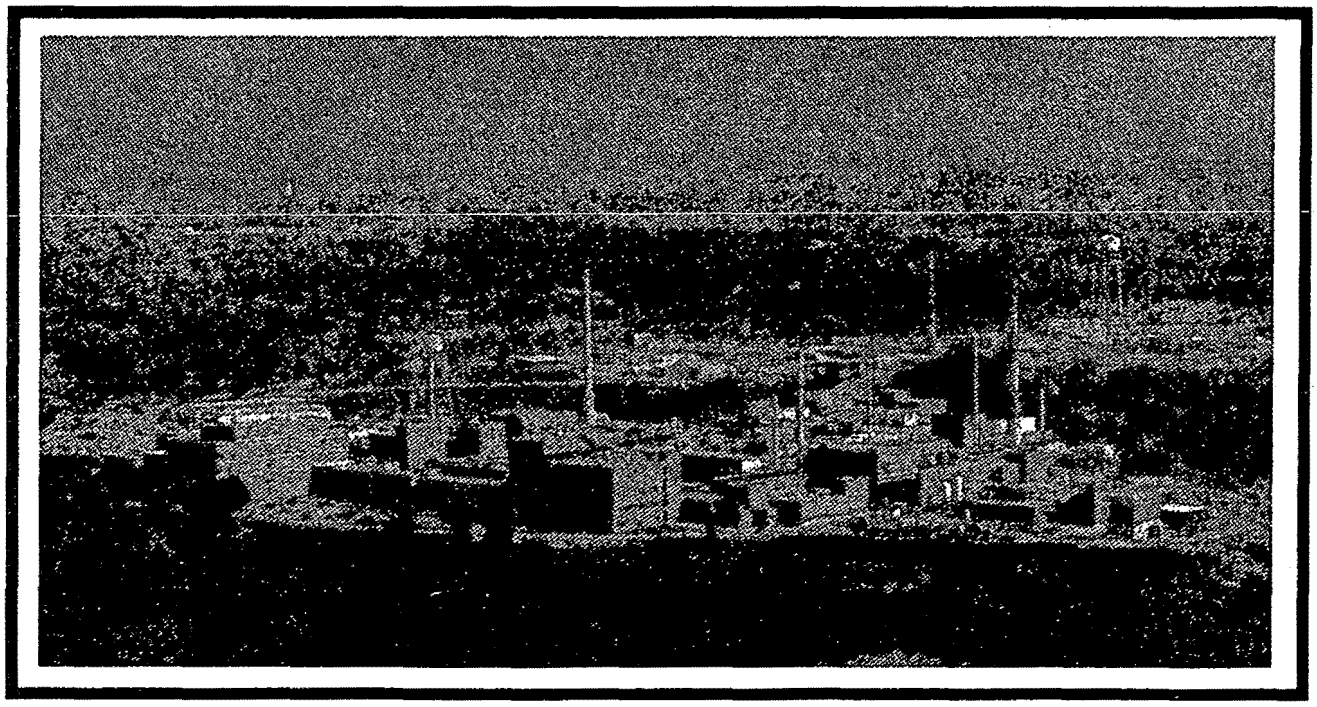
EG&G MOUND-30-03-04-02--9612020012

MOUND

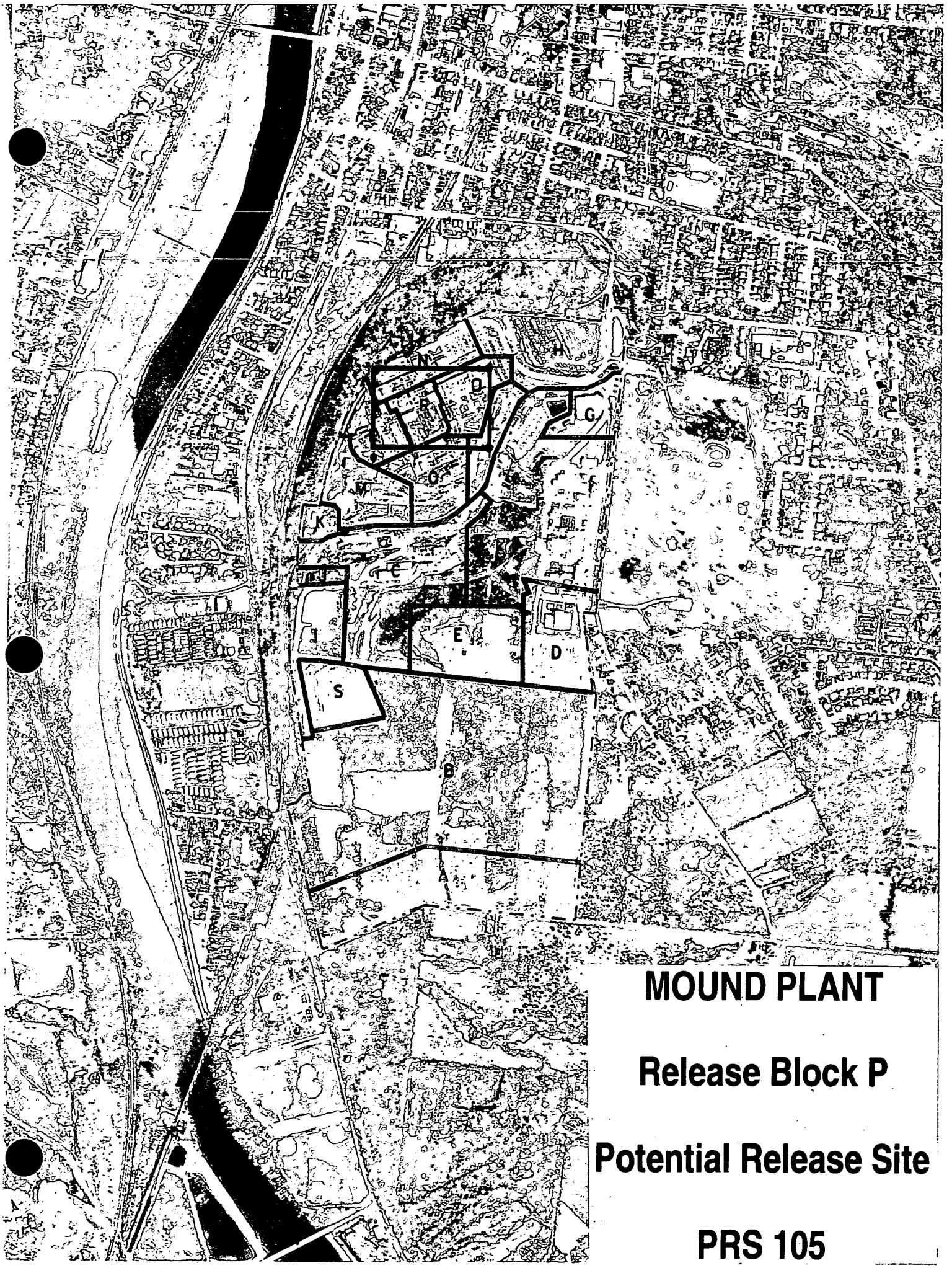
Environmental Restoration Program

MOUND PLANT
Potential Release Site Package
PRS # 105



PRS 105

REV	DESCRIPTION	DATE
PUBLIC RELEASE 0	Available for comments.	Aug. 20, 1996
FINAL 1	Comment period expired. No comments. Recommendation page annotated.	Oct. 16, 1996
FINAL 2	Signature page changed to show correct review period.	Nov. 19, 1996

