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RADIATION SURVEY OF FACTORY BUILDING

at

ENGELHARD CORPORATION

Plainville, Massachusetts

July 14-15, 1988

Robert E. Berlin
Stanley Malsky
for
Environ Corporation
Washington, DC
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FINAL REPORT

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1.0 Introduction

A radiation survey was conducted on July 14-15, 1988 of the interior of buildings No. 1 and 2 (as shown in layout drawing of Figure 1.0) at the Specialty Metals Division of the Engelhard Corporation in Plainville, Massachusetts. Areas surveyed are shown as cross-hatched in the layout drawing of Figure 1.0. The areas surveyed have been identified by plant personnel as those areas believed to have been used in the former nuclear fuel processing activites.

The survey was conducted by Robert E. Berlin, Dr. P.H., Stanley Malsky, Ph.D., and William Koehler (technician). Samples were analyzed by the National Leak Test Center in New York, an NRC approved laboratory. On-site guidance as to building layout and logistical assistance was provided by Robert Brayely and Donald Chabot of Engelhard.

The components of the radiological survey were:

- Ambient gamma levels were measured on a grid pattern at three feet above the surface in open floor areas and in selected locations in partitioned rooms.
- Surface alpha activity was measured at the same locations as the gamma measurements at or close to the surface.

- Surface wipes were taken in areas that might have been particularly susceptible to past deposition and collection of particulates.
- Airborne particulates were collected on a filter using Hi-Vol air pump in a number of selected locations in the building.

The methodology used in performing the survey is described in section 2.0. Results are provided in section 3.0. Section 4.0 is a discussion of the survey results and conclusions and section 5.0 provides recommendations as to future actions.

2.0 Methodology

Ambient gamma levels were measured, using a recently calibrated Victoreen 290 meter that has a discriminator circuit permitting it to be used for gamma measurements and then by internal switching, to be used for alpha measurements. The following areas were surveyed (See Figure 1.0 for locations):

1. Basement area under north end of building No. 1 on a 10 ft. x 10 ft. grid (where unobstructed) initially, with follow-up measurement in region of exhuast fan filters.
2. Metal stairs leading from basement to upper floor.
3. Open factory floor area of building No. 1 initially on a 10 ft. x 10 ft. grid, and subsequently on a 20 ft. x 20 ft. grid (where unobstructed).
4. Partitioned offices, laboratories and work areas generally around periphery of building surrounding open floor area along east side of buildings Nos. 1 and 2. Measurements were taken at selected locations (doorway, corners, walkways). More extensive mapping was made of areas showing gamma readings above background.
5. "Tunnel" ramp area and adjacent pit at south end of building.

6. Region along south fence and interior of the emergency pump station adjacent to fence.
7. In center of "dry well" at Southeast corner of building (in parking lot) approximately 2 ft. from bottom, and surface area around well cover.
8. SCM mezzanine supplies storage area back of offices in building No. 6.
9. In the south and north parking lots and adjacent wooded areas to establish background gamma levels.

The term "background" refers to normal gamma radiation levels produced from naturally-occuring sources in the environment. The parking lots and wooded areas were selected because they were sufficiently distant from the plant buildings so not to be effected by any possible radiological sources in them.

Each measurement was made holding the probe at about three feet above the surface for a period sufficient to achieve stability, and the results recorded on a copy of the building floor plan or on separate data sheets.

Surface alpha activity was measured using a similarly calibrated Victoreen 290 meter with alpha probe 489-60. Measurements were made at essentially the same locations as the gamma measurements holding the probe at or above the surface until a stable reading was achieved. Results were recorded on data sheets.

Surface wipes were taken initially in each of the areas described for the gamma survey from heavily trafficked floor areas, ventilation ducts, wall surfaces, and locations where dust and particulates have collected. Additional wipes were then taken in those areas where the gamma and alpha surveys showed suspect readings. The wipes were immediately separately packaged and catalogued (numbered) following standard health physics practices. The locations of each surface wipe is described by number in Table 1.0, and shown on the layout of Figure 2.0. Each sample was subsequently counted for alpha, beta and gamma activity levels by Dr. Malsky and by the National Leak Test Center to provide a quality control check on the readings.

Hi-Vol air samplers (pumps) in which air is drawn through a filter, were operated for 30-minute periods at 35 $ft.^3$/minute at breathing zone levels to collect representative samples of the particulates in the indoor building air. Filter samples were collected in the primary work areas in building Nos. 1 and 2 and, after removal from the samplers, wipes were taken in accordance with standard procedures for analysis of total activity levels, packaged and catalogued. The alpha, beta and gamma activity levels on the filter wipes were read concurrent with the surface wipes by Dr. Malsky and repeated at the National Leak Test Center.

The air filters were collected in the following locations:

Air No. 1 - Air filter wipes 1 and 2 - open factory floor area near west side of floor in building No. 1.

Air No. 2 - Air filter wipes 3 and 4 - Basement area of building No. 1.

Air No. 3 - Air filter wipes 5 and 6 - open factory floor area near east side of floor of building No. 1.

Air No. 4 - Air filter wipes 7 and 8 - open factory floor area adjacent to work rooms in building No. 1.

Air No. 5 - Air filter wipes 9 and 10 - Scrap melt room at south end of building No. 2.

These sampling locations are also shown on the layout of building Nos. 1 and 2 on Figure 3.0.

In addition, two particlate samples were collected and analyzed in the same manner as the wipes for alpha, beta and gamma contamination. Sample number 1 was a "dust" sample collected from the filters on the floor in the basement, and sample number 2 was from the residue left along the inner wall of the "tunnel" ramp area a the south end of the building. Their locations are also shown on Figure 3.0.

