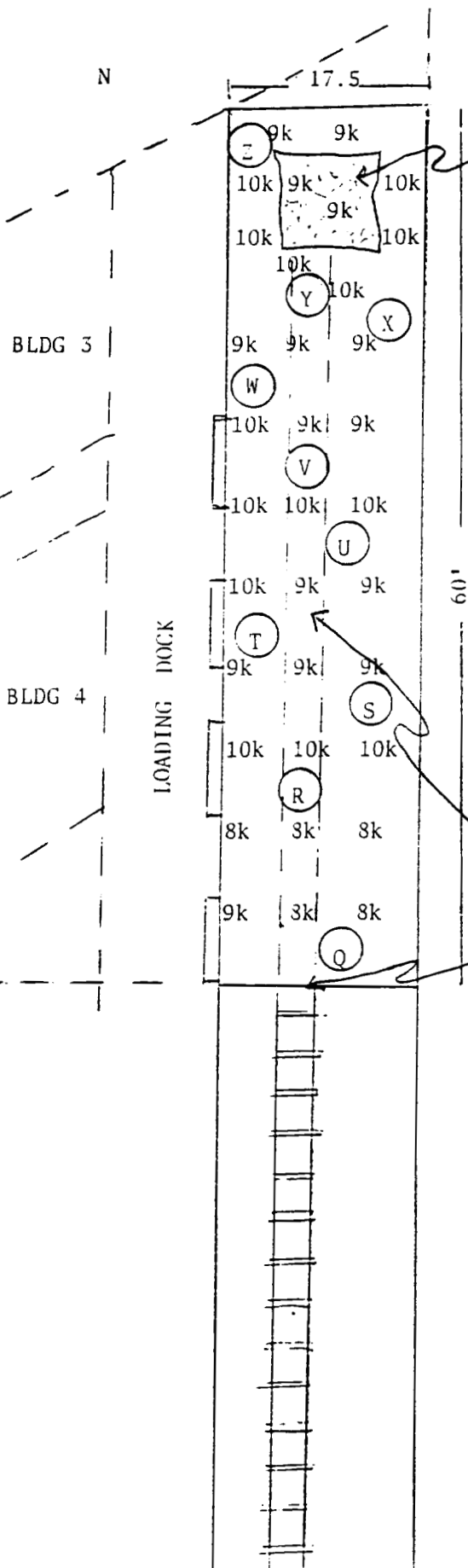
SOIL ANALYSIS RESULTS

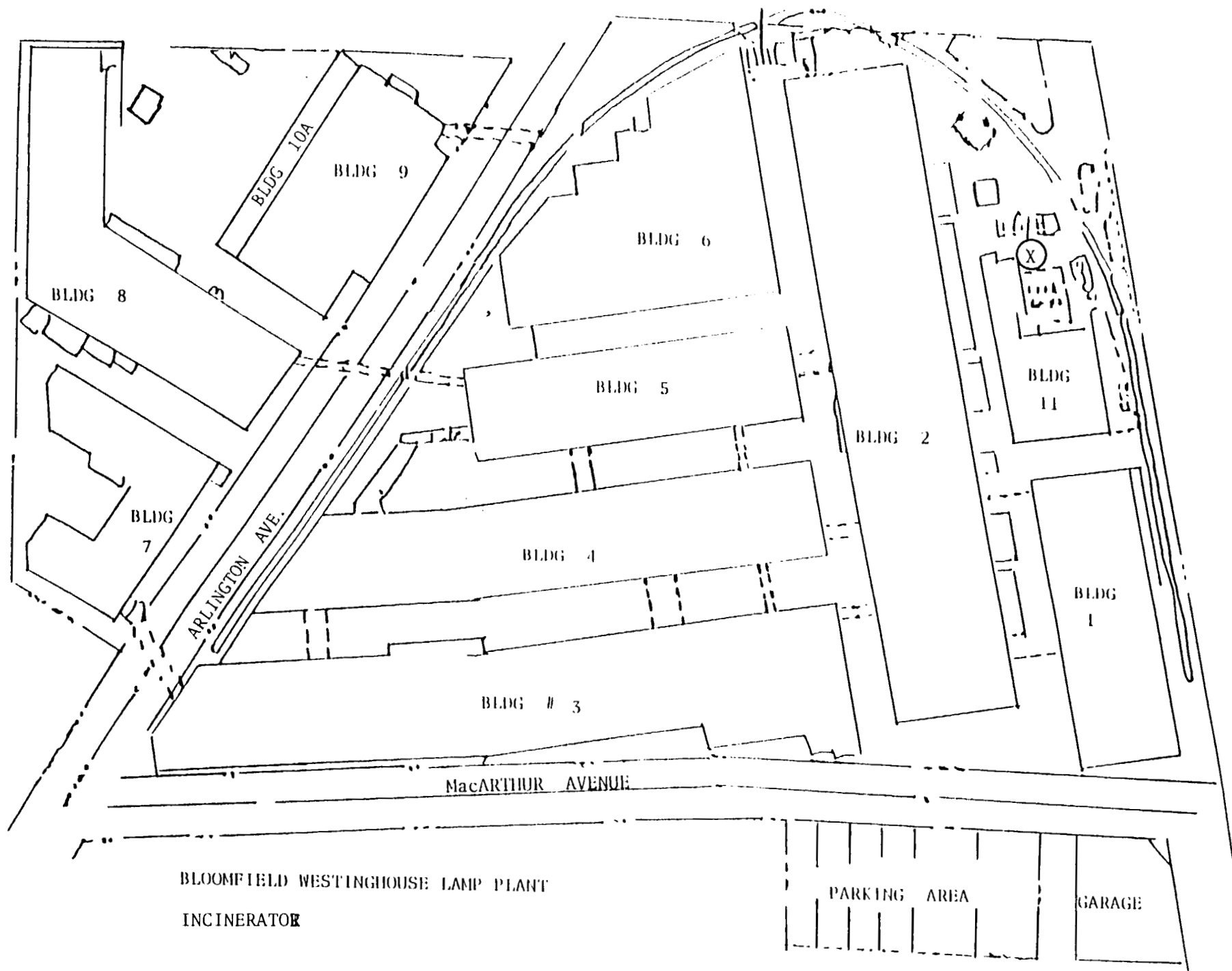
| <u>Sample Location</u> | <u>Activity</u> | <u>Nuclide</u> |
|------------------------|-----------------|----------------|
| "Q" | 20 + 15 pCi/g | U-238 |
| | 1.5 + 1.0 pCi/g | Th-232 |
| "R" | 20 + 14 pCi/g | U-238 |
| | 1.5 + 0.9 pCi/g | Th-232 |
| | 1.5 + 1.2 pCi/g | Ra-226 |
| "S" | 18 + 12 pCi/g | U-238 |
| | 1 + 0.6 pCi/g | Th-232 |
| | < 1 pCi/g | Ra-226 |
| "T" | 15 + 8 pCi/g | U-238 |
| | 2 + 1 pCi/g | Th-232 |
| | 1 + 0.9 pCi/g | Ra-226 |
| "U" | 12 + 7 pCi/g | U-238 |
| | 1.5 + 0.7 pCi/g | Th-232 |
| | 1.0 + 0.9 pCi/g | Ra-226 |
| "V" | 1.0 + 0.6 pCi/g | Th-232 |
| "W" | 15 + 8 pCi/g | U-238 |
| "X" | 15 + 8 pCi/g | U-238 |
| | 1.0 + 0.9 pCi/g | Ra-226 |
| "Y" | 19 + 13 pCi/g | U-238 |
| | < 1 pCi/g | Th-232 |
| "Z" | 26 + 16 pCi/g | U-238 |
| | 1.0 + 0.6 pCi/g | Th-232 |

Rail Spur Adjacent to Bldg. 4

10K = Gross gamma count rates
at surface
(1K \approx 1 uR/hr)

Ties & Rails removed





DECONTAMINATION CONFIRMATORY SURVEY

INCINERATOR

SUMMARY OF ACTIVITIES

The ash residue inside the incinerator building and stack was removed as rad waste. The fire brick lining the interior of the incinerator and stack was removed and disposed of. All interior surfaces were cleaned and vacuumed. Contaminated railroad ties and rails, and contaminated soils, were removed from a 20 by 40 foot area west of the incinerator. Excavation was carried out to a depth of two feet in some locations.