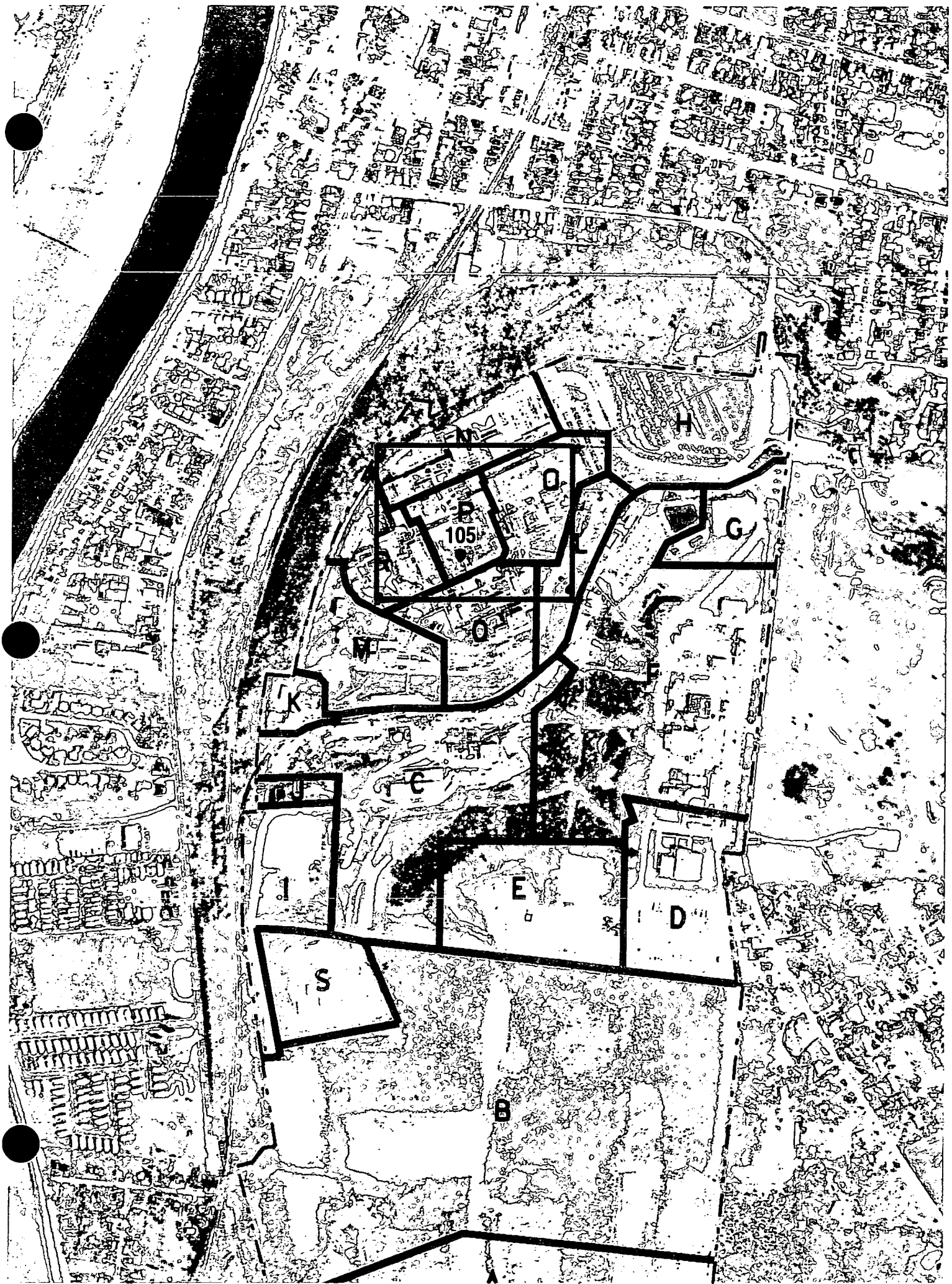


MOUND PLANT

Release Block P

Potential Release Site

PRS 105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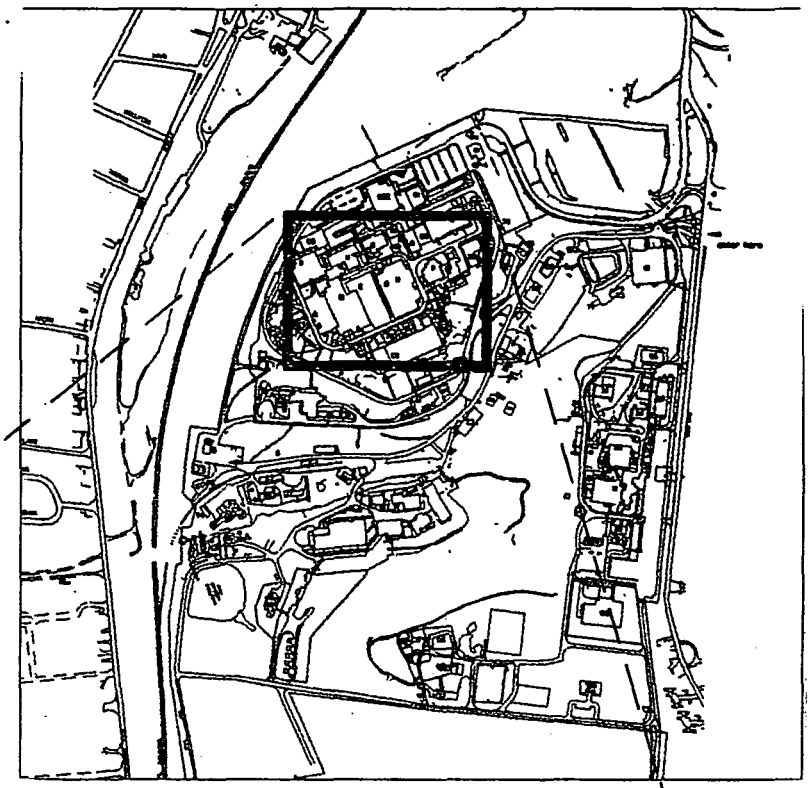
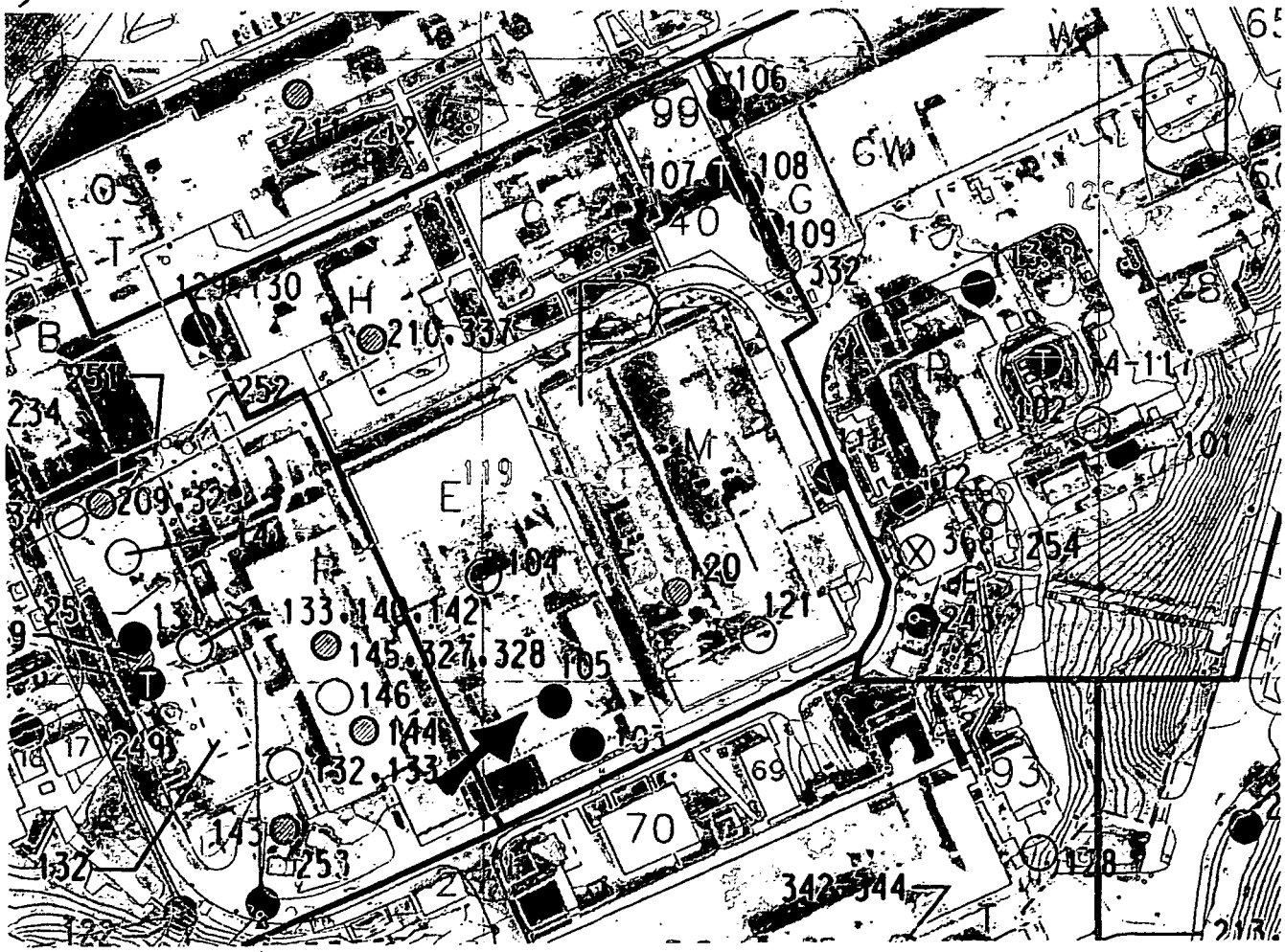
MOUND PLANT

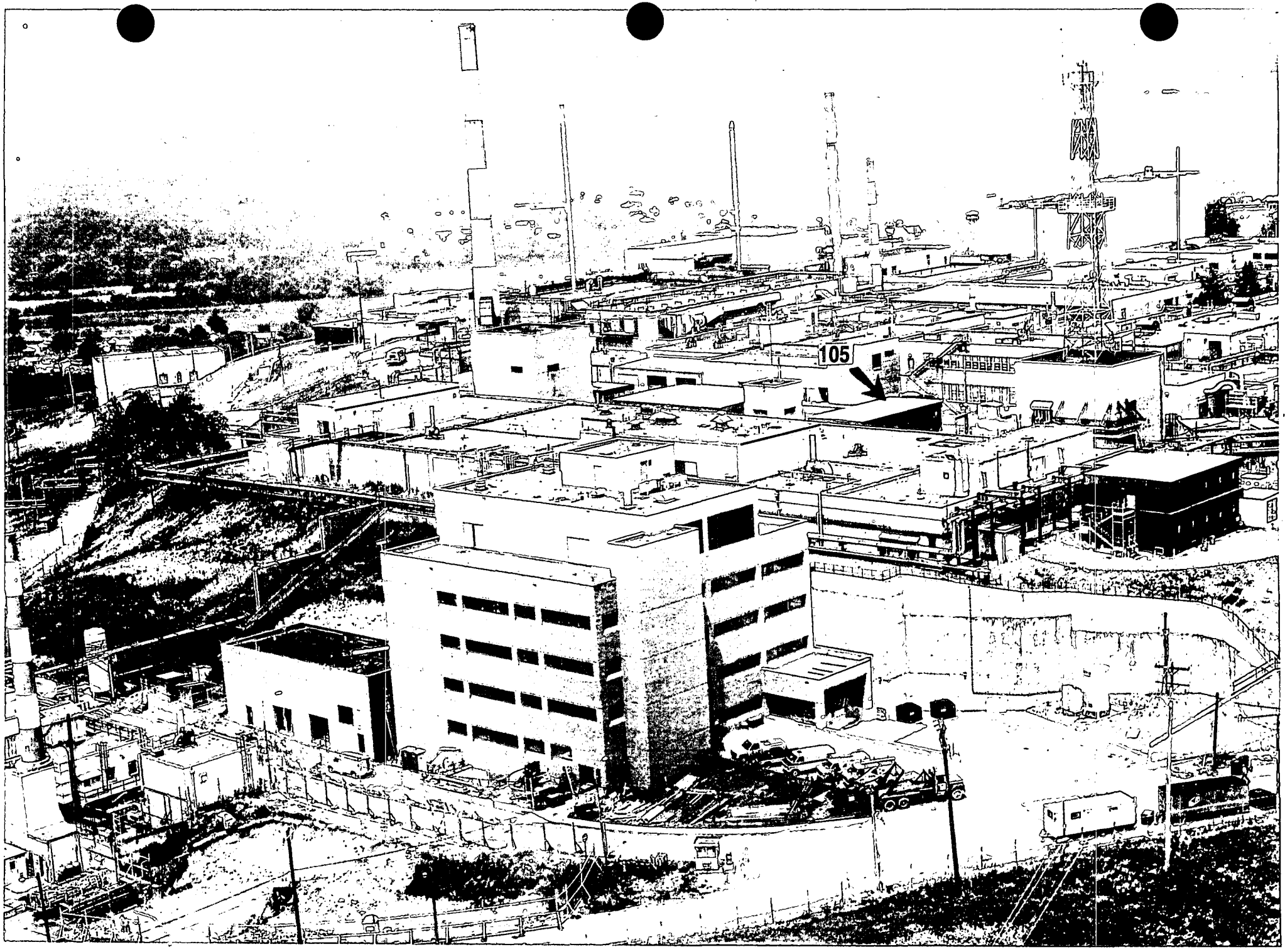
Release Block P

Potential Release Site

PRS 105






105

PRS 105

PRS HISTORY:

PRS 105 is a remediated soils location that was formerly contaminated with solvents from the E Building solvent storage shed. This shed was dismantled in April 1988 when the south addition to E Building was constructed.[2] During excavation and removal of the shed's concrete floor, a small amount of soil (approximately 800 grams) surrounding the floor drain was discovered to be wet with solvent contamination. The contaminated, wet soil and adjacent dry soil were transferred to waste drums. Verification testing for solvent residuals required additional soil to be excavated to a depth of approximately 4 feet, drummed, and shipped off-plant for disposal.[8] (Note: the reference that contaminated soils were excavated to a depth of 10 feet is incorrect - OU9, Site Scoping Report: Volume 7 - Waste Management.)

