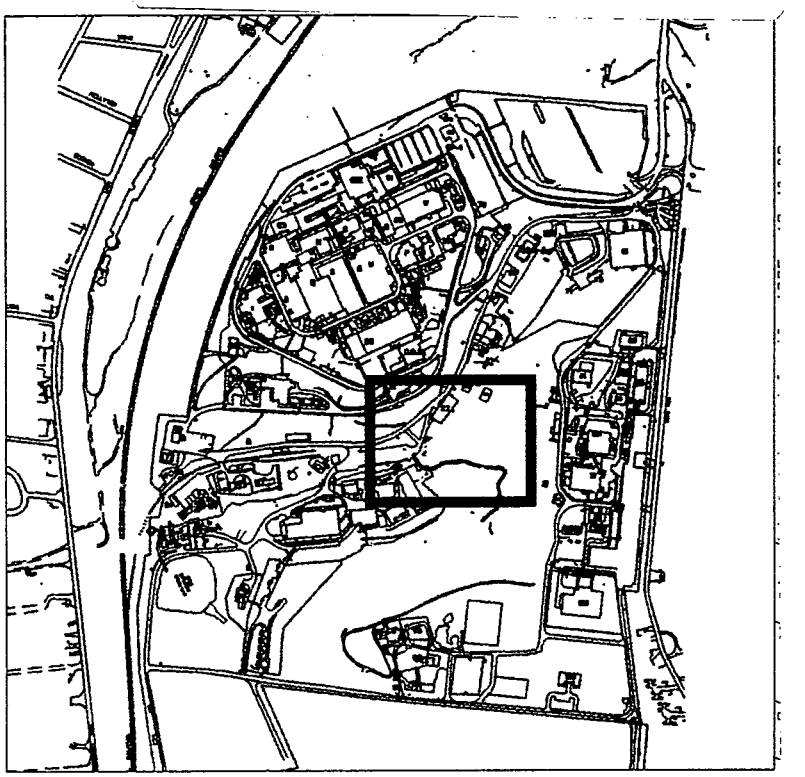
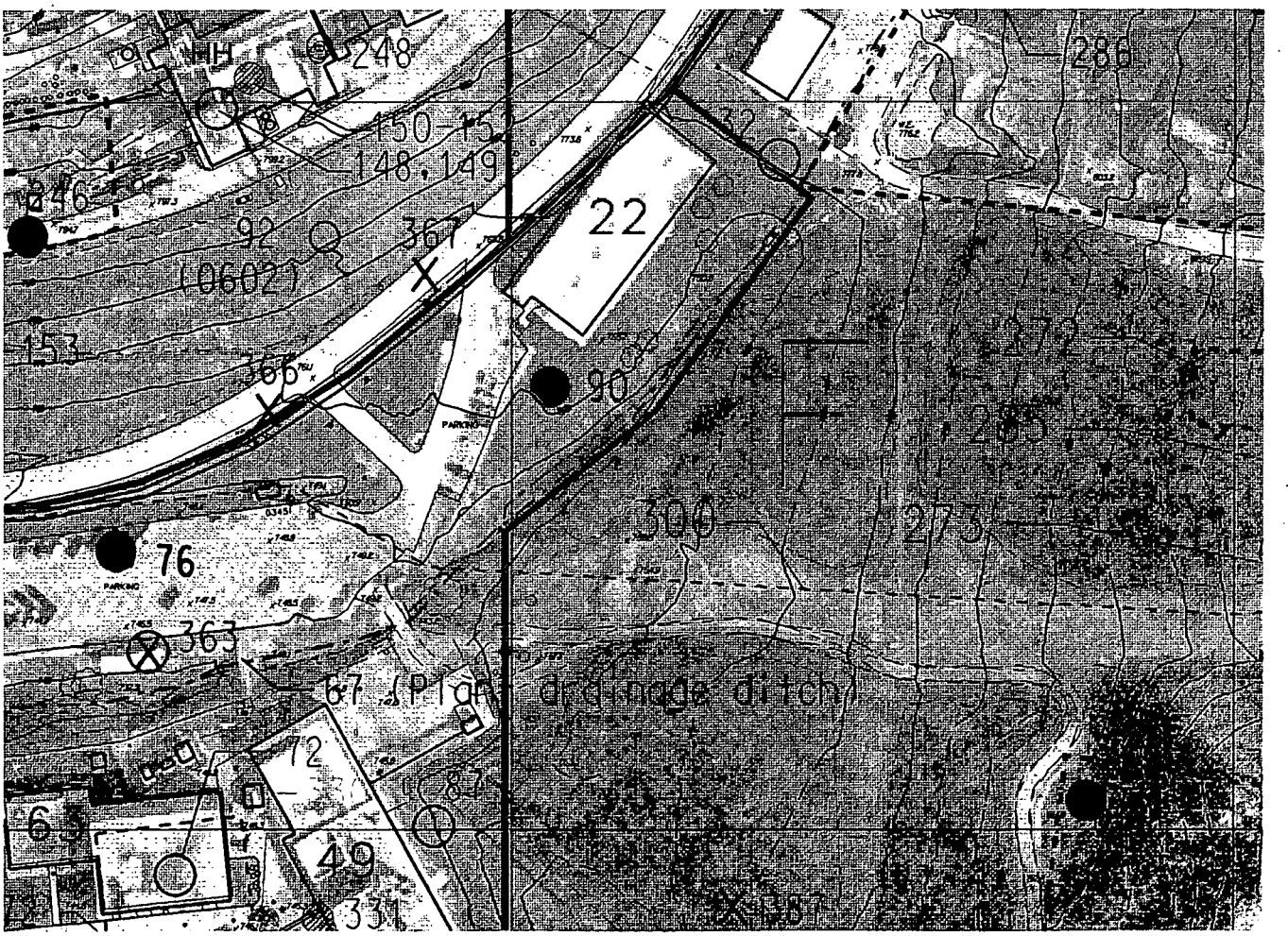
MOUND PLANT

