

MOUND



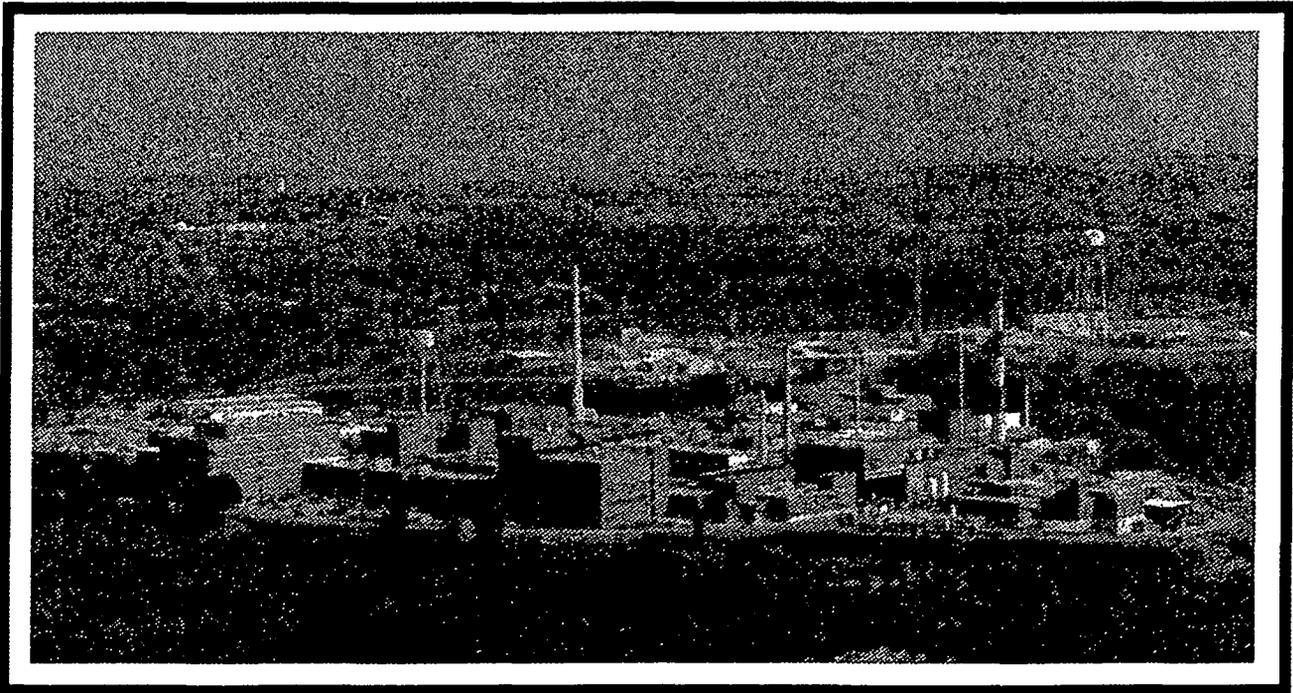
**Environmental
Restoration
Program**



MOUND PLANT

Potential Release Site Package

PRS # 110



MOUND



Environmental
Restoration
Program

MOUND PLANT POTENTIAL RELEASE SITE PACKAGE

Notice of Public Review Period



The following potential release site (PRS) packages will be available for public review in the CERCLA Public Reading Room, 305 E. Central Ave., Miamisburg, Ohio beginning May 8, 1997. Public comment will be accepted on these packages from May 8, 1997, through June 9, 1997.

- PRS 40: Soil Contamination - Bldg. 66 Parking Lot Area
- PRS 110: Soil Contamination - I Building
- PRS 113/114/115/116/117: Soil Contamination - Powerhouse/Former Tank Site - Powerhouse Fuel Oil Storage Tank
- PRS 235: Soil Contamination - Area southwest of Building 98
- PRS 304/313: Disposal Site for Contaminated Soils - Area southwest of Bldg. 105/Soil Contamination - Radiological Survey Site location S0982
- PRS 354: Soil Contamination
- PRS 356: Soil Contamination

Questions can be referred to Mound's Community Relations at (937) 865-4140.

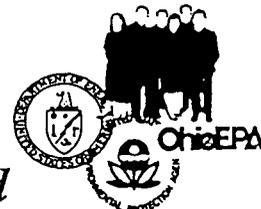
MOUND



Environmental
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MOUND PLANT POTENTIAL RELEASE SITE PACKAGE

Notice of Public Review Period



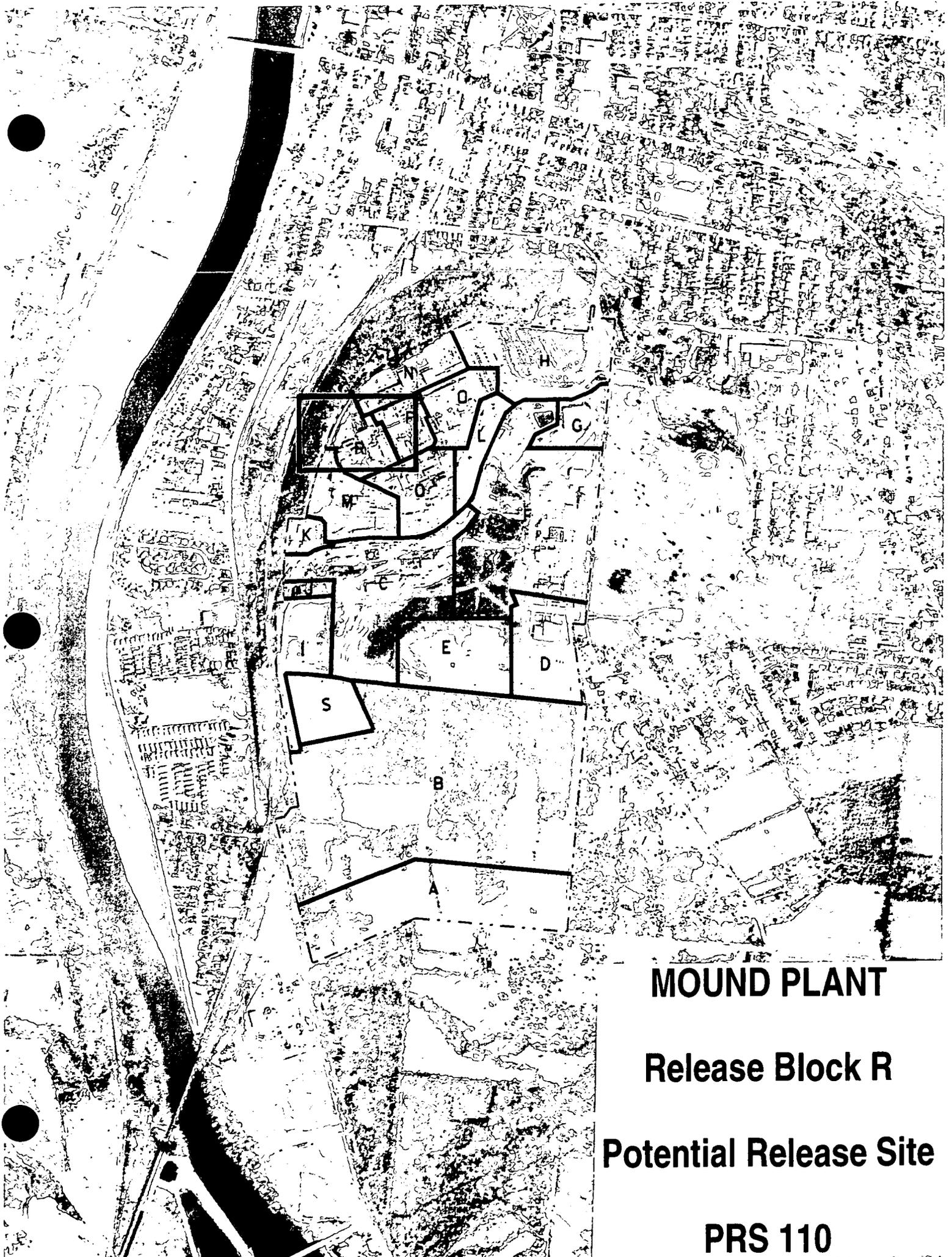
The following potential release site (PRS) packages have been placed in the CERCLA Public Reading Room, 305 E. Central Ave., Miamisburg, Ohio. The public comment period has been extended on these packages to June 16, 1997.