3.0 Results

3.1 Gamma Survey

For ease of interpretation, the results of the gamma survey are reported using the following notation for the level of contamination:

B =Essentially background (within ± 1 sigma)(1) which, based on the readings in locations external to the plant was between 18-22 micro Rem per hour (μR/hr)(2).

E =Somewhat elevated above background but not exceeding twice background (up to 45 μR/hr); levels representative of minor radiological source.

H =Clearly elevated above background; levels representative of distinct radiological source (45 to 110 μR/hr)

Using this notation, the range of readings in each of the areas described in section 2.0 is provided in the second column of Table 2.0. The location of the E and H gamma readings are shown on the floor plan of Figure 4.0.

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(1) sigma = standard deviation or spread of the values, as a measure of level of confidence in values. ± 1 sigma indicates less than normal measure of ± 2 sigma spread in values.

(2) Rem = Unit of measure for dose equivalent, "Radiation Equivalent Man," Micro Rem = 10^{-6} Rem or μR.

The readings corresponding to the H designation are:

- 114 μR/hr in the precious metal storage area
- 110 μR/hr in the scrap metal room at south west end of building.
- 110 μR/hr in the "tunnel" ramp at the south end adjacent to the second capped pipe from the top of the ramp.
- 75 μR/hr in the dry well at 2 ft. from the bottom.
- 75 μR/hr adjacent to the filter bank (top left filter) in the basement.

3.2 Surface Alpha Survey

Similar notation as was used to report the gamma survey results is used for the alpha survey relative to the level of contamination as follows:

B = Essentially background (within $\pm$ 1 sigma) which, based on the readings in locations external to the plant was between 7 - 10 counts per minute (c/m).

E = Somewhat elevated above background but not exceeding twice background (up to 20 c/m); levels representative of minor radiological source.

No "H" readings (distinct radiological source) were detected in the surface alpha survey.

Using this notation, the range of readings in each of the areas measured is provided in the third column of Table 2.0. The locations of the E alpha readings are shown on the floor plan of Figure 4.0.

3.3 Surface Wipes

The results of the analysis of surface wipes for alpha, beta and gamma levels are reported in Figure 5.0 using the same notation (with corresponding definitions) as the survey results reported in sections 3.1 and 3.2. The locations reported in Figure 5.0 correspond to those shown in Figure 2.0 and described in Table 1.0.

Elevated readings at the E level indicating minor radiological sources were found on the floor of the scrap melt room and adjacent corridor area at the south end of building No. 2 (wipes no. 67, 68, 69, 82, 83, 84, 85, and 100) and on the inner (east) wall of the same room (no. 86); on the floor of the adjacent room to the north (no. 70 and 71) in building No. 2; and on the floor of the precious metal storage area (vault) (nos. 93, 95, 96, 97, 98, and 99) in building No. 2. The remainder of the surface wipe readings in the plant were essentially at background. There were no high (H) surface wipe levels.

3.4 Air Filter and Particle Samples

All five air filters had levels of alpha, beta and gamma radiation essentially within background ($\pm$2 sigma)(2) including air filter number 5 from the scrap melt room. Both samples of particles (filter dust from the basement, and residue from the tunnel ramp) also read within background ($\pm$ 2 sigma).

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(2) $\pm$ 2 sigma is normal measure of spread in measured values.

4.0 Discussion/Conclusions

The purpose of the alpha and gamma surveys conducted at the plant on July 14 - 15, 1988 was to 1) obtain rapid gross measurements at all locations of interest in the facility and 2) pinpoint those locations where above background levels may be present. These surveys were conducted in accordance with standard practices. The surveys, particularly the gamma survey, while being a valuable initial indicator, are subject to a degree of variability and must be considered in that light. The variability results from false readings from gamma reflection, presence of electrical equipment and building material which are gamma sources, operator measurement inconsistencies and normal instrument fluctuations.

The laboratory measurement (count) of alpha, beta and gamma levels on the surface wipes, air filters and particle samples collected the same days provides a more precise measure of radioactivity and a more definitive basis for the conclusions and recommended actions than the field surveys.

All measurements (survey, wipes, air filters) showed essentially background radiation levels in all areas except for -

1) The scrap melt room and adjacent corridor area in building No. 2,

2) The room to the immediate north of the scrap melt room in building No. 2,

3) The precious metal storage area (vault) in building No. 2,

4) The tunnel ramp at the wall near the capped es in building No. 2,

5) The region adjacent to the filters on the fans in the basement in building No. 1,

6) The interior of the dry well in the south parking lot, and

7) Two of the rooms on the west side of building, referred to as "Work Rooms" in Figure 1.0.

Each of these areas is discussed separately below:

The Scrap Melt Room and Adjacent Corridor Area (Building No. 2)

The gamma survey results showed elevated (E to H) radiation levels over a wide range of the floor in this area with readings of up to a maximum value of 110 μR/hr and an average of 83 μR/hr over the floor area. The alpha survey confirmed somewhat elevated levels (E), up to twice background, at these locations. The surface wipes also showed E levels indicating somewhat elevated

radiation levels (up to twice background). The air filters at breathing zone heights did not show levels above background.

It is therefore concluded that minor radiological contamination exists in this area, most likely in the form of fugitive dust that has become embedded in the surface of the floor and adhered to the walls in certain spots. The floor appears to have a relatively thick layer of dirt and grease on the surface which has been built up over an extended period and that would hold dust particles tracked into the area. There is no indication that this is a source of radiation in the air in the room.