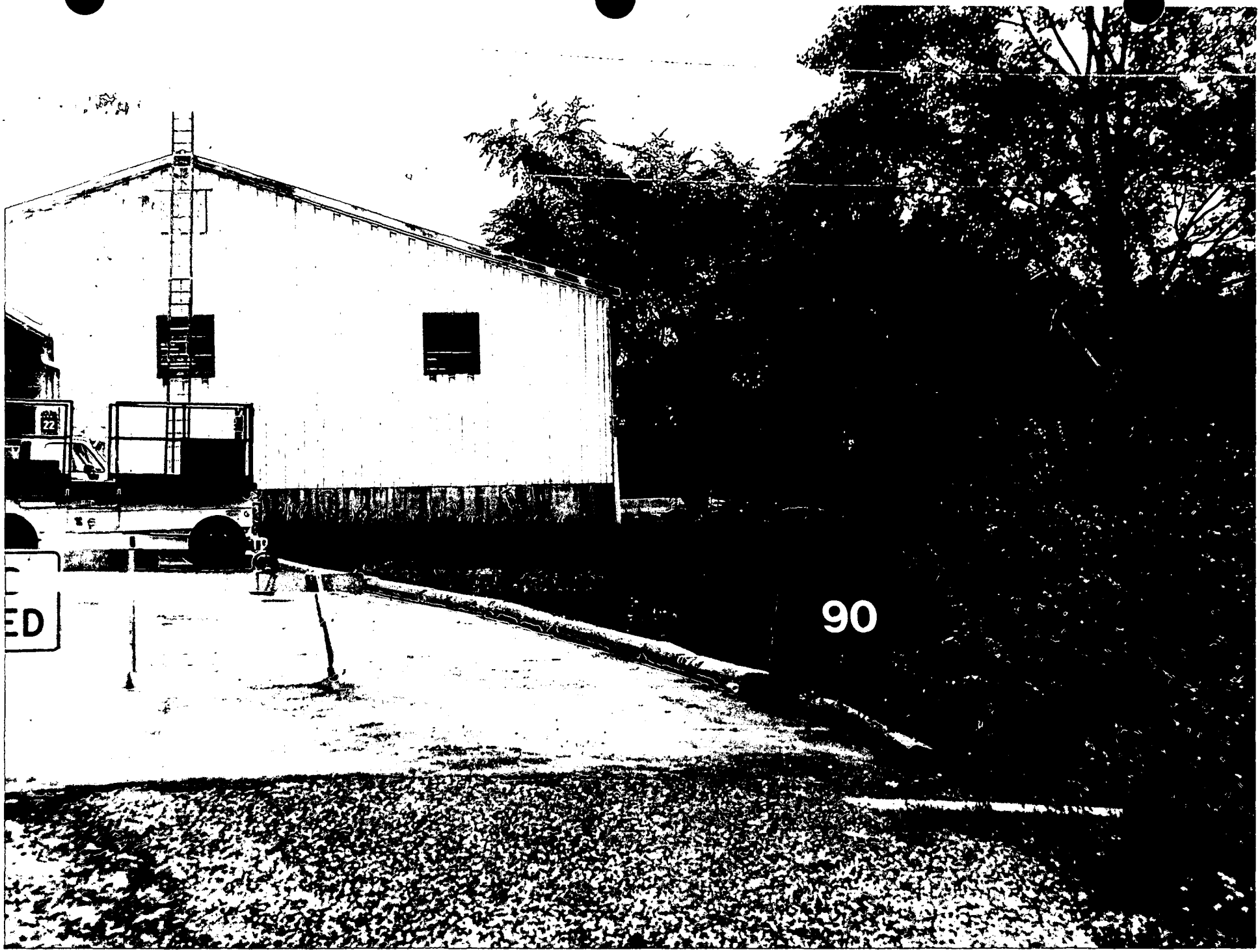
AREA C

PRS 90

July 10, 1995






90
ED

MOUND PLANT
PRS 90
JULY 5, 1995

PRS HISTORY: Isolated thorium hot spot identified Oct 83 during the Site Survey Project (location S0425).

PROCESS DESCRIPTION: No radioactive or hazardous waste generating processes are known to have occurred at the location of PRS 90. Building 22, which is nearby, has never been utilized for radioactive processes.

CONTAMINATION: Contamination levels were 5.74 pCi/g Th and 1.08 pCi/g Pu-238 in a surface sample from the 1983 Site Survey Project.

PRS 90 and the surrounding soil was revisited March 95. Five boreholes were drilled to 16 feet or bedrock and sampled at the surface and every four feet. Field results (Fiddler, Electra, OVA and OVM) found no significant radioactivity or VOCs readings. Mound soil screening results found no radioactivity above action levels.

REFERENCES:

Sampling and Analysis Plan for the Other Soils Areas, June 94
OU9 Scoping Report, Volume 3, Radiological Site Survey Report
Mound Soil Screening Results, Feb 95
Roy F. Weston Field Results, Feb 95
OU5, Operational Area Phase I Investigation, December 94

PREPARED BY: Liebson/Horstman

RECOMMENDATION: _____

_____

CONCURRENCE:

DOE: _____

USEPA: _____

OEPA: _____

REFERENCE MATERIAL
PRS 90
(ALSO KNOWN AS HOT SPOT SO425)

Document Control No. DGC

W.P. DAVIS

Environmental Restoration Program

OPERABLE UNIT 9, SITE SCOPING REPORT
VOLUME 3 - RADIOLOGICAL SITE SURVEY

MOUND PLANT
MIAMISBURG, OHIO

June 1993

FINAL

Department of Energy
Albuquerque Field Office

Environmental Restoration Program
EG&G Mound Applied Technologies

The drilling and sampling were performed using an auger drill rig and a 2-ft, split-barrel sampler. As the split-barrel sampler was removed from the borehole, it was monitored for radioactivity contamination by Mound Plant health physics personnel using a FIDLER to detect radioactivity contamination that would pose a hazard to the workers present. After the soil was removed from the sampler and placed in sample containers, field team members wearing gloves brushed the remaining soil out of the sampler. The gloves were then monitored with an alpha scintillometer before the split-barrel sampler was used again. However, no standard decontamination was performed.

The core locations are shown in Plate 1. The core locations were surveyed by a licensed surveyor after drilling was completed. The available reports submitted to Mound Plant by the drilling subcontractors are presented in Appendix B.

2.1.4. Sample Analyses

2.1.4.1. FIDLER Screening

In order to identify samples with concentrations of plutonium-238 exceeding 25 pCi/g and total thorium exceeding 2 pCi/g, all of the soil samples collected were pulverized and then screened using a Bicron® FIDLER at the Mound Plant Soil Screening Facility, known as trailer 15 at the time of the Site Survey Project. The Soil Screening Facility is now located in the H Building at Mound Plant (Plate 1). The minimum detectable activity at which plutonium-238 can be reliably detected at the Mound Plant screening facility is estimated to be 25 pCi/g (Draper 1986b). The detection of plutonium-238 at lesser concentrations (12-25 pCi/g) was unreliable and had an estimated error of ±75 percent. The estimated error decreased with increasing sample activity; for samples with 25 to 100 pCi/g of plutonium-238, the estimated error was ±35 percent, and for samples with >100 pCi/g, the estimated error was ±30 percent (Casella and Bishop 1984). The minimum detectable activity for thorium from FIDLER screening was estimated to be about 2 pCi/g (Stought et al. 1988). The Mound Plant procedure for screening soil samples is provided in Appendix A.

2.1.4.2. Radiochemical Analysis for Plutonium-238

Because of the high error (±75 percent) involved in the FIDLER screening of samples containing less than 25 pCi/g of plutonium-238, all soil samples were radiochemically analyzed by Mound Plant for plutonium-238. The lower detection limit (LDL) for plutonium-238 by this method was estimated to be 0.01 pCi/g, with a relative precision (two standard deviations) of 25 percent. The overall precision of the plutonium-238 measurements was reported to be about 18 percent (DOE 1991b). The Mound

Plant procedure for the radiochemical analysis of soil samples for plutonium-238 is provided in Appendix A.