- PRS 40: Soil Contamination - Bldg. 66 Parking Lot Area
- PRS 110: Soil Contamination - I Building
- PRS 113/114/115/116/117: Soil Contamination - Powerhouse/Former Tank Site - Powerhouse Fuel Oil Storage Tank
- PRS 235: Soil Contamination - Area southwest of Building 98
- PRS 304/313: Disposal Site for Contaminated Soils - Area southwest of Bldg. 105/ Soil Contamination - Radiological Survey Site location S0982
- PRS 354: Soil Contamination
- PRS 356: Soil Contamination

Questions can be referred to Mound's Community Relations at (937) 865-4140.

PRS 110

REV	DESCRIPTION	DATE
0 PUBLIC RELEASE	Available for comments.	Mar. 19, 1997
1 FINAL	Comment period expired. No comments. Recommendation page annotated.	June 19, 1997

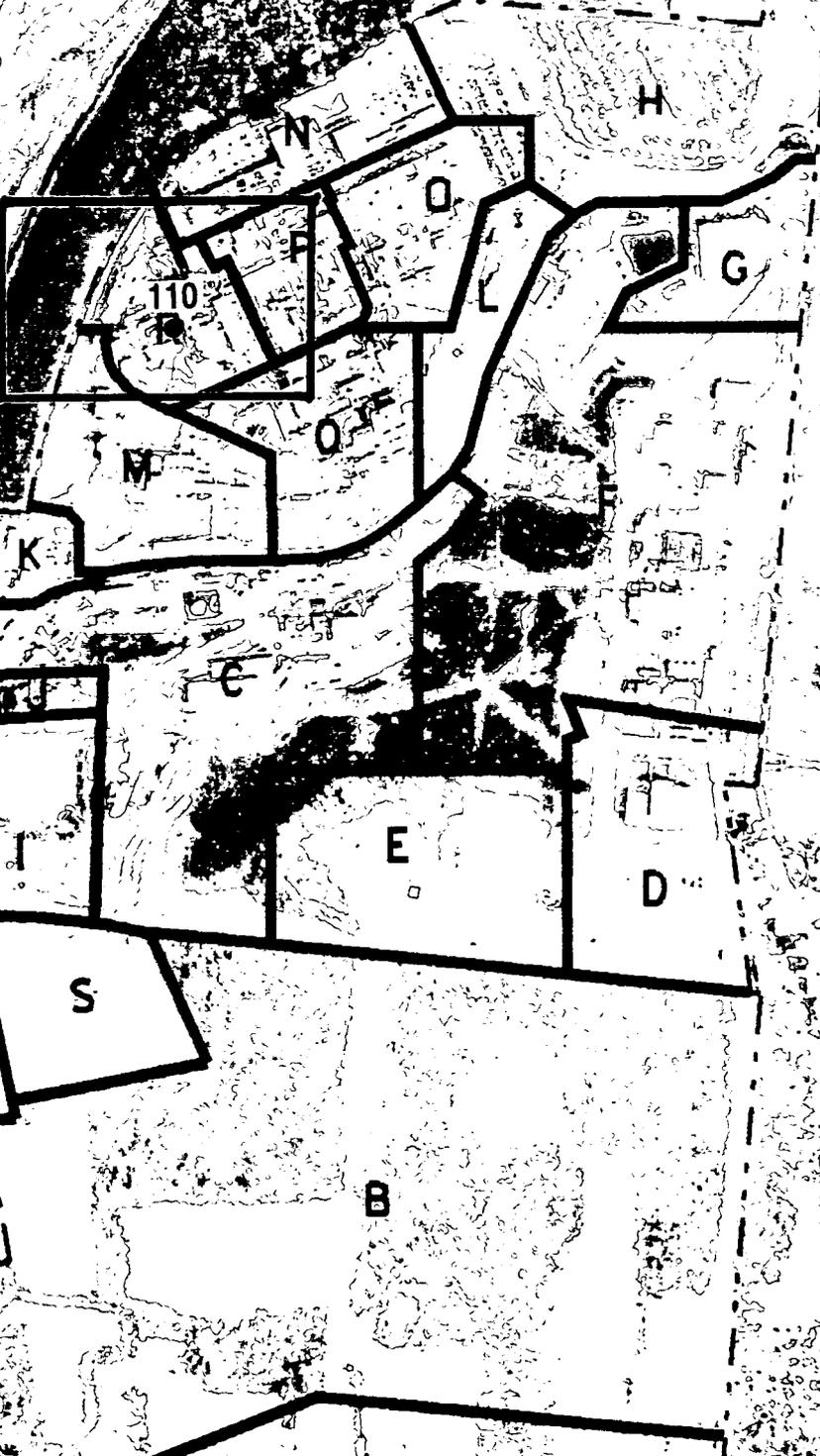
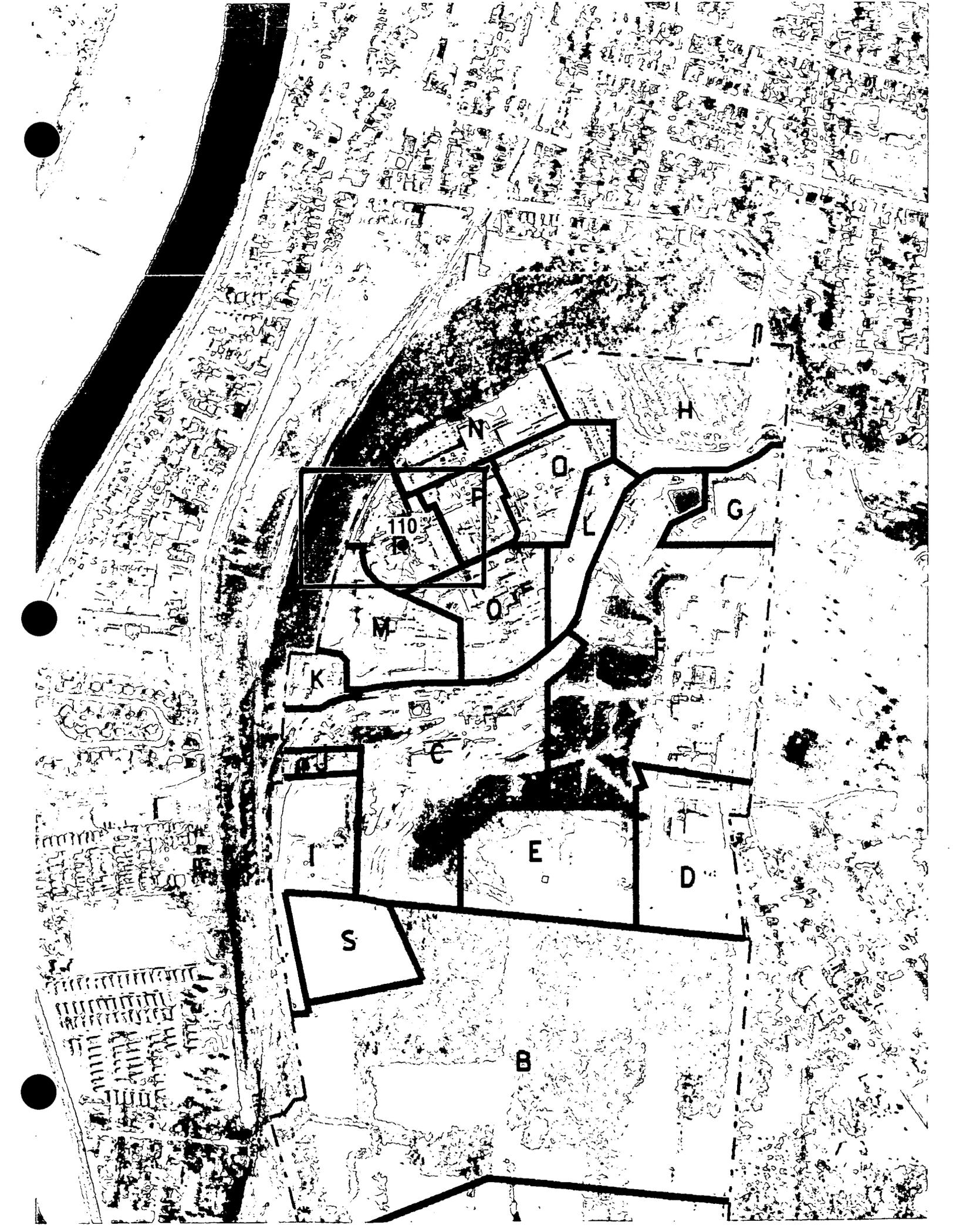