The small shed, approximately 144 ft^2, was located on the southeast corner of E Building. Solvent drums, both process feed and waste, were stored in the shed. The spent solvents from E Building were pumped back to the shed and collected in 55 gallon drums. Once a week, the waste drums were transferred to Building 72 for storage by waste management prior to shipment for off-site treatment and disposal.

CONTAMINATION:

In 1983-84, the Radiological Site Survey collected samples of surface soil from two locations which were near the shed. The soil samples were analyzed for radioactivity. The thorium levels were below the instrumental detection limit of 2 pCi/g. The regulatory limit, 40CFR192.41, for thorium contamination in surface soil is 5 pCi/g. The maximum detection of plutonium-238 was 0.41 pCi/g which is below the 25 pCi/g Mound guideline criteria, ALARA (As Low As Reasonably Achievable) for soil contamination.

After the demolition of the shed and removal of the concrete floor in 1988, the soil was tested to confirm the removal of the solvent contaminated soils. After the soil was excavated down to four feet, no solvent chemicals were detected by gas chromatography/headspace analysis (method SW846-5020) of soil samples. The method detection limit was 1 ug/g for trifluorotrichloroethane, acetone, tricholorethene, dichloromethane, isoproponal, methanol, and 1,1,1-trichloroethane.[8] For these chemicals, any solvent contamintion below 1ug/g (same as 1 mg/kg) would not exceed the current Mound Guideline Values (GV) for soil contamination.

The Soil Gas Survey of 1992 looked for volatile organic compounds (VOCs) in the soils near E Buiding. Gas chromatography analysis did not detect any soil gas chemicals in sample no. 1065, the nearest sampling location to PRS 105. A soil gas concentration of 6 ppb 1,1,1-trichloroethane and 220 ppb toluene was detected in sample #1066, a sampling location on the southwest side of E Building. The calculated guideline criteria for soil gas contamination is 2400 ppb for 1,1,1-trichloroethane and 414,600 ppb for toluene.[9]

In April 1994, the OU2 Soil Vapor Reconnaissance Investigation was performed as a follow up to the 1992 Soil Gas Survey. Multiple samples were collected from the east side of the E Building addition, adjacent to the former solvent shed location. No soil gas chemicals were detected in these sample locations: 4021, 4022, 4023, and 4025.

READING ROOM REFERENCES:

1) OU9, Site Scoping Report: Volume 12 - Site Summary Report, December 1994. (pages 6-8)
2) OU9, Site Scoping Report: Volume 7 - Waste Management, February 1993. (pages 9-12)
3) Remedial Investigation/Feasibility Study Operable Unit 9, Site-Wide Work Plan, April 1992. (pages 13-16)
4) Operable Unit 9, Site Scoping Report Volume 3 - Radiological Site Survey, June 1993. (pages 17-19)
5) Reconnaissance Sampling Report, Soil Gas Survey & Geophysical Investigations, Mound Plant Main Hill and SM/PP Hill, February 1993. (pages 20-22)
6) Soil Vapor Reconnaissance Operable Unit 2, Main Hill OU-2 Phase I Technical Memorandum, February 1995. (pages 23-25)

OTHER REFERENCES:

7) Preliminary Review/Visual Site Inspection for RCRA Facility of Mound Plant, July 1988. (pages 26-29)
8) Soil Assessment Summary - E Building Shed, W. David Gloekler, EG&G, 1988. (pages 30-45)
9) Comparison of Actual Soil Gas Values with Calculated Acceptable Soil Gas Values, March 1996. (pages 46-48)

PREPARED BY:

Dennis J. Gault, EG&G Technical Staff
Dave Gloekler, EG&G Technical Staff

MOUND PLANT
PRS 105
FORMER SOLVENT STORAGE SITE
E BUILDING SHED

RECOMMENDATION:

Potential Release Site (PRS) 105 is a remediated soils location that was the former location of the E Building Solvent Storage Shed. This area was identified as a PRS due to the shed's use as a short term storage area for both fresh and spent solvents. The compounds of concern were identified as trichloroethene (TCE), ethanol, and methanol.

In 1988, the shed's structure, concrete floor and underlying soil was removed (soil was excavated to approximately a 4 foot depth). Subsequent verification sampling found no evidence of any organics in the soil in excess of the 10^{-6} Risk Based Guideline Values. A 1994 quantitative soil gas study and a 1984 radiological study, near PRS 105, also found no evidence of contamination in excess of guideline criteria.

Therefore, since the removal verification results found no remaining evidence of contamination from operations at the E Building Storage Shed and since no additional history or lab evidence of contamination exists at this PRS, PRS 105 requires NO FURTHER ASSESSMENT.

CONCURRENCE:

DOE/MB: Arthur W. Kleinrath, Remedial Project Manager — 8/20/96 (date)

USEPA: Timothy J. Fischer, Remedial Project Manager — 8/20/96 (date)

OEPA: Brian K. Nickel, Project Manager — 8/24/96 (date)

SUMMARY OF COMMENTS AND RESPONSES:

Comment period from 9/18/96 9/16/96 to 10/15/96

☒ No comments were received during the comment period.

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

REFERENCE MATERIAL
PRS 105

Document Control No. _____

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

Table A.1. Comprehensive Tabulation of Potential Release Sites

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[a]	Results	Ref
102	Cooling Tower Drum Storage Area	E-7 E-8	In service	Contaminants listed under Cooling Tower Basins Ethylene glycol	4, 5				No Data		
103	E Building Soils	E-6 E-7 F-7	Grounds			Indicated by Soil Gas Survey	S	12	1 14	SGS[b] Table B.4 Locations 1046, 1047, 1048, 1065, 1067 Table B.9 RSS[c] Locations S0152, S0153, S0164 (Appendix E in Ref. 6)	12 6
104	Scintillation Vial Storage Area	E-6	In service	Tritium, Trimethylbenzene	4, 5, 18	None suspected (within E Building)			No Data		
105	E Building Solvent Storage Shed	F-6	Historical	Trichloroethene, Ethanol, Methanol	4, 5, 18	Closed before construction of E Building Annex, soil removed	S	4	1	SGS[b] Table B.4 Location 1066	12
106	G Building Soils (AKA Garage Area)	E-7	Grounds	Waste oil, Waste antifreeze, Automotive batteries Asbestos	1, 4, 18	Suspected petroleum products			1 14	SGS[b] Table B.4 Locations 1018 Table B.9 RSS[c] Locations S0137 and S0141 (Appendix E in Ref. 6)	12 6
	Building Gasoline Tank (Tank 202)	E-7	Historical	Gasoline	3, 18	Tanks removed 1986, petroleum contaminated soils removed		3, 18	No Data		
	Building Gasoline Tank (Tank 203)	E-7	Historical								

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 7 - WASTE MANAGEMENT

MOUND PLANT
MIAMISBURG, OHIO

February 1993

DEPARTMENT OF ENERGY
ALBUQUERQUE FIELD OFFICE

ENVIRONMENTAL RESTORATION PROGRAM
EG&G MOUND APPLIED TECHNOLOGIES

FINAL

the ground throughout this area. Storm water runoff from the area probably flows westward toward the overflow pond.

5.3.13. Past Hazardous Waste Storage Area (Historical)

The past hazardous waste storage area is the former location of Building 72 and is immediately west of Building 87, in the test fire area of Mound (Figure 5.1). The building began operation in 1982, and the Ohio EPA approved the closure plan August 8, 1985. The building was used for storage, prior to off-plant shipment, of combustible and flammable liquids and waste oils, solvent-containing wastes, ignitable wastes, plating wastes, photoprocessing wastes, polymeric wastes, and toxic wastes generated at the facility. Wastes were stored in sealed 55-gallon drums. The storage structure was a 60-ft by 40-ft covered structure (Building 72) with a concrete floor that was divided into four drum storage bays to segregate incompatible wastes. Three of the bays were 13 ft by 40 ft. The fourth bay measured 24 ft by 9 ft and was used to hold defective containers and to prepare waste containers for off-plant shipment. The bays had sloped floors and 6- to 15-inch dikes. The expansion of Building 87 required removal of the structure. During closure, the concrete floor was broken up and disposed of and soil samples were collected and analyzed for contamination by halogenated volatile chemicals (DOE 1992g). Contaminated soils were identified, excavated, and shipped off-plant for disposal. Additional soil samples were collected from newly exposed soil, but no contamination was found. The building was dismantled and moved to its present location in early 1986. During the time it took to move the building, the contents were staged at the waste oil drum field.