Using a worst case exposure scenario based on the assumption that an employee spends all their working hours in this room (2000 hrs.), exposed to the average of 83 μR/hr, results in an annual exposure of 126 MR. Since employees work in a number of locations in the plant during their shifts where exposure levels are considerably less than the average levels in this room, in reality only a fraction of the 2000 hours will be spent at the 83 μR/hr level. This level is about 25% of the 500 millirem per year (MR/yr)[4] Federal standard (NRC

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(4) millirem = 10^{-3} Rem or MR

regulatory guide 10CFR20) for permissable exposure of non-nuclear workers to radiological sources (excluding natural radiation sources). Thus, even using this extreme case of maximum possible exposure and not taking credit for the contribution from natural sources included in the 83 μR/hr, no individual would have received excessive exposure based on measured gamma radiation levels.

The Room to the Immediate North of the Scrap Melt Room (Building No. 2)

Neither the gamma or alpha survey showed any readings in this area above background levels, either at the bottom level or on the metal platform or stairs. However, one floor wipe and the duplicate at the same location (see Figure 4.0) read at the slightly elevated (E) level.

It is likely that some of the fugitive dust has been tracked from the adacent scrap melt room and corridor area to this room and become imbedded in the surface dirt and grease in individual spots. The floor surface shows the same long-term buildup of dirt.

The Precious Metal Storage Area (Vault) (Building No. 2)

The gamma survey results showed elevated (E to H) radiation levels over a wide range of the floor in the precious metal storage area with the highest readings obtained at the back of the room at and beyond the mesh

wire fencing which is normally inaccessible to plant workers. The maximum reading was 114 μR/hr, and the average was 38 μR/hr over the floor area. The alpha survey confirmed elevated levels (E), up to twice background, at these locations. The surface wipes also showed E levels indicating slightly elevated radiation levels (up to twice background).

Minor radiological sources exist across the entire floor area with the highest concentration in the collected dirt and residue beyond the fence at the back of the room. The floor has the same appearance as in the scrap melt room, dirt and grease covered, in which particles containing radioactivity have apparently become embedded in the surface dirt.

Using an assumed worst case employee exposure scenario of full-time annual occupatic[illegible]000 hrs.) in this room at the average exposure level of 38 μR/hr results in an annual dose of 36 mrem, which is less than 10% of the Federal occupational standard for non-nuclear workers. Even the impossible situation of full-time exposure in the inaccessible region beyond the fence at the 114 μR/hr level, which was the highest gamma level measured at any point during the plant survey, results in an annual dose of 188 mrem, about 38% of the allowable

annual dose. Furthermore, no employee is in the vault area for any time approaching 2000 hours, and the 188 mrem level includes contributions from natural sources, making the calculation even more conservative.

The Tunnel Ramp at the Wall Near the Capped Pipes (Building No. 2)

The gamma survey results showed elevated (H) radiation levels adjacent to and above four of the capped pipes (Figure 4.0) on the inner (north) wall of the ramp with a maximum level of 110 μR/hr measured at the second pipe from the top of the ramp. Neither the alpha survey or the analysis of surface wipes at these locations confirmed the existence of a radiological source, since these results were essentially at background levels. This situation could arise if (1) there was no radiological source and the elevated gamma survey results were caused by proximity to the concrete wall or other factors that tend to bias the readings or (2) some localized radiological source exists near the capped pipes and adjacent to the wall that was not detected by the four wipes taken on the ramp. If this latter situation existed, the radiological sources would likely be in isolated spots in the narrow groove running along

the base of the wall that contains some accumulated residue (dirt and loose material from the walls and floor.) However, the sample of residue taken from the groove did not show any indication of a source.

The Region Adjacent to the Filters on the Fans in the Basement (Buiding No. 1)

Gamma survey readings taken in the basement at the north end of the building showed elevated levels (E and H) only adjacent to the filtered side of the bank of fans. These levels ranged up to a maximum reading of 75 μR/hr and averaged 61 μR/hr across the entire face of the filters. However, none of the alpha survey results in the basement including those at the fan or filter, were elevated. The surface wipes taken on the filter grid and the sample of material collected from the filters also showed essentially background levels. This would lead to the conclusion that the gross gamma survey results were not representative and were perhaps reflecting the presence of electrical equipment.

The Interior of the Dry Well in the South Parking Lot

Both the gamma and alpha survey measurements taken in the center of the dry well about two feet from the bottom were elevated, with the gamma level at about 75 μR/hr. The bottom of the well was not accessible for surface

wipes. A radiological source appears to exist in the soil material at the bottom of the well since the gamma and alpha readings both increased as the probes were lowered.

Two of the Work Rooms at the West Side of Building No. 2

Two of the rooms at the west side of building No. 2 (see Figure 4.0) showed slightly elevated gamma levels (less than twice background) from the survey results. However, neither the alpha survey nor the surface wipes confirmed existence of any radiological source at these locations and it is concluded that none is present.

In summary, it is concluded that:

1) Minor radiological sources, apparently in the form of particles embedded into the surface dirt, exist in the scrap melt room and adjacent corridor area, in the precious metal room (vault), and in locations on the floor of the room directly to the north of the scrap melt room.

2) Radiological sources also appear to exist in the soil at the bottom of the dry well in the south parking lot.

3) Somewhat elevated gamma survey reading in the tunnel ramp, in the two work rooms on the west side of the factory, and at the filter in the basement were not

confirmed by the alpha survey and, more conclusively, were not confirmed by the analysis of the surface wipes and dust and residue samples. Radiological sources are not apparent in these areas. As noted in section 4.0, gamma readings are subject to a degree of variability and, as a result, may not always be a reliable measure of actual levels. The subsequent analysis of wipes provides a more accurate and reliable measure of radiation levels.