DECONTAMINATION CONFIRMATORY SURVEY

INCINERATOR

SURVEY RESULTS

| Sample Location | ALPHA | | BETA | | mrad/hr |
|-----------------|---------------------------------|-------------------------------------|---------------------------------|-------------------------------------|---------|
| | Total DPM/100cm ² | Removable DPM/100cm ² | Total DPM/100cm ² | Removable DPM/100cm ² | |
| 1 Stack | < 10 | < 3 | < 200 | 8 | < 0.020 |
| 2 Stack | < 10 | < 3 | < 200 | 8 | < 0.020 |
| 3 Stack | < 10 | < 3 | < 200 | 20 | < 0.020 |
| 4 Stack | < 10 | < 3 | < 200 | < 10 | < 0.020 |
| 5 Stack | < 10 | < 3 | < 200 | < 10 | < 0.020 |
| 6 Incinerator | < 10 | < 3 | < 200 | 23 | < 0.020 |
| 7 Bldg | < 10 | < 3 | < 200 | < 10 | < 0.020 |
| 8 Bldg | < 10 | < 3 | < 200 | < 10 | < 0.020 |
| 9 Bldg | < 10 | < 3 | < 200 | < 10 | < 0.020 |
| 10 Bldg | < 10 | < 3 | < 200 | 28 | < 0.020 |
| 11 Bldg | < 10 | < 3 | < 200 | < 10 | < 0.020 |
| 12 Bldg | < 10 | 6 | < 200 | < 10 | < 0.020 |
| 13 Bldg | < 10 | < 3 | < 200 | < 10 | < 0.020 |
| 14 Bldg | < 10 | < 3 | < 200 | < 10 | < 0.020 |
| 15 Bldg | < 10 | < 3 | < 200 | < 10 | < 0.020 |
| 16 Bldg | < 10 | < 3 | < 200 | 11 | < 0.020 |
| 17 Bldg | < 10 | < 3 | < 200 | < 10 | < 0.020 |
| All Other Areas | < 10 | | < 200 | | < 0.020 |