2.1.4.3. Radiochemical Analysis for Thorium

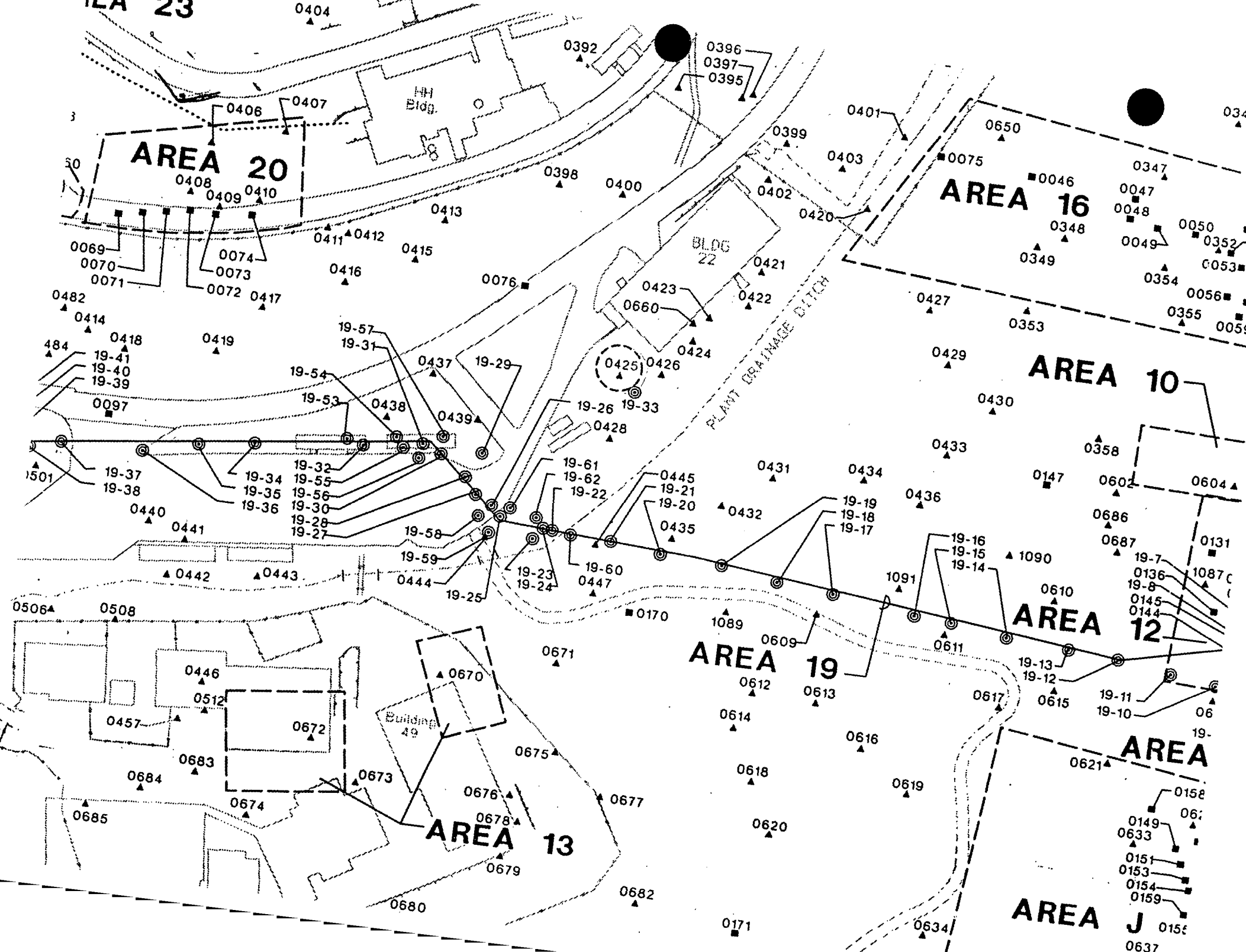
Samples with thorium concentrations in excess of 2 pCi/g by FIDLER screening were also radiochemically analyzed for thorium, resulting in the radiochemical analysis of about 12 percent of the samples. The LDLs for the thorium isotopes using radiochemical procedures were estimated to be

- 0.3 pCi/g for thorium-228, with a relative precision of 60 percent;
- 0.3 pCi/g for thorium-230, with a relative precision of 30 percent; and
- 0.1 pCi/g for thorium-232, with a relative precision of 70 percent.

The overall precision for the thorium measurement was reported to be about 25 percent. The thorium results were reported in pCi of total thorium per gram of soil, isotopes were not identified. The Mound Plant procedure for the radiochemical analysis of soil samples for thorium is provided in Appendix A.

2.1.4.4. Gamma Spectroscopy

Gamma spectroscopy was performed by Mound Plant on approximately 350 (18 percent) of the soil samples in order to verify the identity of the radionuclides present when screening indicated the presence of gamma-emitting radionuclides, but little excess plutonium or thorium was identified by radiochemical analysis. Gamma spectroscopy is capable of detecting a variety of gamma-emitting radionuclides; the radionuclides detected in samples collected during the Site Survey Project included cobalt-60, cesium-137, radium-226, actinium-227, and americium-241. No other gamma-emitting radionuclides with gamma energies below 1.5 millielectron volts (MeV) were detected, although the project report stated that subsequent sampling and analysis in some areas indicated bismuth-207 and bismuth 210m. No polonium-210 peaks were detected in the Site Survey Project samples, confirming that polonium-210, which was used at Mound Plant in the 1950s, is no longer present due to radioactive decay (half-life of 138.4 days). The LDLs for cesium-137, cobalt-60, and americium-241 were given with the original data, and were estimated to be 0.5 pCi/g for each. The LDLs for radium-226 and actinium-227 were estimated to be 1.0 pCi/g for both (Stought 1990). The Mound Plant procedure for gamma spectroscopy is provided in Appendix A.


AREA 23
AREA 20
AREA 16
AREA 10
AREA 12
AREA 19
AREA 13
AREA J
HH Bldg.
BLDG 22
Building 49
PLANT DRAINAGE DITCH

RADIOCHEMICAL ANALYSIS

Map Location[a]	Coordinates South	Coordinates West	MRC ID No.	Mo-Yr	Depth (inch)	Pu-238 (pCi/g)	Thorium[b] (pCi/g)	Tritium (pCi/mL)	Co-60 (pCi/g)	Cs-137 (pCi/g)	Ra-226 (pCi/g)	Am-241 (pCi/g)
			10765	09-85	54	NR	NR		LDL	LDL	0.5	LDL
			10766	09-85	72	NR	NR		LDL	LDL	0.5	LDL
			10767	09-85	90	NR	NR		LDL	LDL	0.6	LDL
			10768	09-85	108	NR	NR		LDL	LDL	0.6	LDL
			10769	09-85	126	NR	NR		LDL	LDL	0.7	LDL
S0411	2300	3150	5869	07-84	0	1.15	b					
S0412	2310	3135	6864	08-84	0	0.08	2.97					
S0413	2325	3050	5868	07-84	0	1.21[c]	b					
S0414	2325	3375	6865	08-84	0	1.04	b					
S0415	2350	3085	2875	10-83	0	1.25	b					
S0416	2350	3150	6868	08-84	0	1.18	b					
S0417	2350	3225	6867	08-84	0	1.45	b					
S0418	2350	3350	6866	08-84	0	0.95	b					
S0419	2375	3275	2877	10-83	0	1.09	b					
C0075	2400	2620	8383	11-84	54	4.94[c]	b					
			8384	11-84	90	0.25	2.73					
S0420	2425	2695	6776	08-84	0	0.12	b					
S0421	2450	2800	10470	08-85	0	1.68	b					
S0422	2475	2820	6775	08-84	0	1.45	b					
S0423	2475	2855	10469	08-85	0	2.40	b					
S0424	2490	2875	10468	08-85	0	1.23	b					