4) None of the air filters showed airborne radioactivity in excess of background levels.

5) There are no measured locations in the plant where the levels are such to cause annual exposure in excess of Federal standards in NRC regulatory guide 10CFR20 for non-nuclear workers.

5.0 Recommendations

In as much as there are no locations in the plant where the radiation levels exceed, or even approach, the Federal health-related exposure limits for non-nuclear workers in 10CFR20, there is no requirement that further clean-up activities be undertaken. However, in recent years, regulatory agencies and the industry have adopted the "As Low As Reasonably Achievable (ALARA)" concept which encourages continuing actions to reduce exposure levels below established limits if technically and economically feasible. On this basis it is suggested that the feasibility of performing the following cleanup activities be considered:

1) The floor and walls up to ten feet from the floor in the scrap melt room and adjacent corridor, precious metal room and room north of the scrap melt room be cleaned to remove the accumulated dirt from the surfaces. This can be accomplished by scrubbing with any standard industrial cleaner/water mixture followed by a thorough rinse. Prior to scrubbing loose residue should be removed. The accumulated wash water can be disposed of as normal industrial liquid waste after verifying that radiological concentrations are within the permissable limits for release to the environment (i.e. through drains or sewer). Any wastes (solids,

immobilized liquids) above the release levels would have to be packaged for offsite shipment to a disposal facility. While the cleanup could be performed by Engelhard personnel, it is suggested that an outside service, experienced in these operations and in the standard radiological safety practices, be employed.

2) After the cleanup is complete, the survey should be repeated and selected wipes taken in the cleaned areas to verify that the residue has been removed.

In addition, the following further measurement should be performed:

3) Samples be taken of the soil at the bottom of, and directly adjacent to the drywell and analyzed for appropriate radiological constituents.

TABLE 1.0

LOCATIONS OF SURFACE WIPES TAKEN ON 7/14/88 and 7/15/88

(Refer to Figure 2.0 for locations)

Wipe No.	Location
1	Basement, old rack with electrical control panel: top and rear sections
2	Basement, electrical switch boxes on wooden wall board
3	Basement, middle section wipe by electrical clock area
4	Basement, pipe at base of stairs (overhead pipe)
5	Main floor: by fan and electrical junction box, just before cage on 'I' beam 20 ft. from window. Wipe 10 ft. from floor.
6	Main floor: floor by cage area below fire extinguisher
7	Main floor: side of 'I' beam by drums near 4-tank hook-up.
8	Main floor: top of electrical control boxes
9	Main floor: floor by gate
10	Main floor: 'I' beam sides at 6 feet
11	Main floor: piping overhead as you enter room
12	Main floor: gold vault, left side looking into vault (metal post at 6 feet)
13	Main floor: left side vent by door (looking into room)
14	Main floor: 2 electrical boxes adjacent to 3 push button switch
15	Main floor: just inside Melt Room 2nd 'I' beam 6 feet from floor
16	Main floor: Top off frame in Melt Room, of broken glass window (on wall side)
17	Main floor: side wall adjacent to door leading into office in Melt Room
18	Main floor: windows in Melt Room 7 to 8 feet from floor
19	Main floor: metal cage & locker room wall areas
20	Main floor: window area in shower room
21	Main floor: Ceiling of air conditioner: sitting-lunch area (room)
22	Main floor: solder room side wall by 1st. set of windows
23	Main floor: vent over Solder Room doors (outside room)
24	Main floor: top of hood
25	Main floor: top of pipes
26	Main floor: top of electrical furnace
27	Main floor: pipes 12 feet high on wall
28	Main floor; radiator, Die Room
29	Main floor; Women's room window frame and radiator
30	Main floor: Men's Room window frame
31	Main floor: small machine shop radiator, left side (as you look into room)

TABLE 1.0 (Cont'd.)

Wipe No.	Location
32	Main floor: small machine shop wooden bench top and sides
33	Main floor; electrical panel
34	Main floor: sprinkler pipe old Main entrance
35	Main floor: wipe office: radiator interior
36	Main floor: Contact test area inside of radiator
37	Main floor: Lab. office, floor
38	Main floor: Lab. balance room wall
39	Main floor: Lab. hood vent over glass sider, 1st. hood as you enter room
40	Main floor: Lab. electrical junction boxes by fire extinguisher
41	Main floor: Lab. filter wipe
42	Main floor: Lab. wipe over major control panel
43	Main floor: wipe in Lab. area on top of electrical box by double doors
44	Main floor: 'I' beam wipe 6' from floor. Beam is 4th from wall "A"
45	Main floor: floor wipe as noted
46	Main floor: floor wipe as noted
47	Main floor: floor wipe as noted
48	Main floor: floor wipe as noted
49	Main floor: floor wipe as noted
50	Main floor: floor wipe as noted
51	Duplicate wipe of #50 area wipe
52	Floor as noted
53	Floor as noted
54	Floor as noted
55	Floor as noted
56	Basement: grid for vent
57	Basement: grid for vent
58	Basement: grid for vent
59	Basement: grid for vent
60	Basement: grid for vent
61	Basement: grid for vent, repeat for #60 area
62	Basement: grid for vent
63	Basement: grid for vent
64	Basement: grid for vent
65	Basement: grid for vent
66	Pipe in carpenter room
67	Upper level, floor area
68	Upper level, floor area
69	Upper level floor area
70	Upper level: floor

TABLE 1.0 (Cont'd.)