5.3.14. Building E Solvent Storage Shed (Historical)

The Building E solvent storage shed was on the south side of Building E, on the Main Hill, in the north-central portion of Mound (Figure 5.1). The start-up date is unknown. It was taken out of service in April 1988 when the new addition to E Building was completed. The shed was used for the temporary storage of waste solvents (most likely ethanol, methanol, and trichloroethene) generated in Building E. Waste solvent was pumped from Building E directly into 55-gallon drums inside the shed. Filled drums were transferred weekly to the hazardous waste storage area in Building 72, near the western edge of the Mound boundary (MRC 1983). The shed was a metal-roofed and walled structure with a concrete floor and a surface area of approximately 144 ft^2. The concrete floor was sloped to a drain that routed spilled materials to storm sewers and to the plant drainage ditch. During operation, the unit had no curbing or other structures to contain spills. The building and pad were removed to allow construction of the E Building addition. During dismantling operations, soil contaminated with trichloroethene was discovered around the floor drain. The soil was excavated to a depth of approximately 10 ft, drummed, and shipped off-plant for disposal (DOE 1992g). Analysis for Freon,

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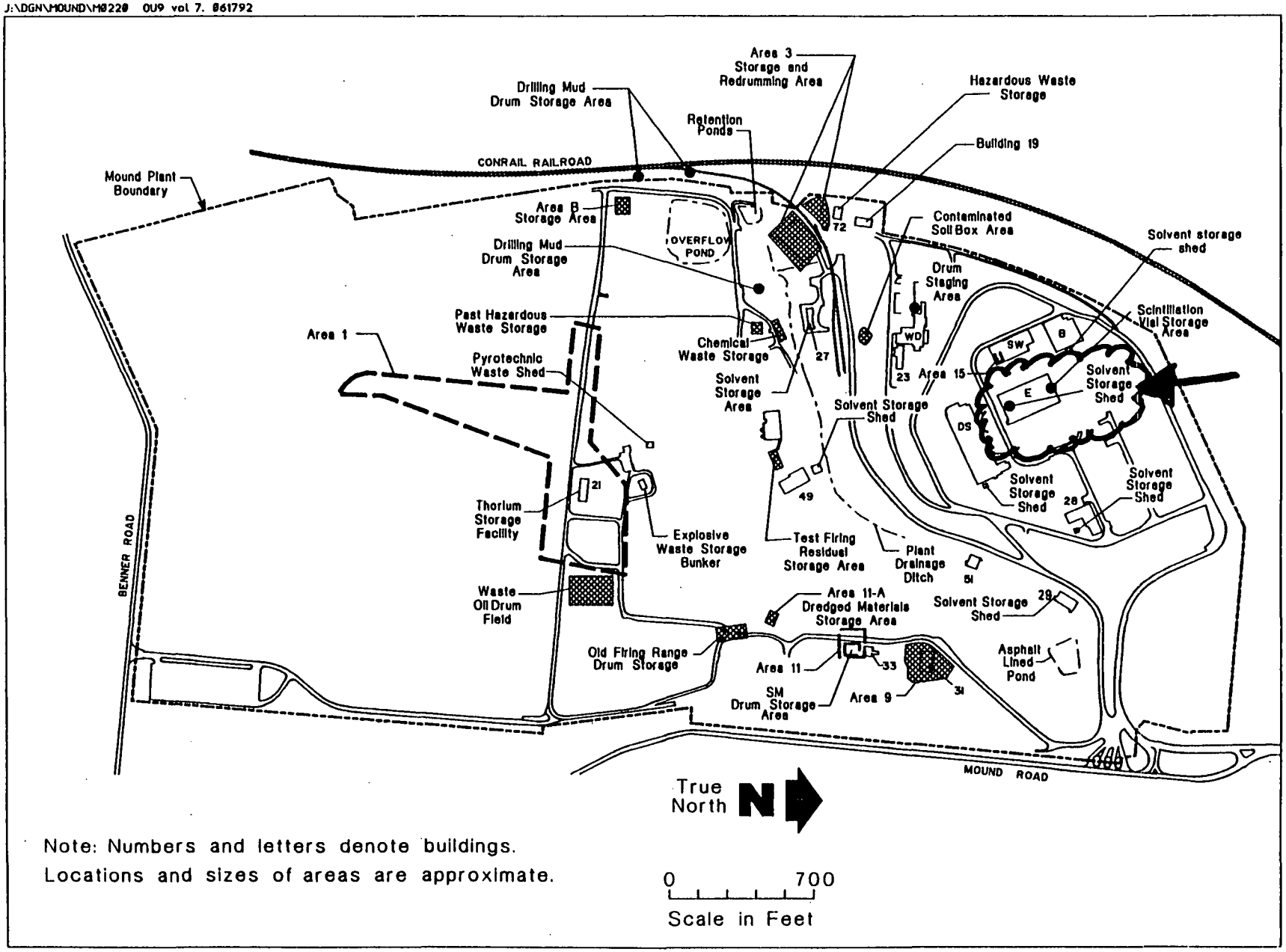

Figure 5.1 Waste storage areas.

acetone, tricholoroethene, dichloromethane, isopropyl and methyl alcohols, and 1,1,1-trichloroethane indicated no results above the 1 ppm detection limit (Gloeckler 1988). The quantity of solvents used in the E Building has since been reduced. Since the removal of the solvent storage shed, these solvents are kept inside the E Building in appropriate cabinets (Pardieck 1991).

5.3.15. Building 29 Solvent Storage Shed (Inactive)

The Building 29 solvent storage shed is on the west end of Building 29, in the north-central portion of Mound (Figure 5.1). The solvent storage shed is a stand-alone building, approximately 11 ft wide by 10 ft high, and is constructed with sheet metal walls and roof. It is placed on a concrete pad. The floor is contained on three sides by a 4-inch-high curb, the remaining side of the floor is uncurbed.

Construction and operation of the solvent storage shed began in 1972. Acetone stored inside the shed in 55-gallon drums is pumped from the drums through transfer lines into Building 29 where it is used. Spent solvent is pumped from Building 29 back into the solvent shed and into drums for disposal. Acetone is the only solvent that has been stored in the shed for use in Building 29. A 55-gallon drum of propanol was delivered by mistake and is currently stored in the shed. However, Mound personnel indicated that acetone is the only solvent intentionally used and stored in the shed.

Prior to construction of the shed, acetone was stored in drums in Room 7 of Building 29. The acetone was used in the building. Waste acetone was drummed for disposal. The drummed waste was picked up by waste management personnel.

The solvent storage shed became inactive approximately two years ago when the process using acetone in Building 29 was shut down. The shed is in a standby mode and may go operational depending upon future plans. This shed was not described in the RFA (EPA 1988).

5.4. STORM WATER RETENTION AND DISCHARGE SYSTEM

The Storm Water Retention and Discharge System (SRDS) consists of three engineered structures constructed along the plant drainage ditch to control the movement of surface water and sediments contaminated with low-levels of plutonium-238. The SRDS surface impoundments include the asphalt-lined pond, the retention basins and weir basin, and the overflow pond. Surface water and sediment samples were collected from the surface impoundments of the SRDS in 1987 as part of the DOE Water and Sediment Sampling/Analysis Program performed by International Technology Corporation (IT 1987). A description of each impoundment and a summary of analysis results are presented in the following sections.

REMEDIAL INVESTIGATION/FEASIBILITY STUDY
OPERABLE UNIT 9, SITE-WIDE
WORK PLAN

MOUND PLANT
MIAMISBURG, OHIO

April 1992

DEPARTMENT OF ENERGY
ALBUQUERQUE FIELD OFFICE

ENVIRONMENTAL RESTORATION PROGRAM
TECHNICAL SUPPORT OFFICE
LOS ALAMOS NATIONAL LABORATORY

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D&D Program will complete a verification of residual radioactivity in soils at a given site. The ER Program will review the verification plans versus suitability for a CERCLA RI/FS, including adding sampling and analysis for hazardous chemicals, and then submit the plan to the EPA and the OEPA for regulatory review. The radiological verification and chemical characterization will be done simultaneously and constitute the remedial investigation. The concurrent sampling will take advantage of easy accessibility to the potentially contaminated surface of the excavation before it is backfilled with clean material.

- Verification Report, RI/FS: Using the combined data from the radiological verification and the hazardous chemical characterization, a verification report will be prepared for each contaminated soil area. The D&D Program normally prepares a verification report to certify a given soil area as clean. This is done for its internal programmatic closeout of an area.

The RI/FS for the D&D Program Sites will be assembled sequentially because of the sequencing of D&D soil excavation for different release sites over several years. Although it is anticipated that the D&D soil removal will satisfy CERCLA cleanup requirements as well, it is possible that a CERCLA remedial action could be required after the D&D cleanup is complete, and that a decision would be made during the RI/FS (verification). A baseline risk assessment based on CERCLA protocols has been scheduled for FY 1991 to provide the basis for a comparison of current D&D Program cleanup levels to CERCLA requirements.

It is anticipated that all radioactively contaminated soils at the Mound Plant, including the currently defined Operable Unit 5, Radioactively Contaminated Soils, and Operable Unit 6, D&D Program Sites, will eventually be consolidated into a single operable unit for the purposes of completing the remedial action and a CERCLA/NEPA ROD. If the D&D Program is able to clean up sufficiently to meet CERCLA requirements and it is verified that no significant levels of radionuclides or hazardous chemicals remain after D&D, no CERCLA remedial action will be required, and a "no action" ROD will be completed.

The conceptual site model is shown in Figure 3.14. The release sites included in this operable unit contain radioactively contaminated surface or near-surface soil scheduled for cleanup. However, the air, surface and ground water pathways will be investigated by other operable units. The site-wide operable unit will initiate investigations for all of these media.

3.7. LIMITED ACTION SITES

The Limited Action Sites include 35 sites brought forth from the RCRA Facilities Assessment (RFA 1988) as requiring "No Further Action" and are believed to have no contamination associated with them (Figure 3.15). These sites (Table III.5) were visually inspected by a joint DOE, EPA, and OEPA committee in August 1990. As of this writing, no further action will be taken on these sites, and no further documentation is planned. Appendix A contains individual descriptions of these sites.