SOIL SAMPLE RESULTS

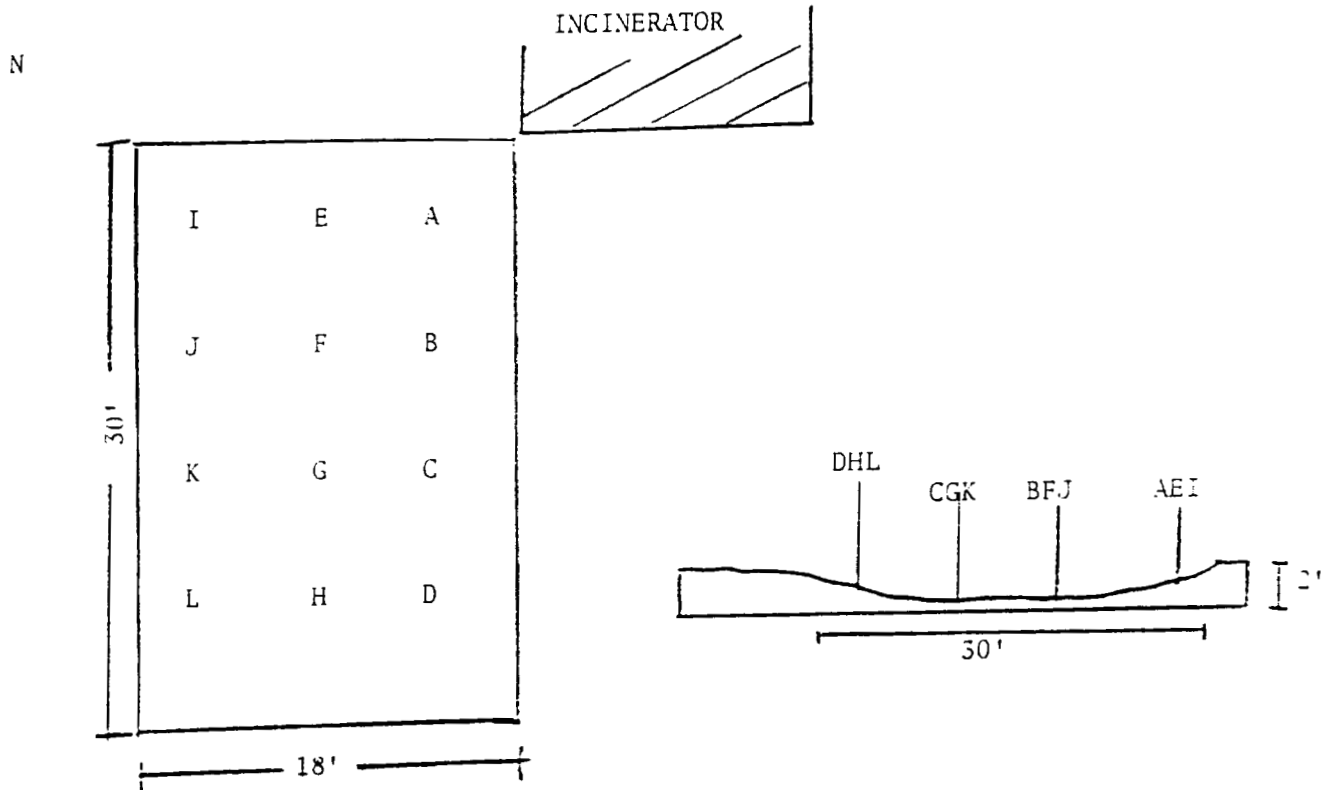
| <u>Sample Locations</u> | <u>Concentration</u> | <u>Nuclide</u> |
|-------------------------|--|------------------------------------|
| A | 20 ± 17 pCi/g 1.5 ± 0.6 pCi/g 1.0 ± 0.9 pCi/g 0.7 ± 0.5 pCi/g | U-138 U-235 Th-232 Ra-226 |
| B | < 6 pCi/g < 1 pCi/g < 1 pCi/g | U-238 Th-232 Ra-226 |
| C | < 6 pCi/g 0.9 ± 0.8 pCi/g 0.9 ± 0.8 pCi/g | U-238 Ra-226 Th-232 |
| D | 18 ± 15 pCi/g < 0.6 pCi/g 1 ± 0.5 pCi/g | U-238 Th-232 Ra-226 |
| E | 19 ± 13 pCi/g 1.2 ± 0.9 pCi/g < 1 pCi/g 1.5 ± 0.6 pCi/g | U-238 Th-232 Ra-226 U-235 |
| F | 16.7 ± 12 pCi/g 0.8 ± 0.8 pCi/g 1.0 ± 0.9 pCi/g 1.3 ± 0.5 pCi/g | U-238 Ra-226 Th-232 U-235 |
| G | 16.4 ± 11 pCi/g 0.9 ± 0.5 pCi/g 1.2 ± 1.0 pCi/g 0.8 ± 0.6 pCi/g | U-238 U-235 Ra-226 Th-232 |
| H | 15.5 ± 11 pCi/g 1.0 ± 0.6 pCi/g < 0.5 pCi/g 0.7 ± 0.6 pCi/g | U-238 U-235 Ra-226 Th-232 |
| I | 15.8 ± 11 pCi/g 1.4 ± 0.7 pCi/g 1.8 ± 0.7 pCi/g < 1.7 pCi/g | U-238 U-235 Th-232 Ra-226 |

| | | |
|---|---------------------|--------|
| J | 7.9 ± 7.1 pCi/g | U-238 |
| | 0.5 ± 0.4 pCi/g | U-235 |
| | < 0.9 pCi/g | Ra-226 |
| | < 0.5 pCi/g | Th-232 |
| K | 9.4 ± 8 pCi/g | U-238 |
| | 0.5 ± 0.4 pCi/g | U-235 |
| | < 1 pCi/g | Ra-226 |
| | 0.7 ± 0.5 pCi/g | Th-232 |
| L | 15 ± 10 pCi/g | U-238 |
| | 0.8 ± 0.4 pCi/g | U-235 |
| | 0.9 ± 0.4 pCi/g | Th-232 |
| | 1.5 ± 1.0 pCi/g | Ra-226 |