Wipe No.	Location
71	Upper level: repeat area of #70 (duplicate)
72	Upper level, window in hallway
73	Upper level electrical junction box, top of box
74	Upper level: wipe of pipe
75	Upper level, repeat of area wipe #10 (duplicate)
76	Upper level, repeat of area wipe #20 (duplicate)
77	Upper level, repeat of area wipe #30 (duplicate)
78	Upper level, repeat of area wipe #40 (duplicate)
79	Upper level, macine room window wipe
80	Upper level, machine room electrical junction box, wipe on top of box
81	Upper level, machine room electrical junction box, repeat of wipe are #80
82	Upper level floor wipe as noted
83	Upper level, floor wipe as noted
84	Upper floor wipe as noted
85	Upper level, floor wipe as noted
86	Upper level, wall wipe as noted
87	Upper level: floor area of room A
88	Upper level, doorway floor as noted
89	Upper level, floor of room 8
90	Upper level, pipe in tunnel
91	Upper level, Wire area: desk top
92	Upper level, Metal Coin Room (vault) 1st. section: floor
94	Upper area, Wire area by 480 Volt junction box (top of box)
95	Upper level, inner Vault mid-section of shelves section: floor
97	Upper level, Inner Vault floor center of room
98	Upper level, Inner Vault: general floor wipe
99	Upper level, Inner Vault: floor
100	Upper level, Inner Vault: floor area

Table 2.0
Ambient Gamma and Alpha Radiation Levels
In Bulding Areas (Figure 2.0)

Location	Range of Ambient Gamma Levels	Range of Surface Alpha Levels
1.0 Basement area under north end of building		
A. Above floor surface	B	B
B. Adjacent to bank of filters over exhaust fans (2 in. from surface)	E to H	B
2.0 Metal stairs between basement and upper floor	B	B
3.0 Open factory floor area	B	B
4.0 Peripheral rooms	B	B
A. Office, laboratories, lockers, showers, toilets, lunch area	B	B
B. Material storage areas and work rooms (west side of building)	B to E	B
C. Melt rooms (south end of building)	B	B
D. Scrap melt room and adjacent floor area (south end of building)	B to H	E
E. Precious metal storage area (south end of building)	B to H	E
5.0 Tunnel ramp area and adjacent pit and platform	B to H	B
6.0 South fence and emergency pump station		
A. South fence	B	B
B. Interior of emergency pump station	B	B
7.0 Dry well		
A. Interior at center, 2 ft. from bottom	H	E
B. Surface around well cover	B	B
8.0 SCM mezzanine Supplies storage	B	-
9.0 External background locations		
A. South parking lot	B	B
B. North parking lot	B	B