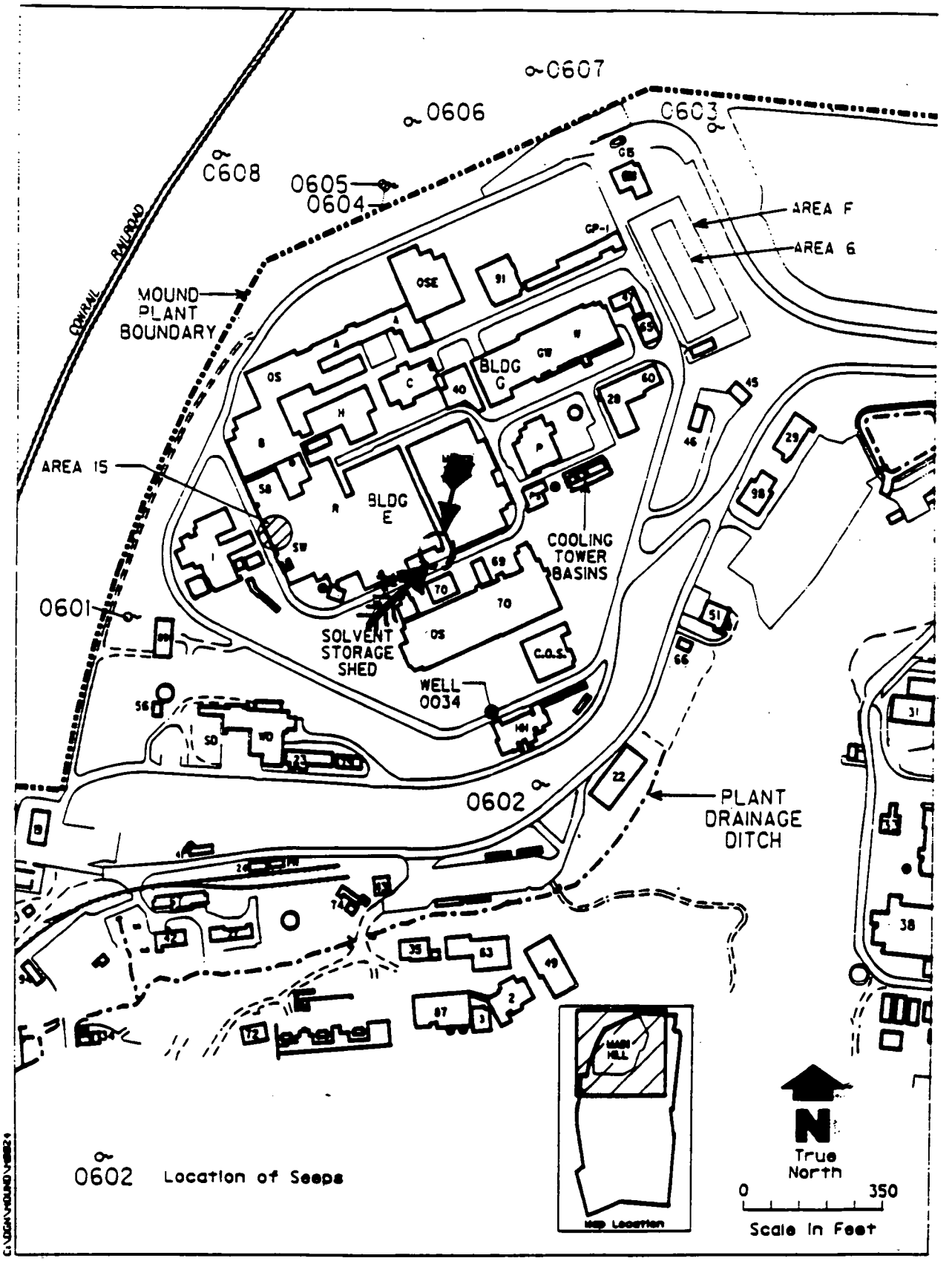


Figure A.2. Main Hill Seeps and potential release sites, Operable Unit 2.

NOTE: CORRECTED LOCATION OF SOLVENT STORAGE SHED

2.5. COOLING TOWER BASINS

The cooling tower basins are small, above-ground impoundments located beneath the cooling towers near the powerhouse, Building P (Figure A.2). The basins are still in service and consist of below-ground concrete sumps covered with a concrete top that recycle water from the towers back to the cooling system. Blowdown water is discharged to the plant drainage ditch, which discharges at the NPDES Outfall 002 or recycles it back into the noncontact cooling system. It is not known whether solids accumulate in the basins or if they are ever cleaned out. The cooling water historically contained additives that included rust inhibitors such as zinc chromate, and organics, and algacides including ANCO algacide No. 1 (Anderson Chemical Co.), 2-benzyl-4-chlorophenol, Siltex (Anderson Chemical Co.), ANCO Microbicide 77 (Anderson Chemical Co.), 5-chloro-2-methyl-4-isothiazolin-3-one, 2-methyl-4-isothiazolin-3-one, organo-phosphonate, triazol and polyacrylate (ref. 2). The chemicals added to the cooling water changed as new water treatment chemicals were developed and environmental regulations were revised. Some of the chemicals presently added to the cooling water include ANCO 3310, ANCOSPERSE 3830, ANCOCIDE 4070, and ANCOCIDE 4020 manufactured by Anderson Chemical Company.

2.6. BUILDING E SOLVENT STORAGE SHED

The Building E solvent storage shed was located on the south side of Building E, on the Main Hill in the north-central portion of the Mound Plant (Figure A.2) until taken out of service in April 1988 (RFA 1988). The shed was a metal roofed and walled structure with a concrete floor and a surface area of approximately 100 ft^2. The concrete floor was sloped to a drain that routed spilled material to storm sewers and to the plant drainage ditch (RFA 1988). The shed was used for temporary storage of waste solvents (most likely ethanol, methanol, and trichloroethene) generated in Building E. During dismantling operations conducted by Mound Plant personnel, soil around the building contaminated with trichloroethene was identified, removed, drummed, and shipped offsite for disposal in accordance with 40 CFR 262 and 263.

2.7. BUILDING G GARAGE AREA

Building G is located next to GW Building, on the Main Hill in the north-northwest part of Mound Plant (Figure A.2) and is approximately 3,200 ft^2 in size. Garage work was performed at Building G. Building G had three adjacent underground gasoline tanks that were removed in December 1986. The soil around the tanks was excavated, spread out at a stockpile location to allow volatilization of gasoline, and disposed of at the Mound Plant Spoils Disposal Area (Operable Unit 5). Building G and vicinity may be contaminated with gasoline constituents as a result of these activities (DOE 1986).

Document Control No. _____

Environmental Restoration Program

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

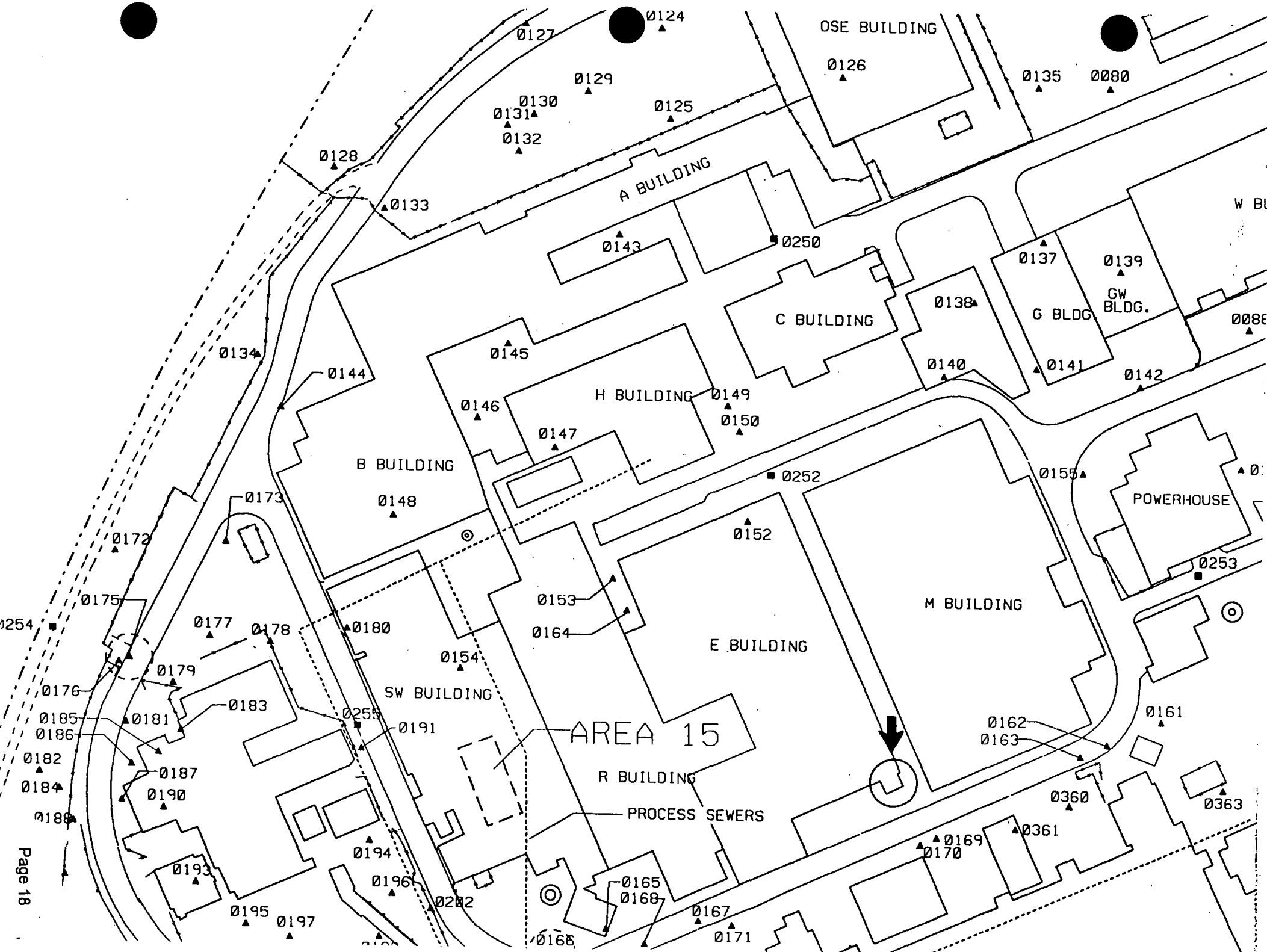
MOUND PLANT
MIAMISBURG, OHIO

June 1993

FINAL

Department of Energy
Albuquerque Field Office

Environmental Restoration Program
EG&G Mound Applied Technologies


OSE BUILDING
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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)
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					

[b]Thorium results of ≤ 2 pCi/g are listed as "b"