MOUND PLANT

Release Block R

Potential Release Site

PRS 110

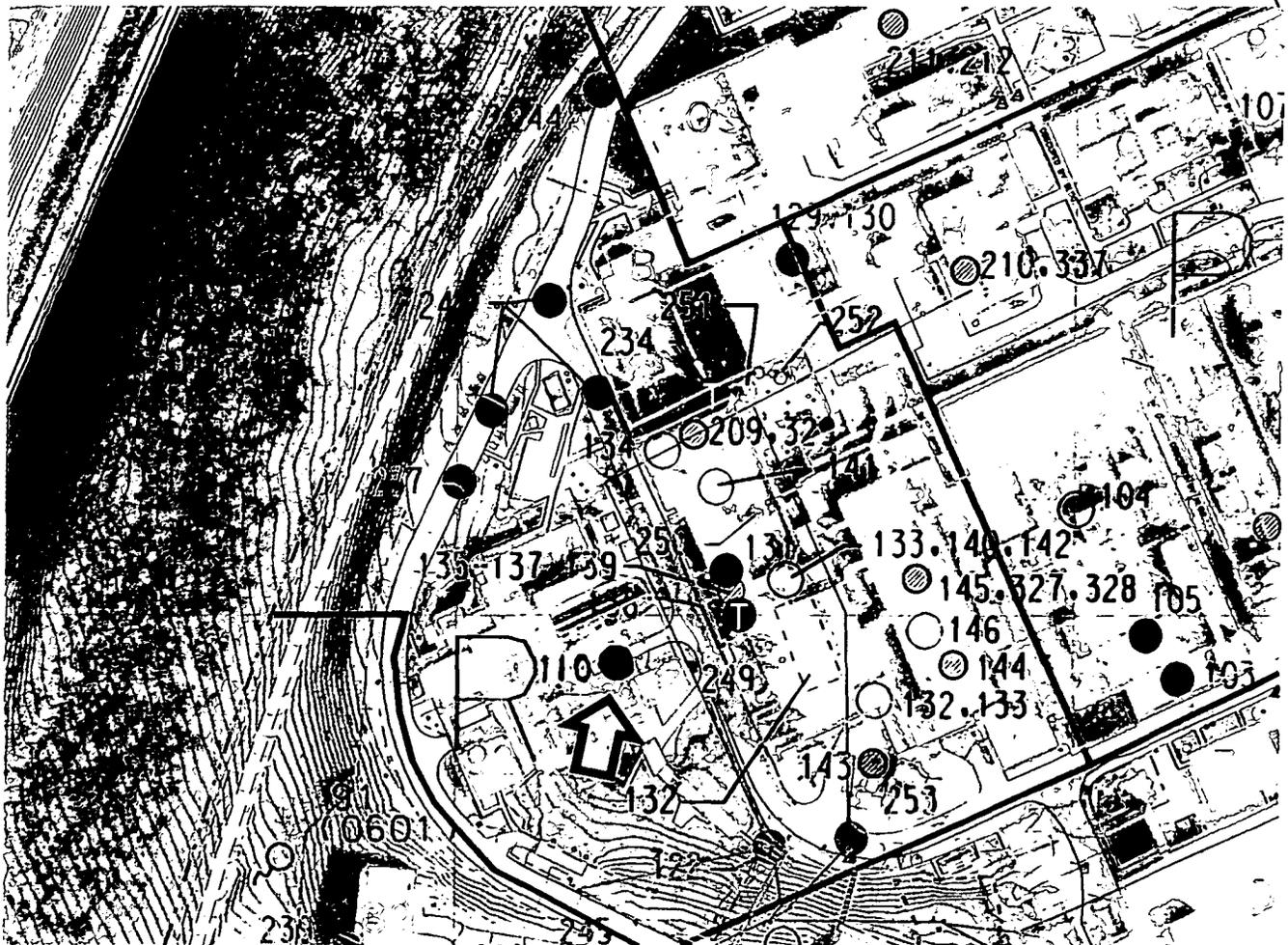
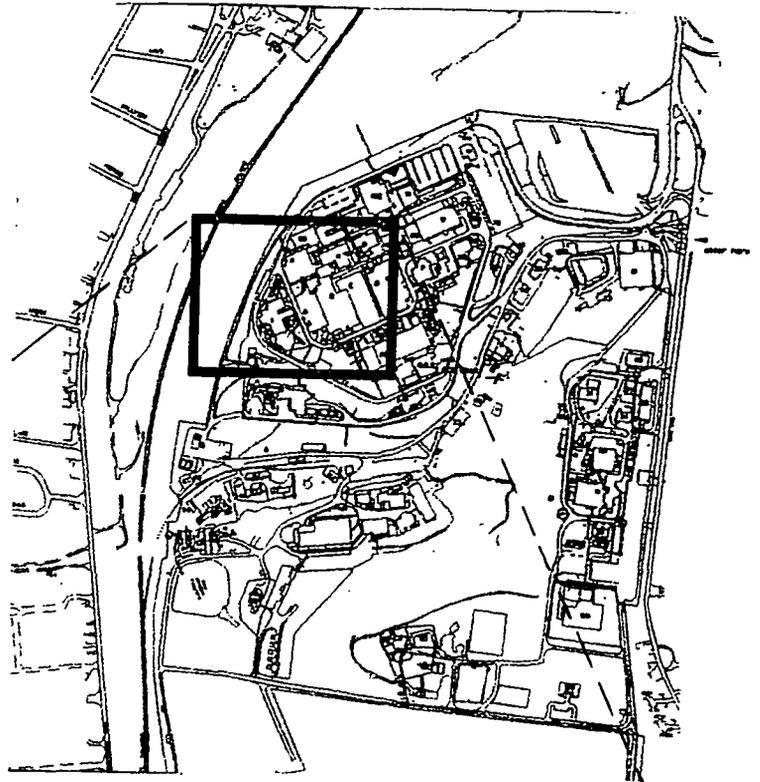