FIGURE 1.0 LAYOUT OF FACTORY BUILDING FLOOR AREA

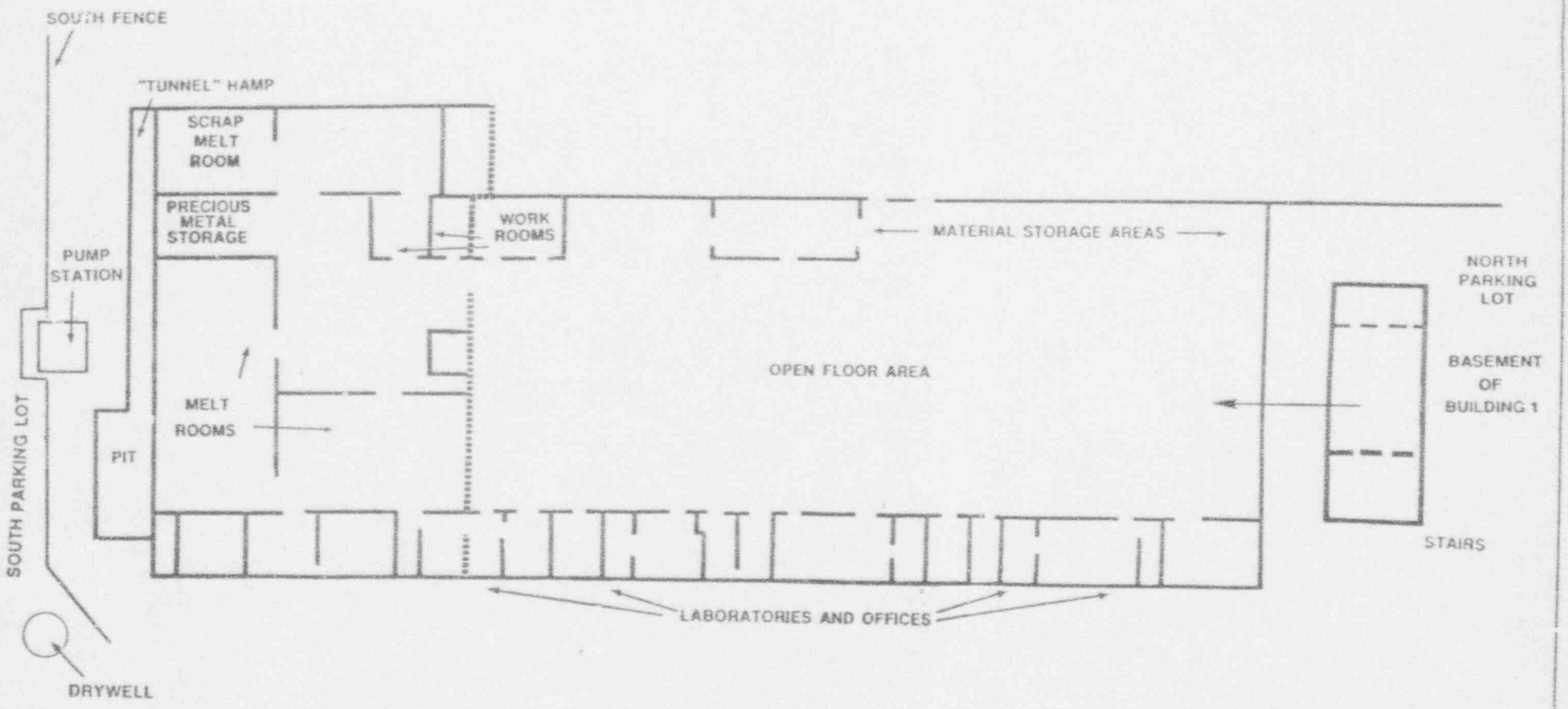


FIGURE 2.0 SURFACE WIPE TEST LOCATIONS

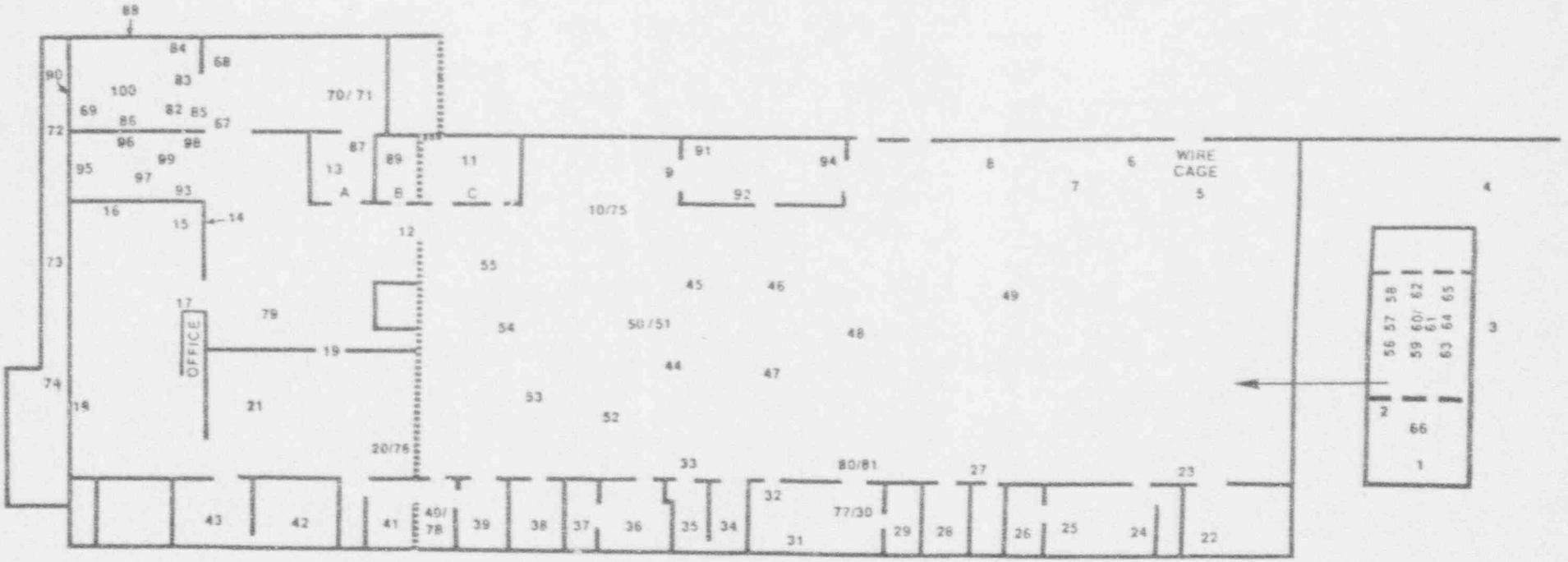


FIGURE 3.0 LOCATION OF AIR AND PARTICLE SAMPLES

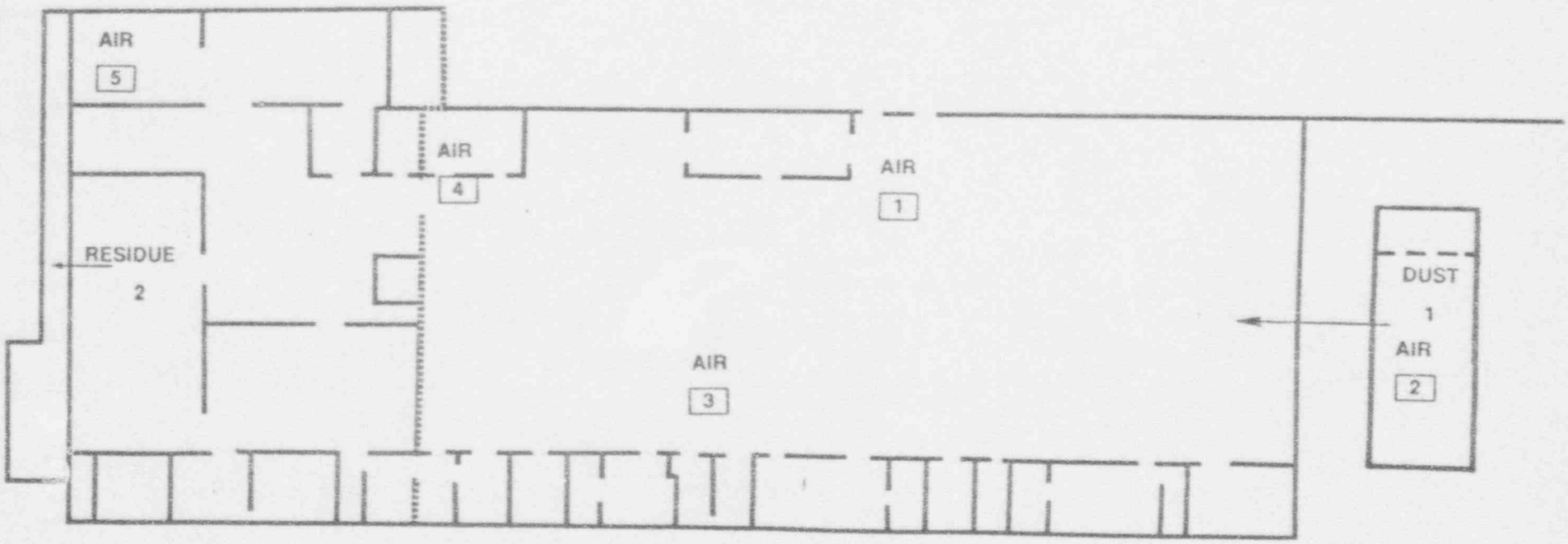