Radiochemical Analysis

Environmental Restoration Program

RECONNAISSANCE SAMPLING REPORT SOIL GAS SURVEY AND GEOPHYSICAL INVESTIGATIONS, MOUND PLANT MAIN HILL AND SM/PP HILL

REPORT
APPENDICES A, B AND D

MOUND PLANT
MIAMISBURG, OHIO

February 1993

Department of Energy
Albuquerque Field Office

Environmental Restoration Program
EG&G Mound Applied Technologies

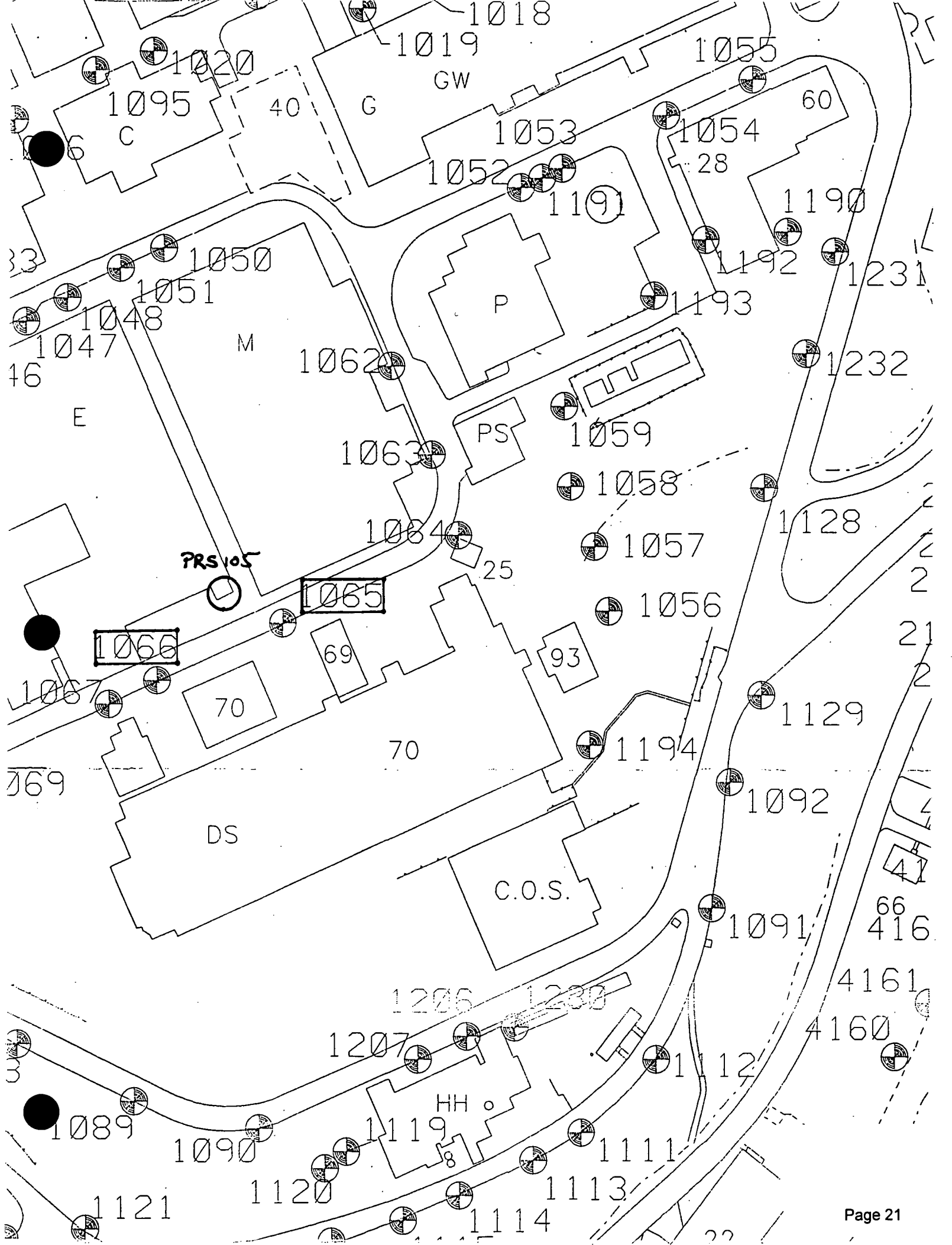

1018
1019
1020
1055
GW
1095
40
G
60
C
1053
1054
28
1052
1191
1190
1050
1192
1231
1051
P
1193
1048
1047
M
1062
1232
E
PS
1059
1063
1058
1128
1064
1057
PRS105
25
1065
1056
1066
69
93
1067
70
1129
70
1194
069
1092
DS
C.O.S.
1091
416
4161
1206
1208
1207
4160
1112
HH
1089
1119
1090
8
1111
1120
1113
1121
1114

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	---	---	---	---	6	---	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	---	226 *	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	---	6	---
MND-01-1064-0005	11 AUG 92	---	---	---	---	---	---	---	19
MND-01-1066-0005	11 AUG 92	---	---	---	---	6	---	---	226
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	---	---	---	---	---	---	---	106
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-01-1076-0005	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	8 *
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

Environmental Restoration Program

SOIL VAPOR RECONNAISSANCE
OPERABLE UNIT 2, MAIN HILL
OU-2 PHASE I TECHNICAL MEMORANDUM

MOUND PLANT
MIAMISBURG, OHIO

February 1995

FINAL

(Revision 0)