DECONTAMINATION CONFIRMATORY SURVEY

INCINERATOR

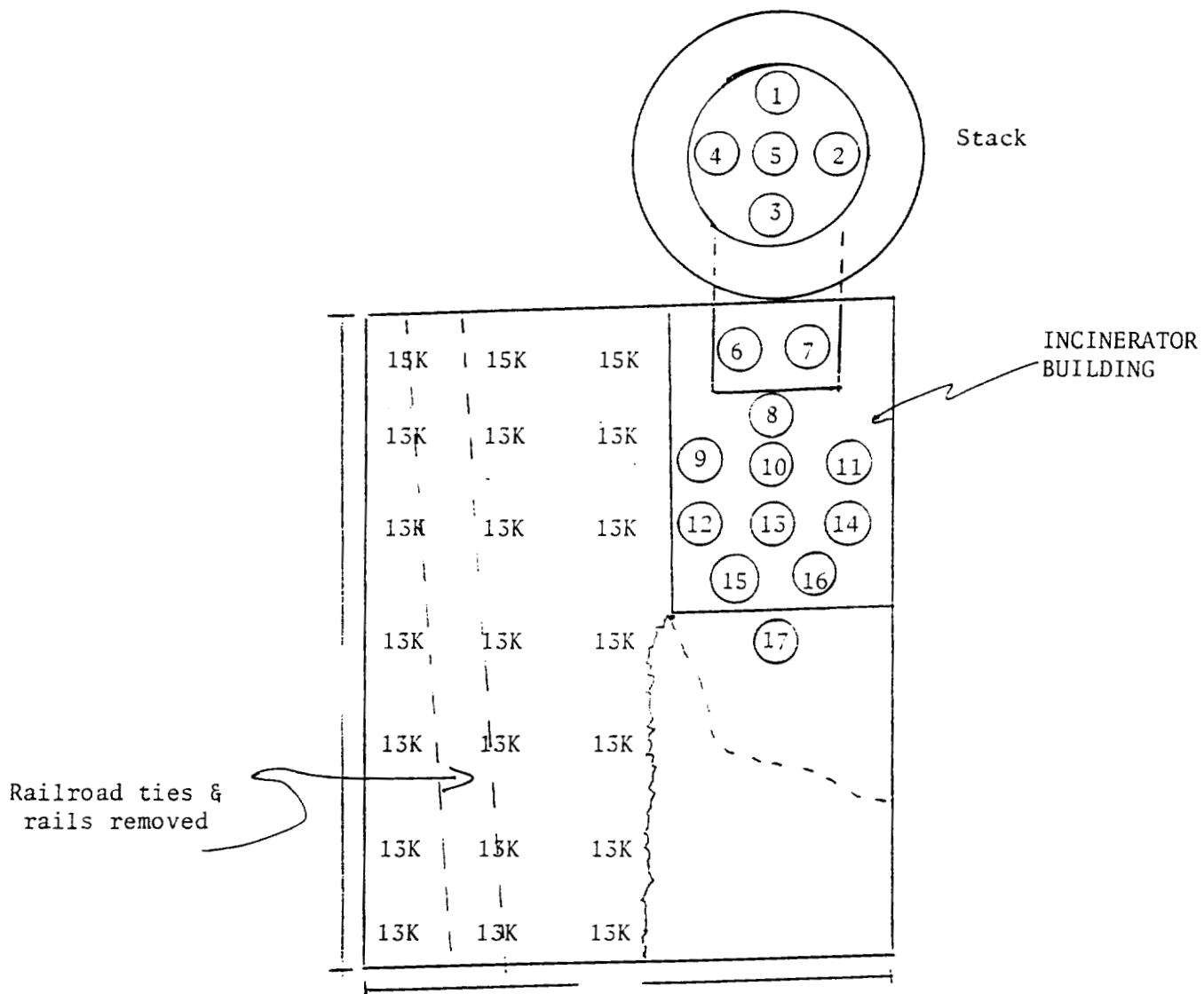
SOIL SAMPLES



(X) = soil sample locations

DECONTAMINATION CONFIRMATORY SURVEY

INCINERATOR



(X) = smear locations

13K = Gross count rate with NaI(Tl) at contact with surface where soils were excavated BKG : 7K

1K \approx 1 uR/hr

Incinerator surveyed with Ludlum 12 meter and 44-9 beta probe and 43-5 alpha probe