GAMMA SPECTROSCOPY

RADIOCHEMICAL ANALYSIS

Map Location[a]	Coordinates South	Coordinates West	MRC ID No.	Mo-Yr	Depth (inch)	Pu-238 (pCi/g)	Thorium[b] (pCi/g)	Tritium (pCi/mL)	Co-60 (pCi/g)	Cs-137 (pCi/g)	Ra-226 (pCi/g)	Am-241 (pCi/g)
S0425	2500	2945	4108	10-83	0	1.08	5.74					
S0426	2510	2910	10467	08-85	0	1.00	b					
S0427	2525	2670	6777	08-84	0	1.58	b					
S0428	2550	2970	6772	08-84	0	11.80	b					
S0429	2575	2670	6774	08-84	0	3.43	b					
S0430	2625	2645	4111	10-83	0	0.20[c]	b					
S0431	2625	2845	4110	10-83	0	1.79	b					
S0432	2635	2895	6780	08-84	0	5.78	b					
S0433	2650	2695	6778	08-84	0	0.98	b					
S0434	2650	2770	6773	08-84	0	12.10	b					
S0435	2650	2945	4109	10-83	0	0.83	b					
S0436	2685	2730	6779	08-84	0	7.83	b					
C0076	2400	3000	8290	11-84	36	0.15	b					
			8291	11-84	72	0.16	b					
			8292	11-84	126	0.11	b					
S0437	2450	3100	5878	07-84	0	1.52	b					
S0438	2474	3150	5879	07-84	0	0.27	b					
S0439	2500	3075	5880	07-84	0	0.49	b					
S0440	2500	3375	2984	10-83	0	0.96	b					
S0441	2525	3350	2982	10-83	0	0.07	b					

Document Control No.: _____

Environmental Restoration Program

OPERABLE UNIT 5
OPERATIONAL AREA PHASE I INVESTIGATION
NON-AOC FIELD REPORT

MOUND PLANT
MIAMISBURG, OHIO

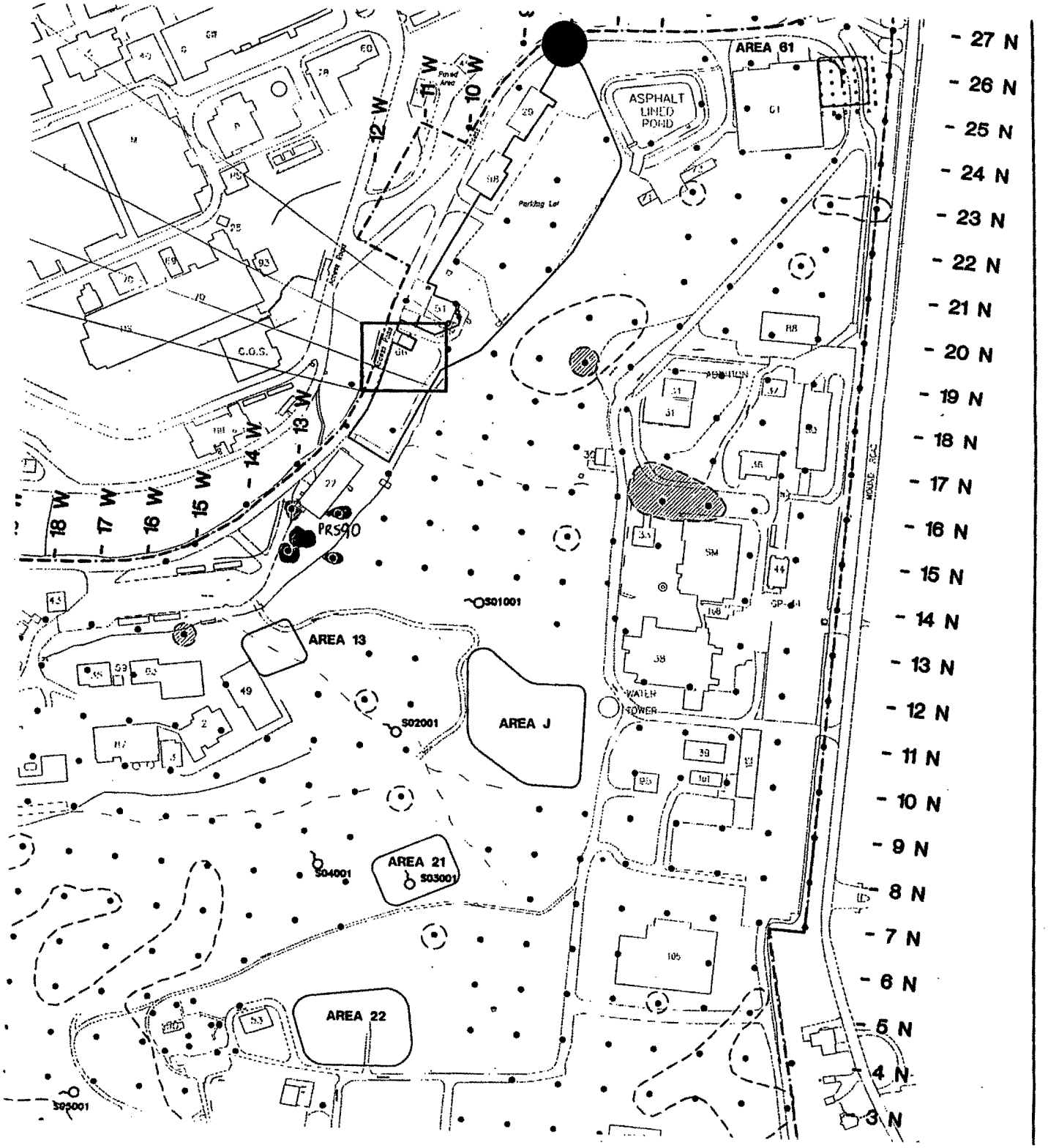
VOLUME I - TEXT

June 1995

Final (Revision 0)

U.S. Department of Energy
Ohio Field Office

EG&G Mound Applied Technologies


AREA 61
ASPHALT LINED POND
Parking Lot
C.O.S.
PRS90
S01001
AREA 13
S02001
AREA J
WATER TOWER
AREA 21
S03001
S04001
AREA 22
S05001
12 W
11 W
10 W
13 W
14 W
15 W
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27 N
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14 N
13 N
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5 N
4 N
3 N

APPENDIX D
RADIOLOGICAL DATA (FIDLER SURVEY MOUND SOIL SCREENING FACILITY DATA) FOR NON-AOC POINTS

	FIDLER SURVEY DATA					MOUND SOIL SCREENING FACILITY DATA			
SMPID	Contamination Criteria CH1	FIDLER Readings CH1	Contamination Criteria CH2	FIDLER Readings CH2	FIDLER Readings Out Channel	Plutonium - 238		Thorium - 232	
	Units: CPM	Units: CPM	Units: KCPM	Units: KCPM	Units: KCPM	Units: pCi/g		Units: pCi/g	
	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	Note:	RESULTS	Note:
12N15	157.3	65	8.45	4.0	NC	85	b	0.9	a
12N16	157.3	110	8.45	5.5	NC	9	a	0.7	a
12N17	157.3	60	8.45	3.5	NC	WIPE	c	WIPE	c
12N18	157.3	60	8.45	4.5	NC	WIPE	c	WIPE	c
12N19	157.3	55	8.45	4.5	NC	19	a	0.5	a
12N20	157.3	65	8.45	4.5	NC	WIPE	c	WIPE	c
12N21	157.3	50	8.45	3.5	NC	WIPE	c	WIPE	c
12N22	157.3	85	8.45	5.5	NC	16	a	1	a
12N23	157.3	75	8.45	5.0	NC	WIPE	c	WIPE	c
12N24	157.3	40	8.45	3.5	NC	WIPE	c	WIPE	c
13N01	253.5	180	12.48	10.0	NC	15	a	1.1	a
13N02	253.5	95	12.48	4.5	NC	WIPE	c	WIPE	c
13N03	130	110	6.5	4.5	NC	WIPE	c	WIPE	c
13N25	157.3	40	8.45	4.0	NC	WIPE	c	WIPE	c
13N26	157.3	60	8.45	4.0	NC	WIPE	c	WIPE	c
14N01	253.5	100	12.48	7.0	NC	WIPE	c	WIPE	c
14N02	122.2	80	5.59	4.5	NC	WIPE	c	WIPE	c
14N03	130	75	6.5	5.0	NC	WIPE	c	WIPE	c
14N07	170.3	100	9.72	7.0	NC	NR		NR	
14N08	170.3	150	9.72	10.0	NC	NR		NR	
14N09	170.3	145	9.72	10.0	NC	NR		NR	
14N10	170.3	85	9.72	8.0	NC	NR		NR	
14N11	170.3	115	9.72	10.0	NC	NR		NR	
14N12	170.3	130	9.72	8.0	NC	NR		NR	
14N13	157.3	100	8.45	5.5	NC	NR		NR	
14N15	157.3	70	8.45	4.0	NC	WIPE	c	WIPE	c
14N25	157.3	85	8.45	7.0	NC	9	a	0.6	a
14N26	157.3	80	8.45	7.5	NC	8	a	0.7	a
14N27	157.3	150	8.45	9.0	NC	20	a	0.9	a