Department of Energy
Ohio Field Office

Environmental Restoration Program
EG&G Mound Applied Technologies

LOCATION OF FORMER
E-BLDG. SOLVENT STORAGE
SHED

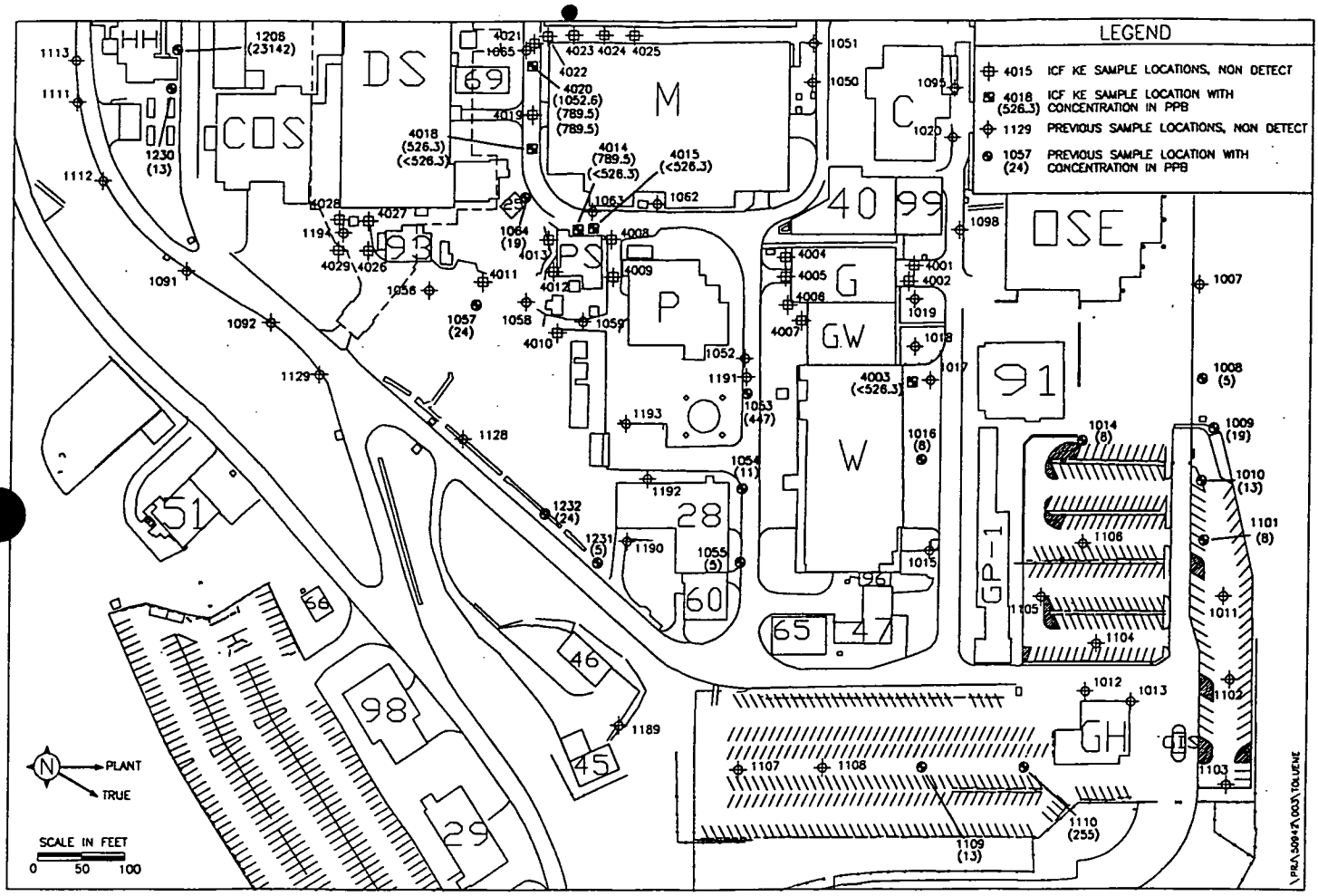


Figure B.1. Toluene Results, Main Hill East

SAMPLE I.D.	Hole	DATE	DEPTH	Chloroform ppb	1,1,1-TCA ppb	TCE ppb	BDCM ppb	Toluene ppb	PCE ppb	Bromoform ppb	Comments
BUILDING G											
M204-4004-0002.0	PH-04	4-18-94	2.0'	ND	2982.5	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4005-0002.0	PH-05	4-18-94	2.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4000-4007	NA	4-18-94	NA	ND	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK
M204-4006-0002.5	PH-06	4-19-94	2.5'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4002-0002.0	PH-02	4-19-94	2.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4001-0002.5	PH-01	4-19-94	2.5'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4000-4009	NA	4-19-94	NA	ND	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK
BUILDING GW											
M204-4000-4008	NA	4-19-94	NA	ND	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK
M204-4007-3000	PH-07	4-19-94	NA	ND	ND	ND	ND	ND	ND	ND	QC-PROBE ROD BLANK
M204-4007-0002.5	PH-07	4-19-94	2.5'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4007-0005.0	PH-07	4-19-94	5.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4007-1005.0	PH-07	4-19-94	5.0'	ND	ND	ND	ND	ND	ND	ND	QC-DUPLICATE SAMPLE
M204-4003-0001.5	PH-03	4-19-94	1.5'	ND	1403.5	ND	ND	< 526.3	ND	ND	SOIL-GAS SAMPLE
BUILDING M											
M204-4019-0002.5	PH-19	4-27-94	2.5'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4019-0005.0	PH-19	4-27-94	5.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4019-0007.5	PH-19	4-27-94	7.5'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4019-0010.0	PH-19	4-27-94	10.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4019-0012.5	PH-19	4-27-94	12.5'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4019-1012.5	PH-19	4-27-94	12.5'	ND	ND	ND	ND	ND	ND	ND	QC-DUPLICATE SAMPLE
M204-4019-0015.0	PH-19	4-27-94	15.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4019-0016.0	PH-19	4-27-94	16.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4000-4021	NA	4-27-94	NA	ND	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK
M204-4000-4022	NA	4-28-94	NA	ND	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK
M204-4018-3000	PH-18	4-28-94	NA	ND	ND	ND	ND	ND	ND	ND	QC-PROBE ROD BLANK
M204-4018-0002.5	PH-18	4-28-94	2.5'	ND	ND	ND	ND	526.3	ND	ND	SOIL-GAS SAMPLE
M204-4018-0005.0	PH-18	4-28-94	5.0'	ND	ND	ND	ND	< 526.3	3235.3	ND	SOIL-GAS SAMPLE
M204-4018-0006.0	PH-18	4-28-94	6.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4020-0002.5	PH-20	4-28-94	2.5'	ND	3333.3	ND	ND	1052.6	ND	ND	SOIL-GAS SAMPLE
M204-4020-0005.0	PH-20	4-28-94	5.0'	ND	< 1403.5	ND	ND	789.5	ND	ND	SOIL-GAS SAMPLE
M204-4020-0007.5	PH-20	4-28-94	7.5'	ND	ND	ND	ND	789.5	ND	ND	SOIL-GAS SAMPLE
M204-4020-0010.0	PH-20	4-28-94	10.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4020-0012.5	PH-20	4-28-94	12.5'	ND	1403.5	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4020-0015.0	PH-20	4-28-94	15.0'	ND	< 1403.5	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4020-0017.5	PH-20	4-28-94	17.5'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4020-0019.7	PH-20	4-28-94	19.7'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4000-4023	NA	4-28-94	NA	ND	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK
M204-4000-4026	NA	5-3-94	NA	ND	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK
M204-4021-3000	PH-21	5-3-94	NA	ND	ND	ND	ND	ND	ND	ND	QC-PROBE ROD BLANK
M204-4021-0001.0	PH-21	5-3-94	1.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4022-0003.0	PH-22	5-3-94	3.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4023-0002.0	PH-23	5-3-94	2.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4024-0002.0	PH-24	5-3-94	2.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4025-0003.0	PH-25	5-3-94	3.0'	ND	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4000-4027	NA	5-3-94	NA	ND	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK

ND Non Detect

NA Not Applicable

QC Quality Control

J Qualitied as Estimated

ppb Parts Per Billion

< Less Than

Gas Chromatography

Table A.1. Soil Vapor Analytical Results

PRELIMINARY REVIEW / VISUAL SITE INSPECTION

FOR RCRA FACILITY ASSESSMENT OF MOUND PLANT

JULY 1988

Unit No.: CS-2

Unit Name: Building E Solvent Storage Shed

Unit Description: The Building E Solvent Storage Shed is a recently dismantled unit located on the south side of Building E. The shed was a metal-walled and roofed structure with a concrete floor approximately 12 feet on a side. It was used for temporary storage of waste solvents generated in Building E. Waste solvent was pumped from the building directly into 55-gallons drums inside the shed. Once a week, filled drums were picked up and transferred to the Hazardous Waste Storage Area (SWMU CS-7). Some of the solvent drums from this unit are being stored at the Building B Temporary Drum Storage Area (SWMU CS-15) (Ref. 84).

Date of Start-up: Unknown.

Date of Closure: The unit was taken out of service in April, 1988.

Wastes Managed: The drums in the shed contained waste solvents used in Building E.

Release Controls: The Solvent Storage Shed was a fully enclosed structure to prevent exposure of the drums to sunlight and precipitation. The concrete floor was sloped to a drain which routed spilled material to storm sewer and to the Plant Drainage Ditch (SWMU MI-1) (Ref. 84). During operation, the unit had no curbing or other structures to contain spills (Ref. 78, p. 3-58).

History of Releases: During dismantling operations, contaminated soil around the floor drain was discovered. The soil was excavated to a depth of approximately 10 feet. The soil is to be analyzed for solvents before backfilling the hole. The facility representatives had no documentation of releases from the unit and did not know how long the drain leakage occurred (Ref. 84).

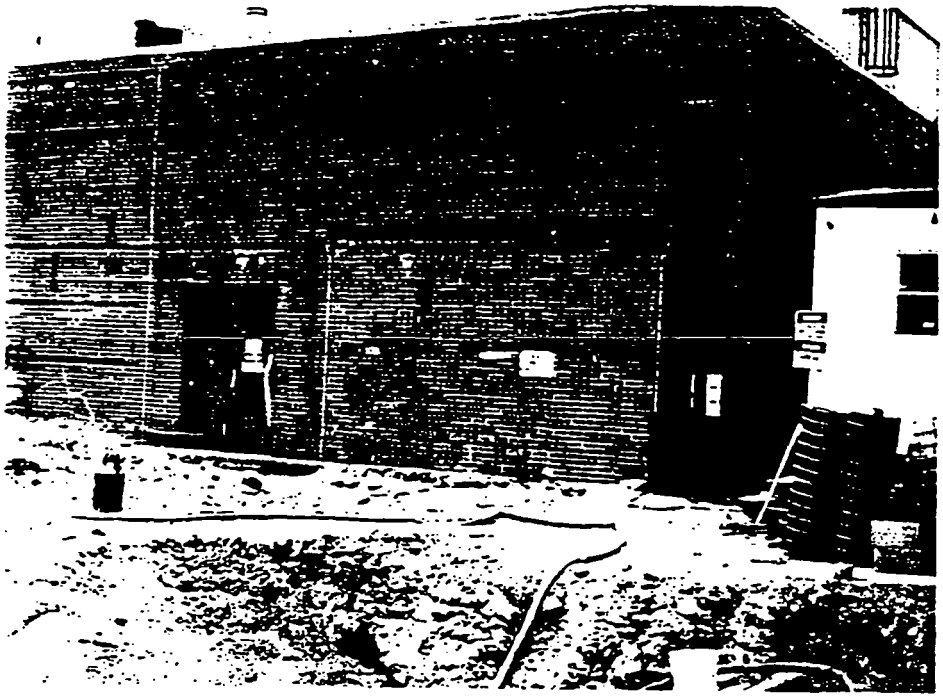
Conclusions: Soil/Groundwater: A release of solvent to the soil underneath the shed was documented. The extent of the soil contamination has not been determined. There is a moderate potential

for past releases from the shed to reach groundwater since there are no release controls in the underlying soil. There is no potential for ongoing releases because the shed and wastes have been removed.

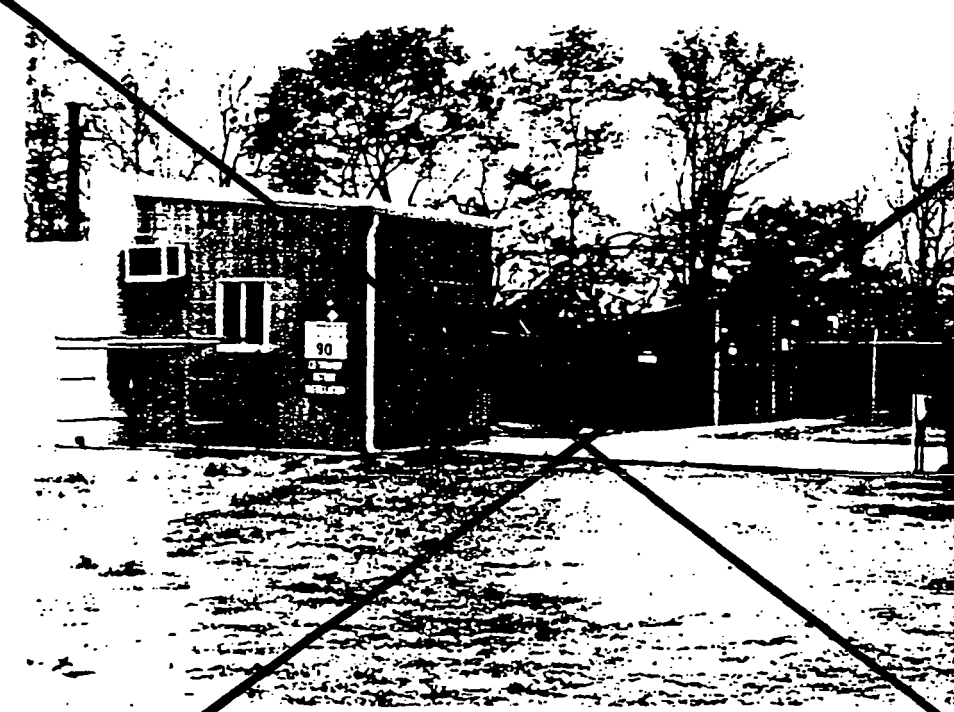
Surface Water: There is no potential for release to surface water because the shed has been dismantled and waste removed. The ongoing potential for release to surface water through groundwater interflow is low since the Great Miami River is located more than 1500 feet away. The site is also located above the river's 100-year floodplain. Past releases from the unit to the Plant Drainage Ditch occurred through the storm drain.

Air: There is no potential for releases to the air from this inactive unit.

Subsurface Gas: There is a moderate to high potential for generation of subsurface gas due to the loss of waste solvents to the storm drain and underlying soil.



3-10 Former site of E Building Solvent Storage Shed (SWMU CS-2). Shed had been dismantled a short time before the VSI.



3-11 Building 90-Blockhouse (SWMU OB-4), looking northwest. Pyrotechnic Waste Shed (SWMU OB-5) visible in center background.

Soil Assessment Summary - E Building Shed
W. David Gloekler, EG&G, 1988.

EG&G MAT

FROM: W. David Gloekler
Environmental Assessment

cc: Dan Carfagno

DATE: December 6, 1988

Subject: Soil Assessment Summary - E Building Solvent Shed

Reference: The May 1988 demolition of the Shed.