MOUND PLANT

Release Block R

Potential Release Site

PRS 110



EG&G 548

135

06-07-89

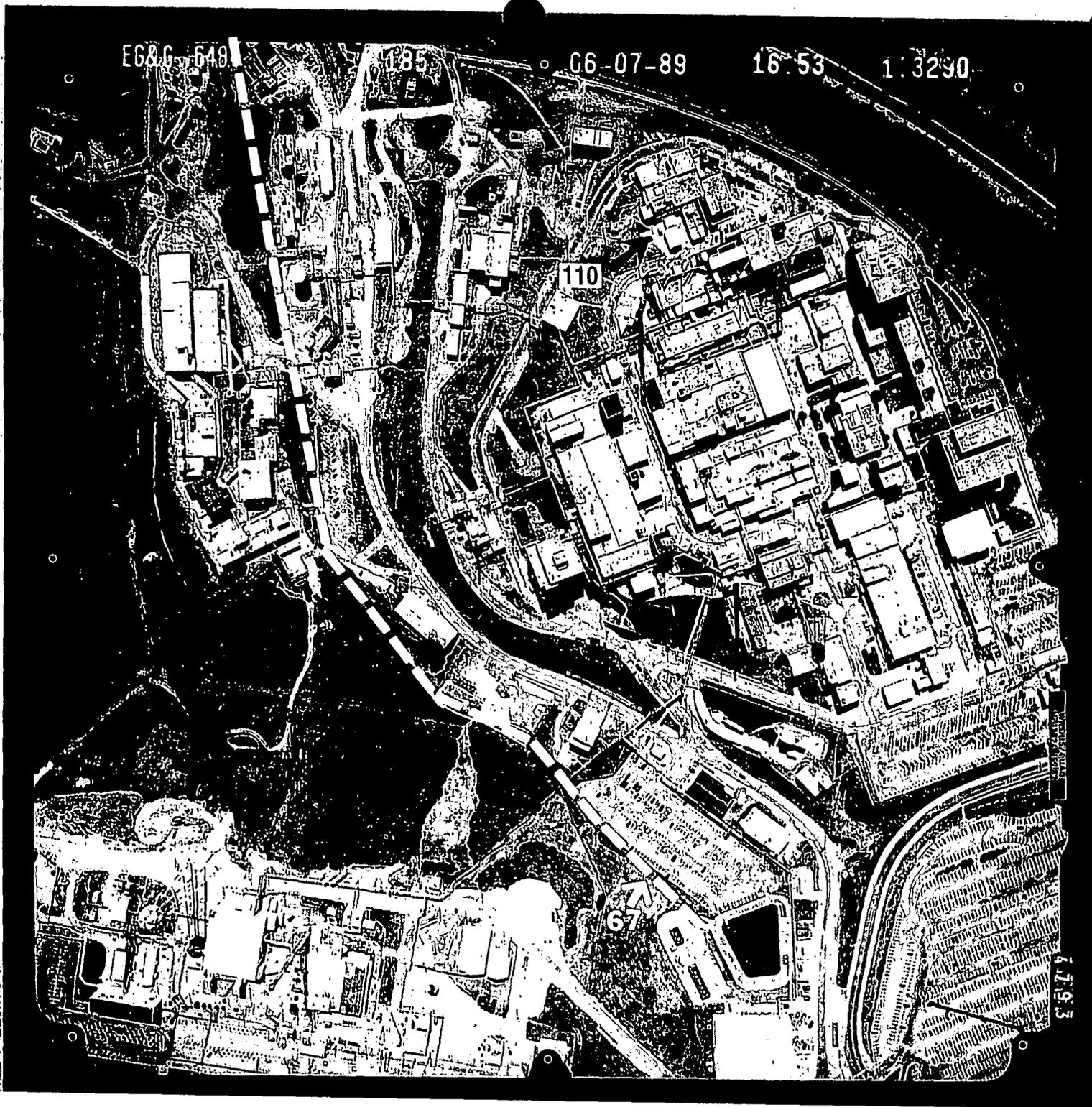
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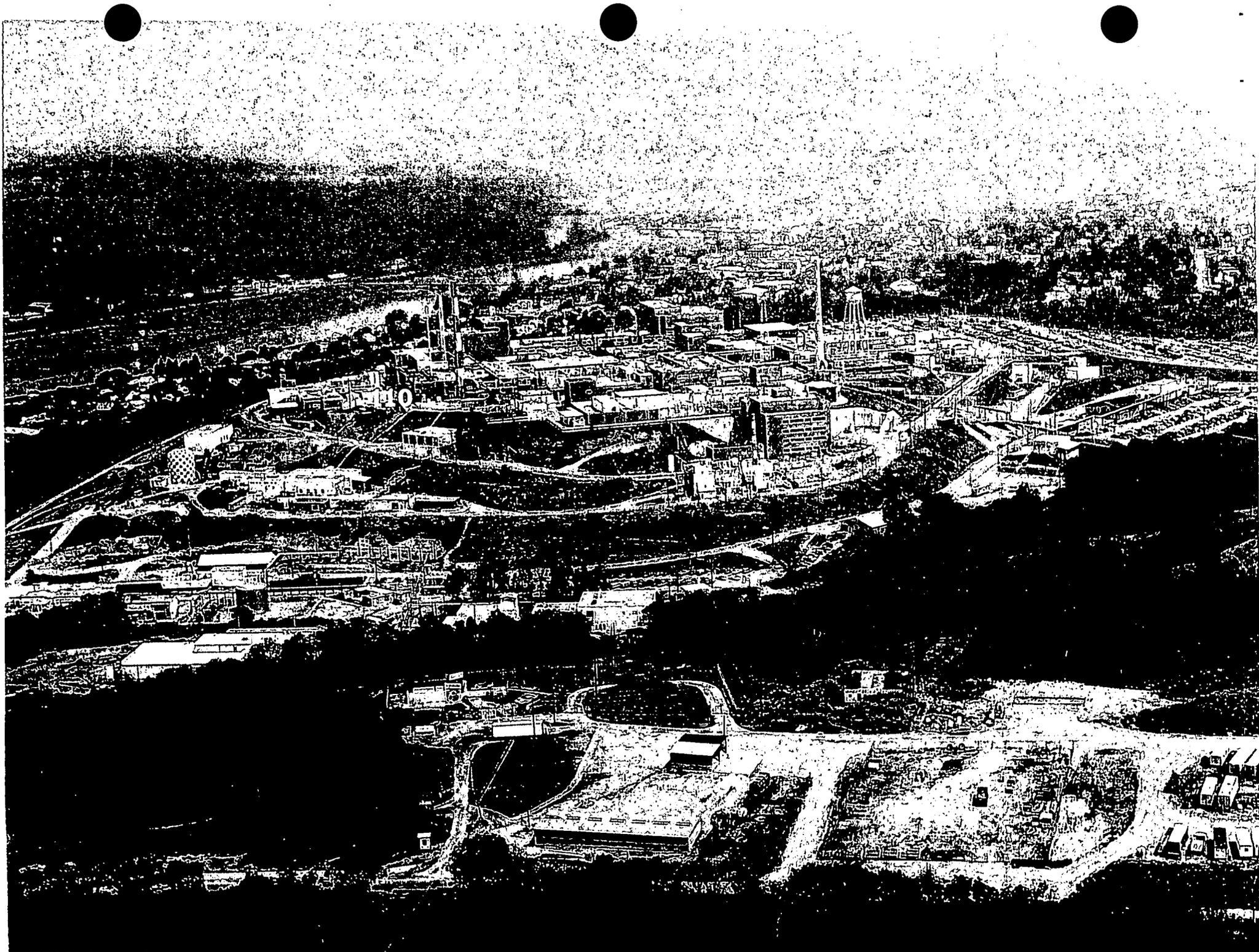
1 3290

110

67

1793





PRS 110

PRS HISTORY:

PRS 110 is identified as the soils around I Building. The site is identified as a PRS because of organic chemicals found in the soils.^{1,3} I Building was used for explosive device fabrication. Organics, especially solvents, are associated with that work. Neighboring Building 17 (a shed now removed) was used by the Bonded Stores Organization to store chemicals, e.g. toluene.⁵ Occasional spills (broken containers) caused clean-up, which often included hosing-off the pavement.