APPENDIX D

RADIOLOGICAL DATA (FIDLER SURVEY MOUND SOIL SCREENING FACILITY DATA) FOR NON-AOC POINTS

	FIDLER SURVEY DATA					MOUND SOIL SCREENING FACILITY DATA			
SMPID	Contamination Criteria CH1	FIDLER Readings CH1	Contamination Criteria CH2	FIDLER Readings CH2	FIDLER Readings Out Channel	Plutonium - 238		Thorium - 232	
	Units: CPM	Units: CPM	Units: KCPM	Units: KCPM	Units: KCPM	Units: pCi/g		Units: pCi/g	
	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	Note:	RESULTS	Note:
15N01	253.5	190	12.48	10.0	NC	21	a	1.1	a
15N02	122.2	110	5.59	4.5	NC	WIPE	c	WIPE	c
15N03	130	80	6.5	6.0	NC	0	a	0	a
15N06	130	75	6.5	5.0	NC	NR		NR	
15N07	170.3	115	9.72	8.5	NC	30	b	1	a
15N08	170.3	155	9.72	9.0	NC	NR		NR	
15N09	170.3	125	9.72	10.5	NC	17 17	a a	1.2 1.1	a a
15N10	170.3	100	9.72	7.5	NC	19	a	0.9	a
15N11	170.3	120	9.72	8.5	NC	3	a	1	a
15N12	157.3	100	8.45	6.0	NC	17	a	0.6	a
15N13	157.3	85	8.45	4.5	NC	WIPE	c	WIPE	c
15N14	157.3	108	8.45	6.0	NC	NR		NR	
16N01	253.5	170	10.0	10.5	NC	17	a	1.1	a
16N02	122.2	70	5.59	4.5	NC	WIPE	c	WIPE	c
16N03	130	100	6.5	5.0	NC	0	a	0.5	a
16N04	130	150	6.5	9.0	NC	78	b	1.2	a
16N05	NC	NC	NC	NC	NC	243	b	1.2	a
16N06	130	45	6.5	4.5	NC	WIPE	c	WIPE	c
16N07	170.3	80	9.72	5.0	NC	4	a	1	a
16N08	170.3	45	9.72	4.5	NC	9	a	0.6	a
16N09	170.3	130	9.72	7.5	NC	NR		NR	
16N10	170.3	125	9.72	6.5	NC	NC		NC	
16N11	157.3	110	8.45	5.5	NC	NC		NC	
16N13	157.3	55	8.45	5.5	NC	NR		NR	
17N01	253.5	100	12.48	5.5	NC	0	a	0.5	a
17N02	130	80	6.5	4.5	NC	WIPE	c	WIPE	c
17N04	130	80	6.5	4.0	NC	WIPE	c	WIPE	c
17N05	130	90	6.5	4.0	NC	WIPE	c	WIPE	c

APPENDIX D

RADIOLOGICAL DATA (FIDLER SURVEY MOUND SOIL SCREENING FACILITY DATA) FOR NON-AOC POINTS

	FIDLER SURVEY DATA					MOUND SOIL SCREENING FACILITY DATA			
SMPID	Contamination Criteria CH1	FIDLER Readings CH1	Contamination Criteria CH2	FIDLER Readings CH2	FIDLER Readings Out Channel	Plutonium - 238		Thorium - 232	
	Units: CPM	Units: CPM	Units: KCPM	Units: KCPM	Units: KCPM	Units: pCi/g		Units: pCi/g	
	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	Note:	RESULTS	Note:

NR - Not recorded
NC - No sample/reading taken
NA - Reading not taken; contamination criteria not exceeded.
a - Mound Soil Screening Facility detection level not exceeded.
b - Concentration at or above the Mound Soil Screening Facility detection level.
c - Results of the wipe sample were less than 20 disintegrations per minute.
CPM - Counts per minute
KCPM - Counts per minute x 1000
pCi/g - Picocuires per gram

ENVIRONMENTAL RESTORATION PROGRAM

OPERABLE UNIT 5 DISCUSSION PAPER
IDENTIFICATION OF ADDITIONAL PHASE 1 RECONNAISSANCE SAMPLING LOCATIONS

MOUND PLANT
MIAMISBURG, OHIO

PREPARED UNDER THE DIRECTION OF:

U.S. DEPARTMENT OF ENERGY BY
EG&G MOUND APPLIED TECHNOLOGIES

BY:
SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

MARCH 1995

1. PURPOSE OF DOCUMENT

EG&G Mound Applied Technologies (EG&G) has requested a document search to identify sites located within the defined boundary of Operable Unit (OU) 5 that may require additional Remedial Investigation (RI) Phase 1 Reconnaissance efforts. This discussion paper summarizes the findings based on review of the following documents:

1. Table V.2 and Figure 1, OU9 Site Scoping Report: Volume 12 - Site Summary Report (Weston, 1993).
2. Table I.3, OU5 RI/FS Work Plan
3. Active Underground Storage Tank Plan (Dames & Moore, 1994)
4. OU9 Site Scoping Report, Volume 7 - Site Summary Report (Weston, 1993)

The identified sites of interest within OU5 are shown in Figure 1 and summarized in Table 1. Based on the proposed sampling for the RI Phase 1 Reconnaissance and the potentially hazardous substances that may be present at the identified sites, recommendations for additional sampling has been made, as appropriate.

2. RESULTS

Table 1. summarizes the identified sites of interest and provides the following information on each site:

- Location number - corresponds to the location of the site within OU5 as shown in Figure 1. Coordinates have been provided to assist in locating a site on Figure 1. For example Location #1 has been given coordinates 9/10N, 20/21W. This means the site of interest is located in the grid bounded by 9 North and 10 North coordinate lines and 20 West and 21 West coordinate lines.
- Site name - provides a brief description of the site based on document research.
- Reference code - provides the corresponding site number (where applicable) to Appendix A, and Figure 1 in Operable Unit 9, Site Scoping Report: Volume 12 (Weston, 1993) which were used to provide a site description, potential hazardous substance at the site, and the size of site/location for most of the identified sites.