FIGURE 4.0 GAMMA AND ALPHA RADIATION SURVEY RESULTS

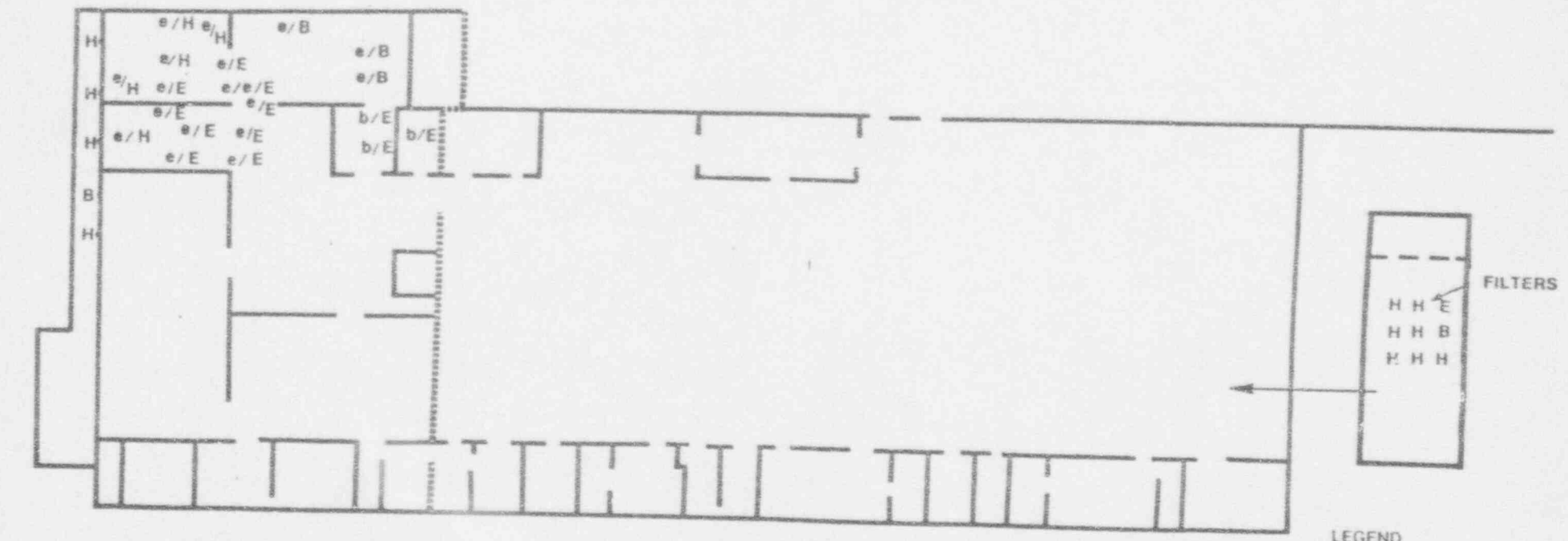
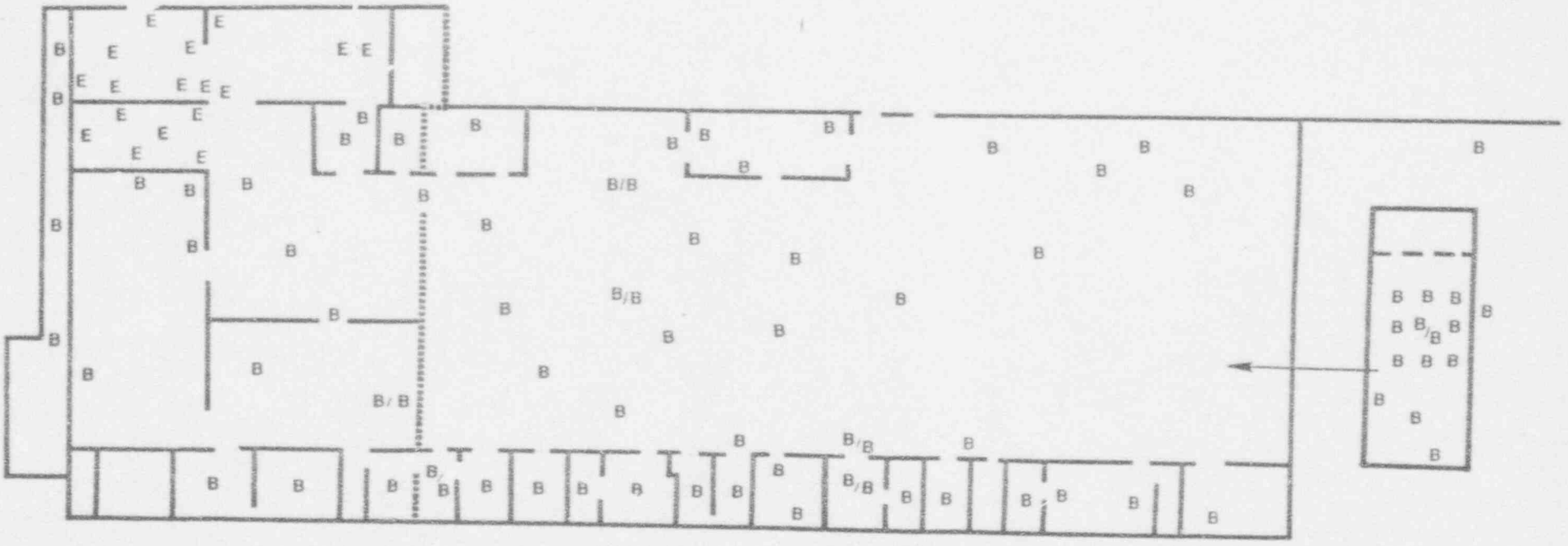
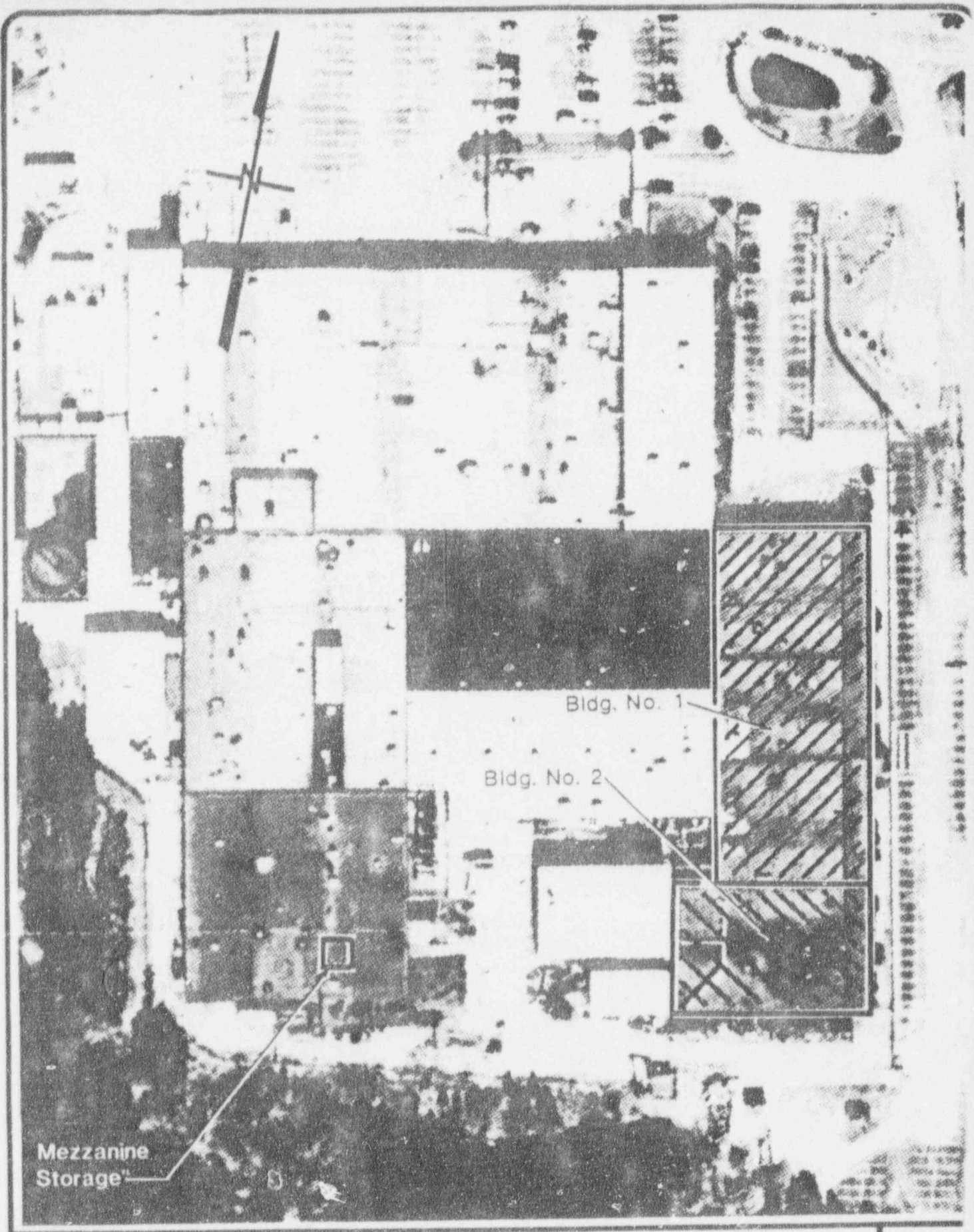


FIGURE 5.0 ALPHA/BETA/GAMMA LEVELS FROM ANALYSIS OF SURFACE WIPES (1)



NOTE

B - BACKGROUND
E - ELEVATED
H - HIGH (NONE)
E/E - INDICATES DUPLICATE AT THAT LOCATION
(1) - ALPHA/BETA/GAMMA SAME LEVEL AT EACH POINT



ENVIRON

Counsel in Health and Environmental Science

SITE LOCATION PLAN

Figure 6.0

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