CONTAMINATION:

I. Investigations:

Acetone was noted in the Volume 12 Site Summary Report¹, but soil gas determinations do not bear this out. Toluene, tetrachloroethene (PCE), and 1,1,1-trichloroethane (1,1,1-TCA) are the organics along with freon found to be present in soil gas sampling. None of these chemicals exceed applicable guideline criteria.^{3,4}

The soils around I Building were significantly sampled for radioactive contamination. Although plutonium-238 and tritium were noted, both were far below guideline values.²

II. Potential Contamination:

Contamination	Maximum Concentration Detected	Guideline Criteria
Plutonium-238	1.87 pCi/g	25 pCi/g (ALARA)
Tritium	1160 pCi/L*	20,000 pCi/L (MCL)
Toluene	4788 ppb	414800 ppb ⁴ (calculated)
PCE	1117 ppb	3100 ppb ⁴ (calculated)
1,1,1TCA	148 ppb	173400 ppb ⁴ (calculated)

* Original reference reported value in pCi/ml, was recalculated to pCi/L for consistency in this report.

READING ROOM REFERENCES:

- 1) OU9, Site Scoping Report: Volume 12 - Site Summary Report. (pages 5-6)
- 2) OU9, Site Scoping Report: Volume 3 - Radiological Site Survey. (pages 7-11)
- 3) Reconnaissance Sampling Report Soil Gas Survey & Geophysical Investigations, Mound Plant Main Hill and SM/PP Hill. (pages 12-14)

OTHER REFERENCES:

- 4) Comparison of Actual Soil Gas Values with Calculated Acceptable Soil Gas Values.
(pages 15-17)
- 5) Private Communication with John Cox, former supervisor of Bonded Stores.

PREPARED BY:

Dean A. Buckner, Member of EG&G Technical Staff

**MOUND PLANT
PRS 110
SOIL CONTAMINATION -I BUILDING**

RECOMMENDATION:

PRS 110 was created due to VOC detections found during the quantitative OU5, Reconnaissance Soil Gas Survey.

Toluene was detected at 4,788 ppb, whereas the calculated guideline criteria is 414,800 ppb. PCE (tetrachloroethene) was found at 1,117 ppb (vs. 3,100 ppb calculated guideline criteria). 1,1,1,-TCA (trichloroethane) was detected at 148 ppb (vs. 173,400 ppb calculated guideline criteria). Freon-113 was detected at 2,934 ppb (no guideline criteria exists for freon-113).

This PRS was included in the Radiological Site Survey. Plutonium was found at 1.87 pCi/g, vs. a guideline of 25 pCi/g ALARA. Thorium was below 2 pCi/g (vs. 5 pCi/g guideline). Tritium was also found at 1,160 pCi/L in the soil moisture (vs. 20,000 pCi/L MCL).

The organic chemicals detected are below the calculated acceptable guideline criteria, and the radiation survey in the area found the radionuclides to be below the guidelines or regulatory standards. Therefore, NO FURTHER ASSESSMENT is recommended for PRS 110.

CONCURRENCE:

DOE/MB:

Arthur W. Kleinrath 3/18/97
Arthur W. Kleinrath, Remedial Project Manager (date)

USEPA:

Timothy J. Fischer 3/18/97
Timothy J. Fischer, Remedial Project Manager (date)

OEPA:

Brian K. Nickel 3/18/97
Brian K. Nickel, Project Manager (date)

SUMMARY OF COMMENTS AND RESPONSES:

Comment period from 5/8/97 to 6/16/97

No comments were received during the comment period.

Comment responses can be found on page _____ of this package.

REFERENCE MATERIAL
PRS 110

Environmental Restoration Program

**OPERABLE UNIT 9 SITE SCOPING REPORT:
VOLUME 12 - SITE SUMMARY REPORT**

**MOUND PLANT
MIAMISBURG, OHIO**

December 1994

Final

**U.S. Department of Energy
Ohio Field Office**



EG&G Mound Applied Technologies

Description of History and Nature of Waste Handling						Hazardous Conditions and Incidents			Environmental Data		
No.	Site Name	Location	Status	Potential Hazardous Substances	Ref	Releases	Media	Ref	Analytes*	Results	Ref
109	G Building Gasoline Tank (Tank 204)	E-7	Historical	(Cont.)	(Cont.)	(Cont.)		(Cont.)	(Cont.)		
110	I Building Soils	E-6 F-6	Grounds	Toluene, acetone, Freon	4	Indicated by Soil Gas Survey	S	12	1 14, 16	SGS ^b Table B.4 Locations 1075, 1227, 1228 Table B.9 RSS Locations S0171, S0178, S0181, S0183, S0186, S0187, S0190, S0193, S0195, S0255 (Appendix E in Ref. 6)	12 * 6 *
111	Monitor Well 0034	F-7	Surplus	Waste oil	5, 18	Suspected	GW	5	No Data		
112	Paint Shop Area	E-7	In service	Paints, Thinners, Solvents (including toluene and methylene chloride) Lead, Chromates	1, 4, 5, 18	Suspected, confirmed lead	S	5	3, 4, 5, 6, 16	Tables B.6, B.7, B.8, and B.9	7
113	Powerhouse Soils	E-7	Grounds	Calcium chloride, magnesium chloride, zinc chromate, PCBs	4	Indicated by Soil Gas Survey	S	12	1 14, 16	SGS ^b Table B.4 Location 1052 Table B.9 RSS ^c Locations S0155, S0158, S0168, S0253 (Appendix E in Ref. 6)	12 6
114	Powerhouse Fuel Oil Storage Tank (Tank 113)	E-7	In service	Fuel oil	1, 3, 5, 7, 18	Fuel Oil, confirmed EPH	S	10, 7	3, 4, 5, 6, 8	Tables B.6, B.7, and B.8	7
	Powerhouse Fuel Oil Storage Tank (Tank 114)										
	Powerhouse Fuel Oil Storage Tank (Tank 115)										
	Powerhouse Fuel Oil Storage Tank (Tank 116)										

* Note that S0255 is in-fact C0255. S0171 is remote from the I-Bldg. location. A.1-13
 ← * add SGS location Nos 1074, 1076, 1099 and 1196 for consideration of the I-Bldg Soil Area.

- 1 - Soil Gas Survey - Freon 11, Freon 113, Trans-1,2-Dichloroethylene, Cis-1,2-Dichloroethylene, 1,1,1-Trichloroethane, Perchloroethylene, Trichloroethylene, Toluene
- 2 - Gamma Spectroscopy - Thorium-228, -230, Cobalt-60, Cesium-137, Radium-224, -226, -228, Americium-241, Actinium-227, Bismuth-207, Bismuth-210m, Potassium-40
- 3 - Target Analyte List
- 4 - Target Compound List (VOC)
- 5 - Target Compound List (SVOC)
- 6 - Target Compound List (Pesticides/Polychlorinated Biphenyl)
- 7 - Dioxins/Furans
- 8 - Extractable Petroleum Hydrocarbons (EPH)/Total Petroleum Hydrocarbons (TPH)
- 9 - Lithium
- 10 - Nitrate/Nitrite
- 11 - Chloride
- 12 - Explosives
- 13 - Plutonium-238
- 14 - Plutonium-238, Thorium-232
- 15 - Cobalt-60, Cesium-137, Radium-226, Americium-241
- 16 - Tritium