Table 1. Location of Potential Sites of Contamination Within OU5
Page 6 of 13

Location Number as Shown in Figure 1	Potential Release Site		Source	Potential Hazardous Substances	Comments
	Site Name	Reference Code			
65 (14N, 13W)	Site Survey Project-Identified Potential Hot Spot, Location S0425	90	2,4	Thorium	D
66 (8/9N, S/6W)	Site Survey Project-Identified Potential Hot Spot, Location S0647	310	2,4	Cesium-137	B
67 (21/23N, 9/12W)	Area of Possible Elevated Thorium Activity		2,4		B
68 (12/13N, 5/6W)	Alpha wastewater sump (in service)- Bldg 38 (Tank 26)	297	3,4	Wastewater from floor drains and decontamination showers	B
69 (12/13N, 5/6W)	Alpha wastewater sump (in service) - Bldg 38 (Tank 27)	298	3,4	Wastewater from floor drains and decontamination showers	B
70 (18/19N, 2/3W)	Sanitary waste tank (in service) - Bldg 37 (Tank 100)	271	3,4	sanitary wastes	E
71 (9/10N, 24/25W)	Grit chambers (in service) - Bldg 57 (Tank 101)	43	3,4	Waters of the backwashes discharged to storm sewer, Plutonium-238 and other radionuclides	B
72 (9/10N, 24/25W)	Comminutor (in service) - Bldg 57 (Tank 102)	45	3,4	Waters of the backwashes discharged to storm sewer, Plutonium-238 and other radionuclides	B
73 (9/10N, 24/25W)	Equalization basin (in service) - Bldg 57 (Tank 103)	46	3,4	Waters of the backwashes discharged to storm sewer, Plutonium-238 and other radionuclides	B

* - Refers to code designated for the site in Appendix A, Roy F. Weston, Environmental Restoration Program, Operable Unit 9, Site Scoping Report: Volume 12 - Site Summary Report, Mound Plant, October 1993

1 - Table V.2, Roy F. Weston, Environmental Restoration Program, Operable Unit 9, Site Scoping Report: Volume 12 - Site Summary Report, Mound Plant, October 1993

2 - Table 1.3., OU5, RI/FS Work Plan, August 1993

3 - Figure 1, Dames & Moore, Revise Draft, Active Underground Storage Tank Plan, May 16, 1994

4 - Figure 1, Roy F. Weston, Environmental Restoration Program, Operable Unit 9, Site Scoping Report: Volume 12 - Site Summary Report, Mound Plant, October 1993

5 - OU9 Site Scoping Report, Volume 7 - Site Summary Report (Weston, 1993)

A - Additional Soil Gas Survey Recommended Based on Site Inspection

B - No additional sampling, site located at/near established survey point or under on-going activities

C - Proposed sampling on one side or around building as appropriate

D - Potential radioactive contaminated area examined under the OU5 Phase I Reconnaissance Survey. A core sample for radiological testing recommended due to insufficient proposed sampling points in the area. The sample will be taken based on site inspection.

E - No sampling required, site never used for hazardous material storage activities

F - Additional sample recommended to be tested for TAL Metals

G - Outside OU5 Range

H - Does not fall in the OU5 Phase 1 Site Reconnaissance Survey Project. Need additional guidance from EG&G.

- Source - references the source used to identify the sites. Initially, all sites listed in Table V.2, Operable Unit 9, Site Scoping Report: Volume 12 (Reference 1) were identified. Then, any additional sites identified in either Table II.3, OU5, RI/FS Work Plan (Reference 2) or Figure 1, Revised Draft, Active Underground Storage Tank Plan (Reference 3) Figure 1, Operable Unit 9, Site Scoping Report: Volume 12 - Site Summary Report (Reference 4) or OU9 Site Scoping Report, Volume 7 - Site Summary Report (Reference 5).

- Potential Hazardous Substance - identifies the potential contaminants that may be present at a site. The potential hazardous substance identified for each site are based on the data provided in Appendix A, Operable Unit 9, Site Scoping Report: Volume 12 (Weston, 1993).

- Comments - provides recommendation on whether additional sampling radiological and/or chemical is required based on the location of a site in relation to the existing soil gas sampling grid established for OU5 RI/FS Site Reconnaissance Survey and the nature of the potential contamination at a site. The sites have been classified into the following categories.

A Recommend additional soil gas survey and Mound Screening Facility sample(s). Potential location of sample(s) is shown in Figure 1. However, the final determination of whether sampling is required and the exact location of the sample should be based on a site inspection.

B No additional sampling is required since the site is located at or near an established soil gas survey sample or is covered under other on-going site activities (e.g., D&D activities in Area 1 which eliminates Sites #41, 42, and #125 from further sampling under this investigation).

C Recommend sampling on one side or around the building for sites that are located either inside a building or clustered around the building (e.g, tanks). The potential side(s) of buildings that may require sampling have been identified in Figure 1. However, the final determination of the sides of the building, if any, that should be sampled will be made based on site inspection.

D Recommend surface soil sample(s) for Mound Screening Facility analysis be taken at identified locations(s) based on the potential for radiological contamination at these locations. The proposed locations for the sample(s) are shown in Figure 1. However, the final determination of whether an additional sample is required will be based on a site inspection.

E No additional sampling is recommended for the site, since it has not been historically used in hazardous material activities.

F Recommend additional shallow soil sample(s) be taken at the identified locaitons(s) and tested for Total Analyte List (TAL) Metals based on the potential hazardous substance that may be present at the site.

G Recommend no further sampling at the site. Although site has been listed as a part of OU5 in the researced documents, it falls outside the established OU5 boundary.

H Require further guidance from ~~EG&G~~ since these sites do not fall within the OU5 Phase 1 Site Reconnaissance Survey Project. Most of these sites have been identified as having contained explosive materials.

3. RECOMMENDATIONS

The proposed recommendations for each of the 139 sites identified through the document search has been presented in Table 1. Where additional sampling has been proposed, the potential locations have been identified in Figure 1. However, all final determination for additional sampling will be based on site inspection. In general, the following sampling is recommended:

1. Soil gas sampling at the following locations:

    - (1) sample near location #1
    - (1) sample near location #2
    - (1) sample near location #4 and #7
    - (1) sample near location #6
    - (1) sample near location #11 and #96
    - (1) sample near location #29
    - (1) sample near location #35 and #120
    - (1) sample near location #37
    - (1) sample near location #40
    - (1) sample near location #51
    - (1) sample near location #97
    - (1) sample near location #100
    - (1) sample near location #129

2. Sampling on on side or around the following buildings:

   - (1) Bldg. 9 (Location #9)
   - (1) Bldg. 24 (Location #63)
   - (1) Bldg. 51 (Location #15, #16, and #17)
   - (1) Bldg. 36 (Location #35)

3. Surface soil sample(s) for Mound Screening Facility Analysis at the following locations:

   - (1) sample near location #28
   - (1) sample near location #29
   - (1) sample near location #45
   - (1) sample near location #46
   - (1) sample near locaiton #86 and #87
   - (1) sample near location #115
   - (1) sample near location #117
   - (1) sample near location #65

4. One sample for TAL analyses at the following location:

   - (1) sample near location #50

5. Samples for Explosive Analyses at the following locations:

   - (4) samples near location #106, #107, #122, and #123
   - (2) samples near location #33 and #124

DECONTAMINATION & DECOMMISSIONING PROGRAM

SAMPLING AND ANALYSIS PLAN FOR THE OTHER SOILS AREAS

MOUND PLANT
MIAMISBURG, OHIO

FINAL (Rev 1)

Prepared for:

EG&G MOUND APPLIED TECHNOLOGIES
AND
THE U.S. DEPARTMENT OF ENERGY

Prepared by:

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JUNE 1994

2.1.4 Hot Spot S0175

Hot Spot S0175 is located on the southwestern edge of the Main Hill. This hot spot is in an area west of the perimeter road near Building I and possibly covered with asphalt. The ground slopes steeply just past the hot spot to the west. (See Figure 2.4)

2.1.5 Hot Spot S0208

Hot Spot S0208 is located in the southwest corner of the Main Hill. This hot spot is in a grassy, fairly steep area along the western edge of Building 89. (See Figure 2.4)