DECONTAMINATION CONFIRMATORY SL

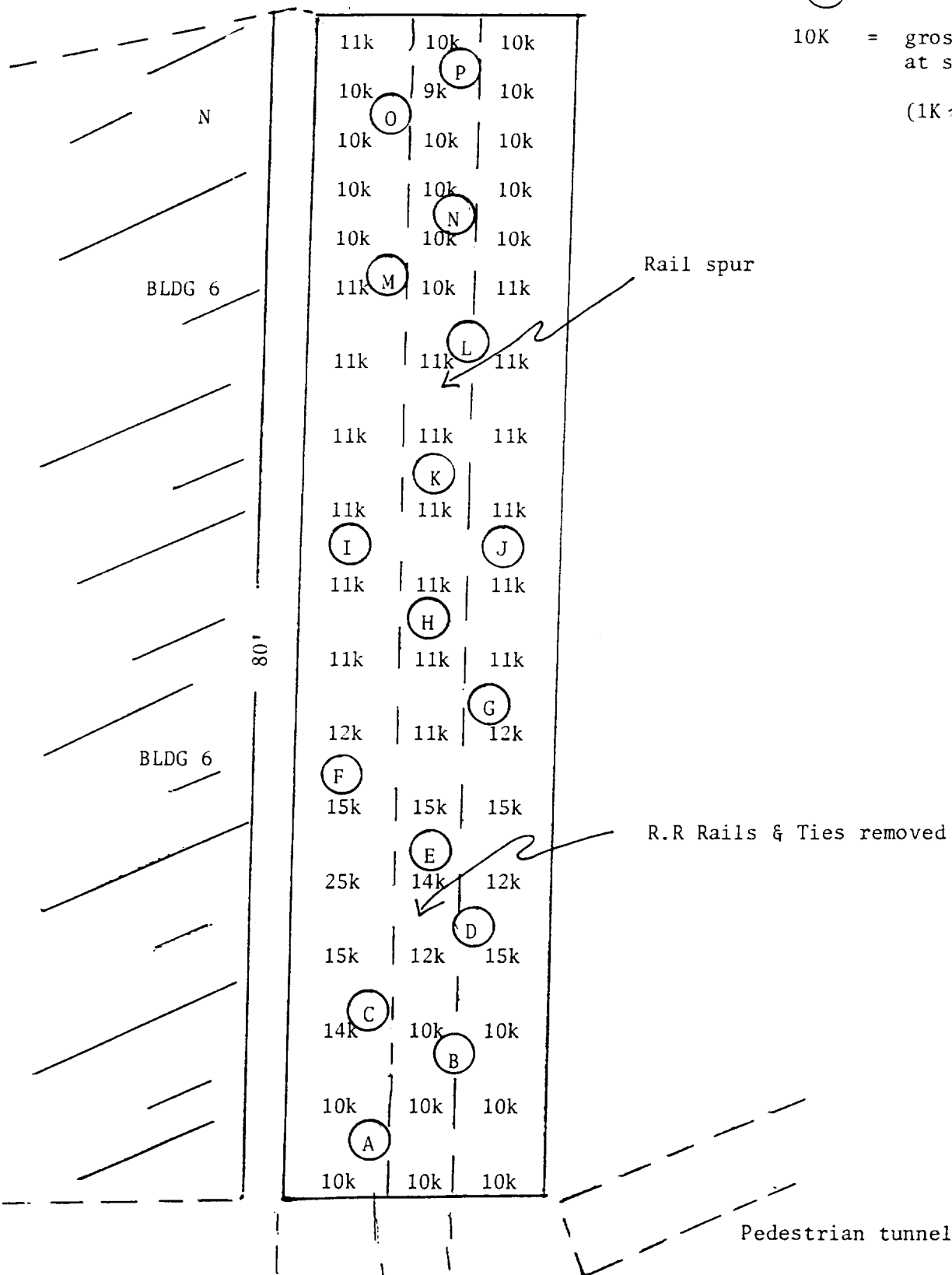
BLDG. & EXTERIOR RAIL SPUR

17.5'

(X) = soil sample location

10K = gross gamma count rate at surface

(1K \approx 1 uR/hr)



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