Reference List

1. DOE 1986 "Phase I Installation Assessment Mound (DRAFT)."
2. DOE 1992a "Remedial Investigation/Feasibility Study, Operable Unit 9, Site-Wide Work Plan (Final)."
3. DOE 1992c "Mound Plant Underground Storage Tank Program Plan & Regulatory Status Review (Final)."
4. DOE 1993a "Site Scoping Report: Volume 7 - Waste Management (Final)."
5. EPA 1988a "Preliminary Review/Visual Site Inspection for RCRA Facility Assessment of Mound Plant."
6. DOE 1993d "Operable Unit 9, Site Scoping Report: Volume 3 - Radiological Site Survey (Final)."
7. DOE 1993c "Operable Unit 3, Miscellaneous Sites Limited Field Investigation Report."
8. DOE 1992d "Reconnaissance Sampling Report Decontamination & Decommissioning Areas, OU6, (Final)."
9. Fentiman 1990 "Characterization of Mound's Hazardous, Radioactive and Mixed Wastes."
10. DOE 1992f "Operable Unit 9, Site Scoping Report: Volume 11 - Spills and Response Actions (Final)."
11. Styron and Meyer 1981 "Potable Water Standards Project: Final Report."
12. DOE 1993b "Reconnaissance Sampling Report - Soil Gas Survey & Geophysical Investigations, Mound Plant Main Hill and SM/PP Hill (Final)."
13. DOE 1993d "Operable Unit 9, Site Scoping Report: Volume 3 - Radiological Site Survey (Final)."
14. DOE 1991b "Main Hill Seeps, Operable Unit 2, On-Scene Coordinator Report for CERCLA Section 104 Remedial Action, West Powerhouse PCB Site."
15. Halford 1990 "Results of South Pond Sampling."
16. DOE 1993e "Operable Unit 4, Special Canal Sampling Report, Miami Erie Canal."
17. DOE 1990 "Preliminary Results of Reconnaissance Magnetic Survey of Mound Plant Areas 2, 6, 7, and C."
18. DOE 1992a "Remedial Investigation/Feasibility Study, Operable Unit 9, Site-Wide Work Plan (Final)."
19. Rogers 1975 "Mound Laboratory Environmental Plutonium Study, 1974."
20. DOE 1992h "Ground Water and Seep Water Quality Data Report Through First Quarter, FY92."
21. Dames and Moore 1976 a, b "Potable Water Standards Project Mound Laboratory" and "Evaluation of the Buried Valley Aquifer Adjacent to Mound Laboratory."
22. DOE 1992i "Closure Report, Building 34 - Aviation Fuel Storage Tank."
23. DOE 1992j "Closure Report, Building 51 - Waste Storage Tank."
24. DOE 1994 "Operable Unit 1, Remedial Investigation Report."
25. EG&G 1994 "Active Underground Storage Tank Plan."

ENVIRONMENTAL RESTORATION PROGRAM

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

**MOUND PLANT
MIAMISBURG, OHIO**

June 1993

**DEPARTMENT OF ENERGY
ALBUQUERQUE FIELD OFFICE**

**ENVIRONMENTAL RESTORATION PROGRAM
EG&G MOUND APPLIED TECHNOLOGIES**

FINAL

Map Location ^a	Coordinates		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)
	South	West										
S0161	1775	2795	3093	10-83	0	1.19	b					
S0162	1775	2845	6206	08-84	0	0.62	b					
S0163	1775	2870	6207	08-84	0	0.34	b					
S0164	1505	3175	3096	10-83	0	0.25	b					
S0165	1750	3300	6211	08-84	0	0.22 ^c	b					
S0166	1750	3350	4000	10-83	0	34.50	b					
S0167	1775	3225	6212	08-84	0	0.81	b					
S0168	1775	3275	3099	10-83	0	1.76	b	12.73				
S0169	1790	3010	8424	11-84	0	0.05	b					
S0170	1790	3025	3097	10-83	0	0.41	b					
S0171	1790	3200	3098	10-83	0	1.87	b					
S0172	1285	3555	4081	10-83	0	0.17	b	1.65				
S0173	1315	3465	3050	10-83	0	0.17 ^c	b					
C0254	1325	3630	8415	11-84	36	0.22	b					
S0175	1375	3580	9845	06-85	0	NR	NR	82	10	0.8	LDL	
S0176	1375	3590	3051	10-83	0	2.82	b					
S0177	1385	3510	3055	10-83	0	1.17	b					
S0178	1410	3465	6187	08-84	0	0.55	b					
S0179	1410	3555	6189	08-84	0	0.48	b					
E-10												



Map Location ^a	Coordinates		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)
	South	West										
	S0180	1425	3400	6188	08-84	0	0.96 ^c	b				
➔	S0181	1425	3605	6190	08-84	0	0.42	b				
	S0182	1435	3690	4080	10-83	0	0.06	b	1.70			
➔	S0183	1450	3565	3052	10-83	0	0.08	b	1.16			
	S0184	1455	3680	6193	08-84	0	1.24	b				
	S0185	1460	3590	6192	08-84	0	0.57	b				
➔	S0186	1460	3615	6191	08-84	0	0.38	b				
➔	S0187	1485	3635	3053	10-83	0	0.41	b				
	S0188	1485	3680	3054	10-83	0	0.50	b				
➔	C0255	1505	3425	8423	11-84	36	0.09	b				
➔	S0190	1505	3605	4004	10-83	0	0.97	b				
	S0191	1525	3430	4002	10-83	0	0.10	b				
	S0192	1525	3705	4005	10-83	0	0.81	b	1.11			
➔	S0193	1575	3605	6213	08-84	0	1.87	b				
	S0194	1600	3455	6217	08-84	0	0.50	b				
➔	S0195	1625	3580	6214	08-84	0	0.42	b				
	S0196	1650	3455	4001	10-83	0	0.44	b	4.11			
	S0197	1650	3550	6215	08-84	0	0.23	b				
	S0198	1675	3705	4006	10-83	0	1.32	b				