2.1.6 Hot Spot S0307

Hot Spot S0307 is located in the ravine between the Main Hill and the SM/PP Hill. This hot spot is in a grassy area east of the Building 29 parking lot and approximately 200 feet south of the concrete spillway extending from the asphalt lined pond. (See Figure 2.1)

2.1.7 Hot Spot S0425

Hot Spot S0425 is located near the northern end of the plant drainage ditch between the Main Hill and the SM/PP Hill. This hot spot is in an a grassy area to the south of Building 22, and between the parking lot and the plant drainage ditch. (See Figure 2.5)

2.1.8 Hot Spot S0472

Hot Spot S0472 is located on the southern slope of the Main Hill. This hot spot is in an area outside of the security fence near the top of a steep drop south of Buildings 23 and 79. (See Figure 2.3)

2.1.9 Hot Spot S0647

Hot Spot S0647 is located on the SM/PP Hill. This hot spot is in a surface water drainage ditch, east of the roadway, approximately 250 feet south of the water tower and southwest of Building 95. (See Figure 2.6)

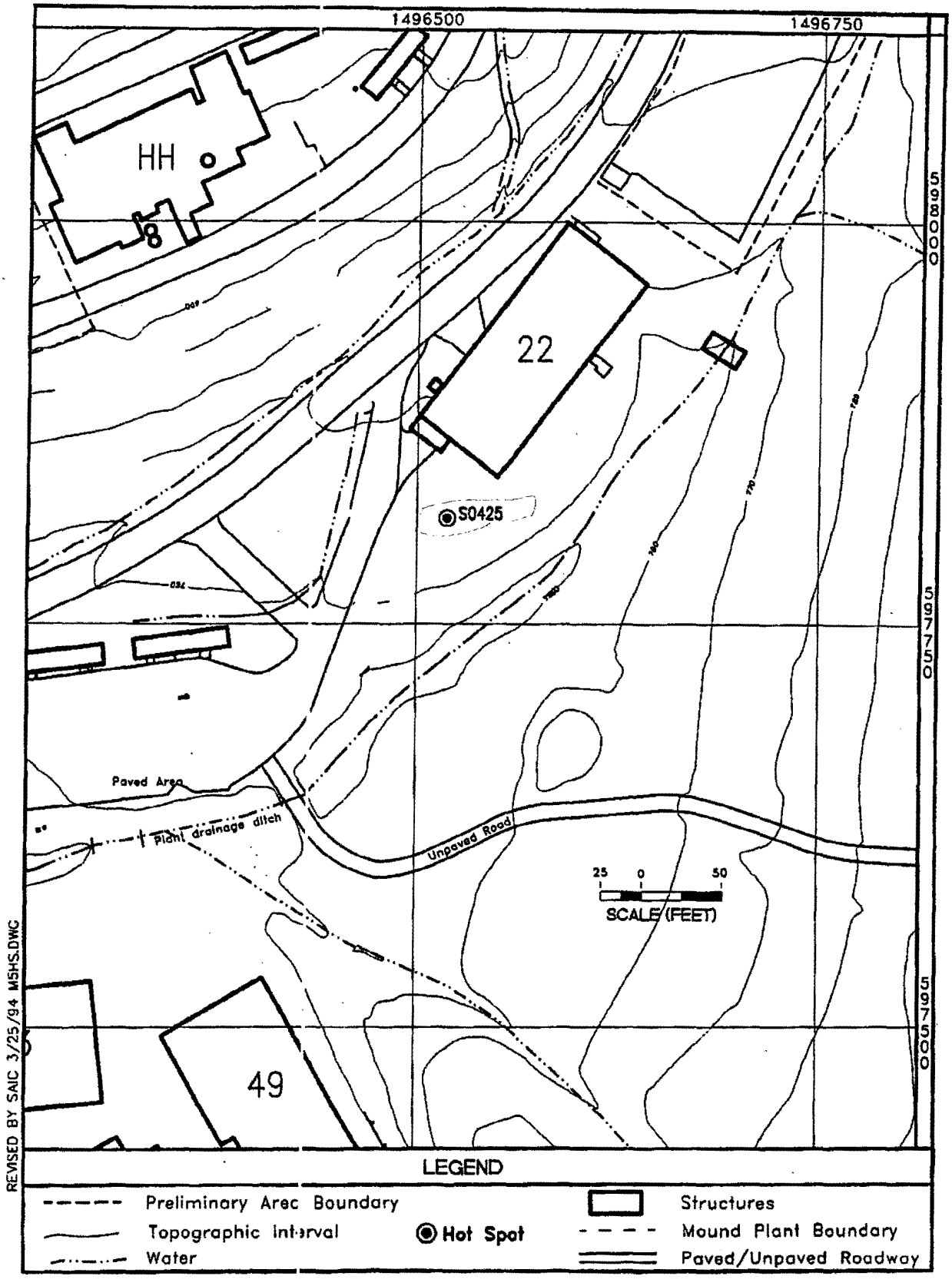

Figure 2.5. Location of Hot Spot S0425

RADIOCHEMICAL ANALYSIS

Table II.1 Historical Data from the Mound Site Survey Project - Hot Spots
Page 1 of 2

Hot Spot ID #[a]	(Mo-Yr)	Depth	Plutonium-238 (pCi/g)	Thorium[b] (pCi/g)	Tritium (pCi/mL)	Cobalt 60 (pCi/g)	Cesium-137 (pCi/g)	Radium-226 (pCi/g)	Americium-241 (pCi/g)
C0007[c]	11-84	54	0.39	41.63					
	11-84	108	0.08	5.14					
C0028	12-82	18	11.40	5.61					
	12-82	48	NR	109.00					
	12-82	66	NR	109.00					
	12-82	102	NR	58.00					
	12-82	156	NR	97.00					
	12-82	216	0.29	29.45					
	12-82	234	0.06	b					
	12-82	252	0.03	b					
S0166	10-83	0	34.50	b					
S0175	06-85	0	NR	NR		82	10	0.8	LDL
S0208	10-83	0	61.00	b	0.72				
S0307	10-83	0	5.36	6.46					
S0425	10-83	0	1.08	5.74					
S0472	08-84	0	1.20	7.50					

Table III.1. A Listing of Suspected Contaminants of Concern Based on Historical Data Sources

Hot Spot	Depth[1] of Contaminant (feet)	Suspected Contaminants	Sampling Depth (feet)
C0007	9[a]	Thorium, Plutonium	9
C0028	21[a]	Thorium, Plutonium	21
S0166	surface	Plutonium	13
S0175	surface	Cobalt, Cesium, Radium, Americium	7
S0208	surface	Plutonium, Tritium	1.5
S0307	surface	Thorium, Plutonium	15
S0425	surface	Thorium, Plutonium	16
S0472	surface	Thorium, Plutonium	28
S0647	surface	Cobalt, Cesium, Radium, Americium	2.5
S0706	surface	Plutonium	5
S0971	surface	Thorium, Plutonium	3
S0982	surface	Thorium, Plutonium	3
S1092	surface	Thorium, Plutonium	28

[1]Vertical location at hot spot where contamination was detected.
[a]Core sample. Depth is estimate based on previous results.