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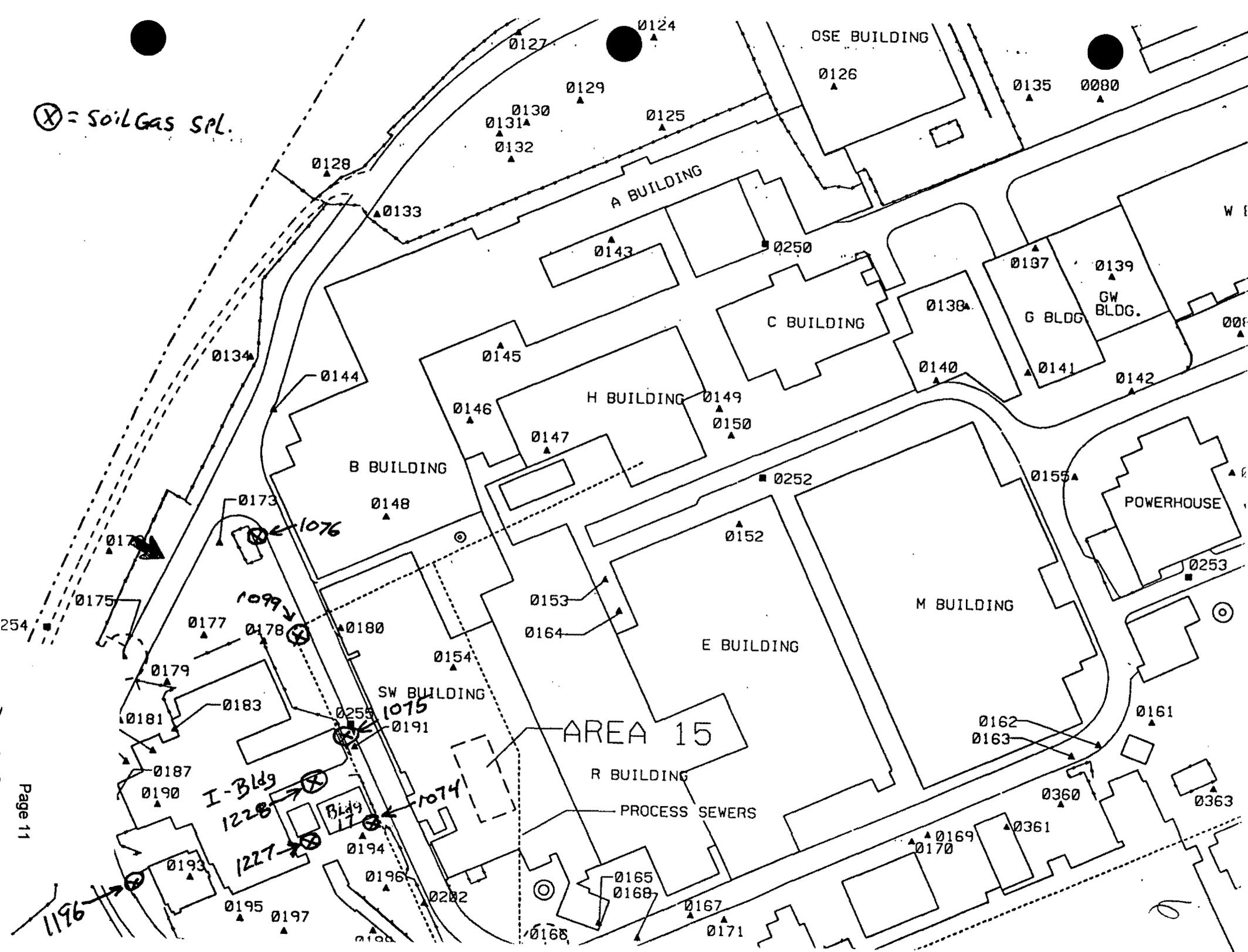
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ER PROGRAM
MOUND PLANT
MIAMISBURG, OHIO
PLATE 1
(1 OF 2)
SITE SURVEY PROJECT SAMPLING LOCATIONS
PREPARED FOR
SITE SCOPING REPORT: VOLUME 3,
RADIOLOGICAL SITE SURVEY

⊗ = Soil Gas SPL.





*Reconnaissance
Sampling Report
Soil Gas Survey &
Geophysical
Investigations, Mound
Plant Main Hill and
SM/PP Hill*

TABLE II.4. SUMMARY OF POSITIVE DETECTIONS—MAIN HILL
(ppb)

SAMPLE ID	SAMPLE DATE	FREON 11	FREON 113	TRAN-12DCE	CIS-12DCE	111TCA	PCE	TCE	TOLUENE
MND-01-1002-1003	28 JUL 92	----	----	----	----	----	----	----	40
MND-01-1003-0005	28 JUL 92	----	----	----	----	----	----	----	3*
MND-01-1005-0005	28 JUL 92	----	----	----	----	----	----	----	21*
MND-01-1007-0005	29 JUL 92	----	----	----	----	----	----	2	----
MND-01-1008-0005	29 JUL 92	----	----	----	----	----	----	----	5
MND-01-1008-1005	29 JUL 92	----	----	----	----	----	----	----	3
MND-01-1009-0005	29 JUL 92	----	----	----	----	----	----	4	19
MND-01-1010-0005	29 JUL 92	----	----	----	----	----	----	----	13
MND-01-1014-0005	29 JUL 92	----	----	----	----	----	----	----	8
MND-01-1016-0003	30 JUL 92	----	----	----	----	----	----	2	8
MND-01-1046-0005	4 AUG 92	----	----	----	----	2	----	188	3*
MND-01-1047-0005	4 AUG 92	----	----	----	----	7	----	4	----
MND-01-1048-0005	4 AUG 92	----	----	----	----	8	----	4	----
MND-01-1050-0003	4 AUG 92	----	----	----	----	----	----	8	----
MND-01-1050-1003	4 AUG 92	----	----	----	----	----	----	17	27*
MND-01-1051-0003	4 AUG 92	----	----	----	----	----	----	8	5*
MND-01-1052-0003	4 AUG 92	----	----	----	----	----	----	----	13*
MND-01-1053-0002	5 AUG 92	2	----	----	----	----	----	----	447
MND-01-1054-0005	5 AUG 92	4	----	----	----	7	----	228*	11
MND-01-1055-1005	5 AUG 92	----	----	----	----	----	----	4*	5
MND-01-1057-0005	5 AUG 92	----	----	----	----	----	----	----	24
MND-01-1062-0003	5 AUG 92	----	----	----	----	13	----	8	----
MND-01-1064-0005	11 AUG 92	----	----	----	----	----	----	----	19
MND-01-1066-0005	11 AUG 92	----	----	----	----	8	----	----	228
MND-01-1067-0005	11 AUG 92	----	----	----	----	----	----	11	133
MND-01-1069-1005	12 AUG 92	----	----	----	----	----	----	----	37
MND-01-1070-0005	12 AUG 92	----	----	----	----	----	----	----	5
MND-01-1070-1005	12 AUG 92	----	----	----	----	----	----	----	5
MND-01-1072-0005	12 AUG 92	----	----	----	----	----	----	----	108
MND-01-1074-0005	12 AUG 92	----	799	----	----	----	1191	----	5
MND-01-1074-1005	12 AUG 92	----	812	----	----	----	1117	----	5
MND-01-1075-0005	12 AUG 92	----	----	----	----	----	----	----	80
MND-01-1078-0005	12 AUG 92	----	2934	----	----	148	----	----	----
MND-01-1077-0005	12 AUG 92	----	----	----	----	----	----	----	27
MND-01-1079-0005	13 AUG 92	----	13	----	----	----	----	----	----
MND-01-1080-0005	13 AUG 92	----	13	----	----	----	----	----	----
MND-01-1085-0005	13 AUG 92	----	102	----	----	22	----	41	----
MND-01-1086-0005	13 AUG 92	----	47	----	----	----	----	----	----
MND-01-1093-0005	15 AUG 92	----	131000	247	40800	----	----	**34780	53*
MND-01-1094-0005	14 AUG 92	----	83	13	485	----	----	978	----
MND-01-1097-0002	14 AUG 92	----	----	----	----	----	----	6	8
MND-01-1099-0005	15 AUG 92	----	----	----	----	----	----	4	0*
MND-01-1101-0005	16 AUG 92	----	865	----	----	----	----	----	8
MND-01-1102-0005	16 AUG 92	----	419	----	----	----	----	----	13
MND-01-1106-0003	16 AUG 92	----	329	----	----	----	----	6	----
MND-01-1108-0005	16 AUG 92	----	----	----	----	----	----	6	----
MND-01-1109-0005	16 AUG 92	----	----	----	----	----	----	8	13
MND-01-1110-0005	16 AUG 92	----	----	----	----	----	----	----	255

TABLE II.4. SUMMARY OF POSITIVE DETECTIONS—MAIN HILL
(ppb)