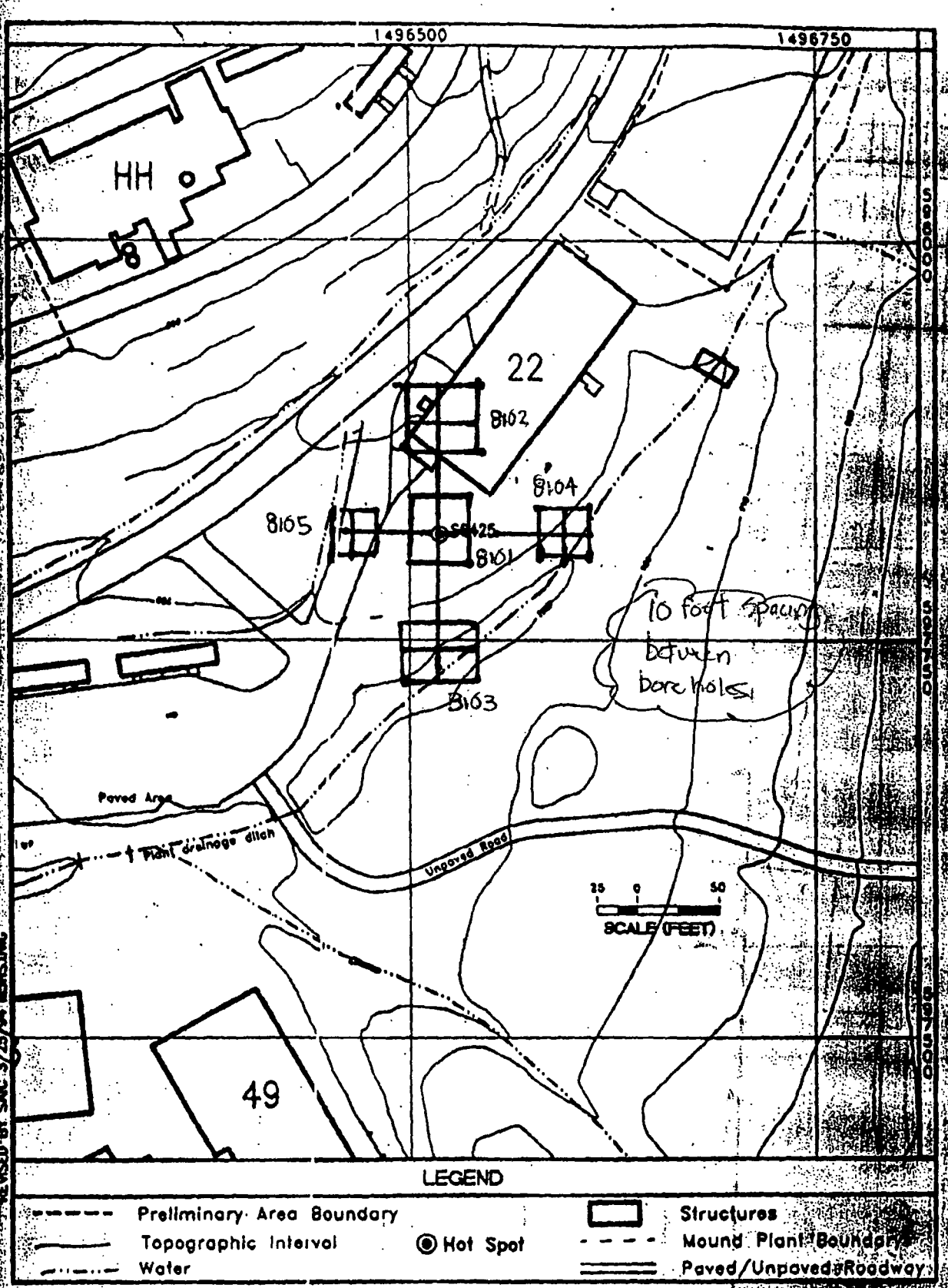

Figure 2.5. [redacted]

S0425

1

TEST RESULTS - SODIUM IODIDE SOIL SCREEN
(MD-80030, OP. 1355)
400 SECOND COUNT
PREPARED BY BETTY PETERS -EXT. 4408

Thorium
Plutonium

SAMPLE NO.	DATE COLLECTED	DATE SCREENED	SAMPLER	SAMP TYPE	88 KEV WINDOW pCi/g	17 KEV WINDOW pCi/g	MORE ISO-TOPES	GRID LOCATION	WELL
501751	02/27/95	02/28/95	[redacted] 5983	CONT	0.9	3	N	WESTON OTHER SOILS 8101-5001	C
501750	02/27/95	02/28/95	[redacted] 5983	CONT	1.3	17	N	WESTON OTHER SOILS 8101-5004	A
501748	02/27/95	02/28/95	[redacted] 5983	CONT	1.4	19	N	WESTON OTHER SOILS 8101-5008	A
501749	02/27/95	02/28/95	[redacted] 5983	CONT	1.0	14	N	WESTON OTHER SOILS 8101-5012	A
501746	02/27/95	02/28/95	[redacted] 5983	CONT	0.8	14	N	WESTON OTHER SOILS 8101-5016	A
501747	02/27/95	02/28/95	[redacted] 5983	CONT	0.8	13	N	WESTON OTHER SOILS 8102-5001	C
501744	02/27/95	02/28/95	[redacted] 5983	CONT	1.2	20	N	WESTON OTHER SOILS 8102-5004	A
501743	02/27/95	02/28/95	[redacted] 5983	CONT	0.9	16	N	WESTON OTHER SOILS 8102-5008	B
501745	02/27/95	02/28/95	[redacted] 5983	CONT	1.0	20	N	WESTON OTHER SOILS 8102-5012	C

surface sample

4 foot sample
bore hole location
8 foot sample

MOUND SOIL SCREEN DATA

TEST RESULTS - SODIUM IODIDE SOIL SCREEN
(MD-80030, OP. 1355)
400 SECOND COUNT
PREPARED BY BETTY PETERS -EXT. 4408

	DATE COLLECTED	DATE SCREENED	SAMPLER	SAMP TYPE	88 KEV WINDOW pCi/g	17 KEV WINDOW pCi/g	MORE ISO-TOPES	GRID LOCATION	WELL
501766	02/28/95	02/28/95	[redacted]983	CONT	0.7	14	N	WESTON OTHER SOILS 8103-5001	C
9501761	02/28/95	02/28/95	[redacted]983	CONT	2.3	22	N	WESTON OTHER SOILS 8103-5004	A
9501764	02/28/95	02/28/95	[redacted]983	CONT	1.1	13	N	WESTON OTHER SOILS 8103-5008	B
9501762	02/28/95	02/28/95	[redacted]983	CONT	1.0	11	N	WESTON OTHER SOILS 8103-5012	B
9501758	02/28/95	02/28/95	[redacted]983	CONT	1.0	14	N	WESTON OTHER SOILS 8103-5016	A
[redacted]67	02/28/95	02/28/95	[redacted]535	CONT	1.0	15	N	WESTON OTHER SOILS 8104-5001	A
9501763	02/28/95	02/28/95	[redacted]5983	CONT	1.1	10	N	WESTON OTHER SOILS 8104-5004	C
9501760	02/28/95	02/28/95	[redacted]5983	CONT	1.0	9	N	WESTON OTHER SOILS 8104-5008	C
9501757	02/28/95	02/28/95	[redacted]5983	CONT	0.8	16	N	WESTON OTHER SOILS 8104-5012	B
9501755	02/28/95	02/28/95	[redacted]5983	CONT	1.0	5	N	WESTON OTHER SOILS 8105-5001	C
9501765	02/28/95	02/28/95	[redacted]5983	CONT	1.0	16	N	WESTON OTHER SOILS 8105-5004	A
9501756	02/28/95	02/28/95	[redacted]5983	CONT	0.9	0	N	WESTON OTHER SOILS 8105-5008	A
9501759	02/28/95	02/28/95	[redacted]5983	CONT	0.7	5	N	WESTON OTHER SOILS 8105-5012	B

MOUND SOIL SCREEN DATA