SAMPLE ID	SAMPLE DATE	FREON 11	FREON 113	TRAN-12DCE	CIS-12DCE	111TCA	PCE	TCE	TOLUENE
MND-01-1113-0005	17 AUG 92	---	---	---	---	---	---	11	---
MND-01-1114-0005	17 AUG 92	---	9	---	---	315	10	357	5*
MND-01-1114-1005	17 AUG 92	---	---	---	---	259	9	263	3*
MND-01-1115-0005	17 AUG 92	---	---	---	---	58	---	13	---
MND-01-1117-0005	18 AUG 92	---	---	---	---	---	12	8	---
MND-01-1117-1005	18 AUG 92	---	---	---	---	---	15	9	---
MND-01-1118-0005	18 AUG 92	---	---	---	---	---	3	---	---
MND-01-1119-0005	18 AUG 92	---	---	---	---	---	---	---	213
MND-01-1122-0005	18 AUG 92	801	13	---	---	---	---	---	---
MND-01-1123-0005	18 AUG 92	---	---	---	---	---	---	---	5*
MND-01-1124-0005	18 AUG 92	---	---	---	---	---	---	---	8884*
MND-01-1127-0005	18 AUG 92	---	---	---	---	---	4	---	27*
MND-01-1129-0005	18 AUG 92	---	10	---	---	37	12	4	11*
MND-01-1190-0005	24 SEP 92	240	477	---	---	---	---	---	3*
MND-01-1190-1005	24 SEP 92	287	707	---	---	---	---	---	3*
MND-01-1192-0005	24 SEP 92	---	---	---	---	---	---	---	5*
MND-01-1193-0005	24 SEP 92	---	---	---	---	---	---	---	18*
MND-01-1196-0005	25 SEP 92	---	---	---	---	---	---	4	64
MND-01-1197-0002	25 SEP 92	---	---	---	---	---	---	23	5
MND-01-1198-0008	25 SEP 92	---	24	13	518	33	---	474	5
MND-01-1199-0002	25 SEP 92	---	10218	---	120	---	---	479	---
MND-01-1201-0007	25 SEP 92	---	4716	13	811	---	---	130	48
MND-01-1201-1007	25 SEP 92	---	5895	---	612	---	---	117	43
MND-01-1202-0002	25 SEP 92	---	6419	66	2499	9	---	1921	3
MND-01-1202-1002	25 SEP 92	---	9301	41	1708	---	---	1737	---
MND-01-1203-0002	25 SEP 92	---	1475	---	334	---	---	45	192
MND-01-1204-0005	25 SEP 92	---	453	---	---	---	---	11	5
MND-01-1205-0005	25 SEP 92	---	---	---	---	---	---	---	21
MND-01-1206-0005	28 SEP 92	---	---	---	---	---	---	---	23142
MND-01-1207-0005	28 SEP 92	---	---	---	---	---	---	---	90
MND-01-1227-0005	28 SEP 92	---	10	---	---	---	---	---	4708
MND-01-1228-0005	28 SEP 92	---	---	---	---	---	---	---	11
MND-01-1230-0005	28 SEP 92	---	---	---	---	---	---	---	13
MND-01-1230-1005	28 SEP 92	---	---	---	---	---	---	---	5
MND-01-1231-0005	28 SEP 92	---	48	---	---	---	34	21	5
MND-01-1232-0005	28 SEP 92	---	4	---	---	---	13	8	24
MND-01-1233-0002	29 SEP 92	---	29	---	---	---	---	---	72
MND-01-1233-1002	29 SEP 92	---	29	---	---	---	---	---	64

Notes:

- Only sample locations having positive detections are shown.
- *: Associated trip, ambient, equipment or field blank contained specified compound.
- B: Indicates blank sample.
- w: Indicates water sample.
- ** : Freon 113 & TCE Off-Scale

COMPARISON OF ACTUAL SOIL GAS
VALUES WITH CALCULATED
ACCEPTABLE SOIL GAS VALUES

SCREENING POTENTIAL RELEASE SITES BASED ON SOIL GAS READINGS

Soil gas readings can be utilized in the PRS screening process to identify potential release sites that may present a potential soil contamination problem for volatile organics. The soil gas survey that was conducted at Mound as part of the "Reconnaissance Sampling Report--Soil Gas Survey and Geophysical Investigations, Mound Plant Main Hill and SM/PP Hill" investigated 8 volatile compounds. The concentrations of these compounds in the in the vapor phase within the pore spaces of the soil can be correlated to the actual soil contaminant concentrations by utilizing a method developed by ICF Kaiser Engineers. This technique has been used with US EPA Region IX approval at a large Superfund site contaminated with many of the same chemicals found at relatively low levels in soils at the Mound Plant.

The soil concentration can be estimated from the soil gas values by the following equation:

$$C_t = (C_g/P_b) * [(P_b * K_d / H) + [p_w / H] + [p_t - p_w]]$$

where

C_g	concentration of volatile chemical concentrations as soil vapor in ng/ml
P_b	Bulk density of the soil in g/ml
K_d	soil/water partition coefficient in ml/g
H	Dimensionless Henry's Law Constant
p_w	water filled porosity
p_t	total porosity
C_t	target soil concentration in ng/g or ug/kg (ppb)

The technique that Mound Plant will use for screening a PRS, is to compare the soil gas values obtained at a PRS with soil gas concentrations that are known to be below any regulatory or health based level of concern. The risk based guideline values for the Mound Plant (DOE, December 1995) soils are based upon 10^{-6} risk levels or a hazard index of 1. These values correspond to direct soil exposure to persons who's activities place them at the highest risk, in particular inhalation and ingestion by a Mound Plant construction worker.

Another potential exposure path must be considered, however. The potential for some of the organic contaminants to leach into ground water must be considered in developing protective soil screening levels. A "Mound Plant Soil Screening Level" paper explains the calculation of soil screening levels. For all of the chemicals that the soil gas survey identified, the calculated soil screening level soil concentrations are below the standard guideline values, therefore they are more conservative and are appropriate to be used as the basis for the soil gas calculations.

By re-arranging the equation, and using either the soil guideline values or the soil screening levels as the target soil concentration, a soil gas concentration can be calculated; this calculated soil gas concentration can be compared to the actual observed soil gas values:

$$C_g = (P_b * C_t) / [(P_b * K_d / H) + [p_w / H] + [p_t - p_w]]$$

The values of the soil specific and chemical parameters for this equation are summarized as follows:

P_b	1.6	Bulk density of the soil in g/ml
p_w	0.15	water filled porosity
p_t	0.43	total porosity
foc	0.02	fraction organic material in soil (used in developing the SSL values)

Typical chemicals that are detected with soil gas sampling are:						
NAME	Hazardous	Kd	Calculated Soil Screening Level Value	Acceptable	Calculated Soil Gas Reading	Acceptable
		mg/kg	mg/kg (ppm)		ng/m ³	ppb
Toluene	2.52E-01	3.42		22.06	1.56E+03	241400
Trichloroethene (TCE)	4.35E-01	2.24		0.07	1.26E+01	2400
111 Trichloroethane (TCA)	7.63E-01	2.2		3.01	9.46E+02	173400
Trans-1,2 Dichloroethene (DCE)	2.29E-01	1		0.70	1.41E+02	35700
cis-1,2 Dichloroethene (DCE)	1.85E-01	2.78		0.31	1.97E+01	5000
Freon 11	NA	NA				
Freon 113	NA	NA				
Tetrachloroethene (PCE)	7.09E-01	2.78		0.09	2.13E+01	3100

na not available

IF THE SOIL GAS READING IS BELOW THE VALUES IN THE CALCULATED SOIL GAS READING COLUMN (SHADED), THEN THERE IS NO THREAT TO GROUNDWATER FROM THIS PRS.

The soil screening level values are calculated using the Soil Screening Methodology. The Potential Release Site is assumed to be more than 100 meters from a potential drinking water source with an aquifer thickness of 15 meters and a source size of 10 meters. The hydraulic gradient is assumed to be 0.01 which is conservative for most of the Mound Plant PRSs. In special instances where the PRS lies less than 100 meters from a potential drinking water source, or the hydraulic gradient is much less than 0.01, new SSL values and new acceptable soil gas values will be calculated for that particular PRS.