To: Charles S. Friedman

Upon completion of the demolition of the E Building Solvent Shed, two sets of soil samples were collected to determine the extent of soil contamination which resulted from the operation the shed. The soil was visually inspected immediately after the removal of the concrete floor. Approximately one liter of soil surrounding the floor drain was obviously wet which resulted from a crack in the upper part of the trap. Since this crack was high in the trap, we estimate that only a few milliliters could escape to the soil from any spill involving this floor drain. The wet soil and adjacent dry soil was placed in a drum for disposal. The site was excavated down to a level of three feet lower than the drain trap. Soil samples were collected on 5-2-88 from two levels beneath this drain trap, 2 ft. and 3 ft. These samples were submitted to a local lab, Pollution Control Science, Inc., for VOC analysis. One sample, #2, contained 6 ug/g of trichloroethylene which necessitated additional excavation and sampling at a depth of 4 ft. These samples and two drum samples containing excavated soil were submitted for analysis on 5-5-88. The analysis of the 4 ft. level soil samples confirmed satisfactory cleanup. Analysis of the drummed soil was performed on dry soil to determine the hazard of the containerized waste. The two data sets confirmed that the solvent contamination was localized to a small area surrounding the solvent drain. Copies of the sampling and analytical work are attached for transmittal to the EPA.

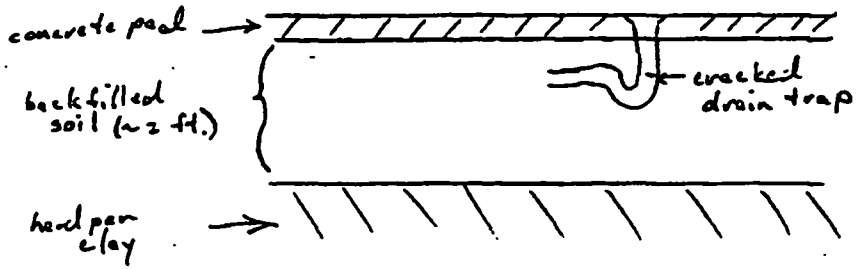
Sincerely,

David Gloekler

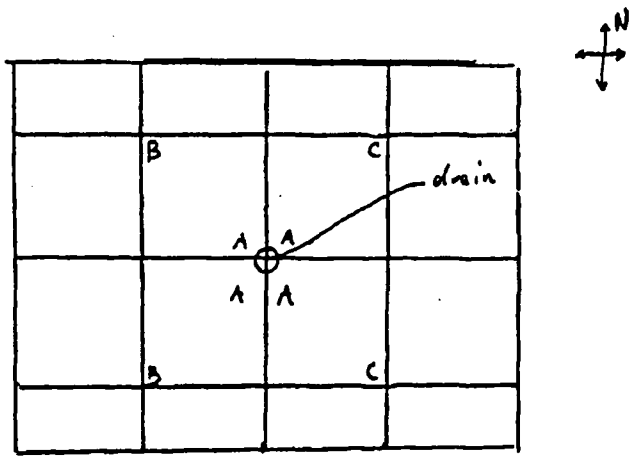
Sample Collection Notes: Demolition of the E Building Solvent Shed

W.D. Fletcher
5-2-88

Soil Profile



Composite Sample Locations



A – center composites were collected from a 1 ft^2 areas at depths of 2 ft and 3 ft. (4 ft. depth on 5-5-88 W.D.F.)

B – west composites were collected from two – 1 ft^2 areas which were a distance of 4 ft from the center composites.

C – East composites were collected from two – 1 ft^2 areas which were a distance of 4 ft from the center composites.

pollution control science, inc.
testing, sampling & analysis

May 19, 1988

Mr. Dave Gloekler
MONSANTO RESEARCH CORP.
Mound Facility
P.O. Box 32, Mail St. E113
Miamisburg, OH 45342

Subject: **PCS Lab Task # 88050040**
PCS Sample Number(s) 805149 - 805152

Dear Mr. Gloekler:

We are pleased to submit the report of analysis for the sample(s) you recently submitted to our laboratory. This report contains results for samples you submitted on 5/5/88.

If you need additional information regarding these samples or if you have any questions regarding the results, please contact one of the persons listed below at 513/866-5908. We can provide additional report copies, method summaries or quality control data reports that you may require for full documentation of your samples.

Thank you for choosing PCS for your environmental or industrial hygiene laboratory needs. We hope to continue to provide you with quality analytical services and support. If you have any comments on the services we have provided, we would appreciate hearing from you.

Sincerely,

POLLUTION CONTROL SCIENCE, INC.

Laboratory Director

Quality Assurance Reviewer

cc: Client File

6015 manning road, miamisburg, ohio 45342 513/866-5908

LABORATORY ANALYSIS REPORT

Mr. Dave Gloekler
MONSANTO RESEARCH CORP.
Mound Facility
P.O. Box 32, Mail St. E113
Miamisburg, OH 45342

Page 1
Report Date : 05/19/88
PCS Task # : 88050040
PCS P/N, Acct:

P.O. Number: 47114

Date Received: 05/05/88

PCS Sample # : 805149
Sample ID : #7
Sample Date : Not Specified Sample Priority : Emergency

Parameter	Units	Results / Comments
Trifluorotrichloroethane	ppm	< 1
GC Scan, as Hexane	ppm	< 1
Acetone	ppm	< 1
Trichloroethylene	ppm	< 1
Methylene Chloride	ppm	< 1
Isopropyl Alcohol	ppm	< 1
Methyl Alcohol	ppm	< 1
1,1,1-Trichloroethane	ppm	< 1

PCS Sample # : 805150
Sample ID : #8
Sample Date : Not Specified Sample Priority : Emergency

Parameter	Units	Results / Comments
Trifluorotrichloroethane	ppm	< 1
GC Scan, as Hexane	ppm	< 1
Acetone	ppm	< 1
Trichloroethylene	ppm	< 1
Methylene Chloride	ppm	< 1
Isopropyl Alcohol	ppm	< 1
Methyl Alcohol	ppm	< 1
1,1,1-Trichloroethane	ppm	< 1

LABORATORY ANALYSIS REPORT

Mr. Dave Gloekler
MONSANTO RESEARCH CORP.
Mound Facility
P.O. Box 32, Mail St. E113
Miamisburg, OH 45342

Page 2
Report Date : 05/19/88
PCS Task # : 88050040
PCS P/N, Acct:

==========

PCS Sample # : 805151
Sample ID : A
Sample Date : Not Specified Sample Priority : Emergency

Parameter	Units	Results / Comments
GC Scan, as Hexane	ppm	< 1

==========

PCS Sample # : 805152
Sample ID : E
Sample Date : Not Specified Sample Priority : Emergency

Parameter	Units	Results / Comments
GC Scan, as Hexane	ppm	< 1

QA/QC DATA REPORT
MONSANTO RESEARCH CORP.

	Hexane, Xylenes (ppm)
PARAMETER	
METHOD BLANK	< 1
PRECISION	
PCS # Duplicated	805149
Original Result	< 1
Duplicate Result	< 1
R	--
ACCURACY	
PCS # Spiked	805151
Original Result	< 1
Amount Spiked	5.0
Spiked S'Result	5.0
% Recovery	100.0
Spiked Blank (Known)	
Spiked Blank Result	
% Recovery	
EXTERNAL REF. QC	
Known Value	
Observed Result	
% Recovery	

METHOD SUMMARY FOR ANALYSIS OF VOLATILE ORGANIC COMPOUNDS IN SOIL

The method used for the anaysis of volatile organic compounds in soil was SW846-5020 (Headspace Method). A 10.00 gram representative portion of the sample was weighed into a septum seal vial and heated at 90 degrees centigrade for 1 hour. Using a gas-tight syringe, a 1.0 mL aliquot of the sample headspace was injected into a GC operating under conditions specified in the appropriate method being used (8010, 8015, 8020, or 8030).

Laboratory Quality Assurance protocol includes analysis at 10% frequency of duplicates and matrix spikes . A method blank of an empty vial and a check standard is also analyzed with each set of samples.

pollution control science, inc.
testing, sampling & analysis

May 9, 1988

Mr. Dave Gloekler
MONSANTO RESEARCH CORP.
Mound Facility
P.O. Box 32, Mail St. E113
Miamisburg, OH 45342

Subject: PCS Lab Task # 88050011
PCS Sample Number(s) 805006 - 805011

Dear Mr. Gloekler:

We are pleased to submit the report of analysis for the sample(s) you recently submitted to our laboratory. This report contains results for samples you submitted on 5/2/88.

If you need additional information regarding these samples or if you have any questions regarding the results, please contact one of the persons listed below at 513/866-5908. We can provide additional report copies, method summaries or quality control data reports that you may require for full documentation of your samples.

Thank you for choosing PCS for your environmental or industrial hygiene laboratory needs. We hope to continue to provide you with quality analytical services and support. If you have any comments on the services we have provided, we would appreciate hearing from you.

Sincerely,

POLLUTION CONTROL SCIENCE, INC.

Laboratory Director

Quality Assurance Reviewer

cc: Client File

6015 manning road, miamisburg, ohio 45342 513/866-5908

LABORATORY ANALYSIS REPORT

Mr. Dave Gloekler
MONSANTO RESEARCH CORP.
Mound Facility
PO Box 32, Mail St. E113
Miamisburg, OH 45342

Page 1
Report Date : 05/06/88
PCS Task # : 88050011
PCS P/N, Acct:

==========

P.O. Number: 47114

Date Received: 05/02/88

==========

PCS Sample # : 805006
Sample ID : #1
Sample Date : 05/02/88 Sample Priority : Emergency

Parameter	Units	Results / Comments
1,1,1-Trichloroethane	ug/g	< 1
Methyl Alcohol	ug/g	< 1
Isopropyl Alcohol	ug/g	< 1
Methylene Chloride	ug/g	< 1
Trichloroethylene	ug/g	< 1
Acetone	ug/g	< 1
GC Scan, as Hexane	ppm	< 1
Trifluorotrichloroethane	ppm	< 1

==========

PCS Sample # : 805007
Sample ID : #2
Sample Date : 05/02/88 Sample Priority : Emergency

Parameter	Units	Results / Comments
1,1,1-Trichloroethane	ug/g	< 1
Methyl Alcohol	ug/g	< 1
Isopropyl Alcohol	ug/g	< 1
Methylene Chloride	ug/g	< 1
Trichloroethylene	ug/g	6
Acetone	ug/g	< 1
GC Scan, as Hexane	ppm	< 1
Trifluorotrichloroethane	ppm	< 1

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LABORATORY ANALYSIS REPORT

Mr. Dave Gloekler
MONSANTO RESEARCH CORP.
Mound Facility
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Miamisburg, OH 45342

Page 2
Report Date : 05/06/88
PCS Task # : 88050011
PCS P/N, Acct:

==========

PCS Sample # : 805008
Sample ID : #3
Sample Date : 05/02/88 Sample Priority : Emergency

Parameter	Units	Results / Comments
1,1,1-Trichloroethane	ug/g	< 1
Methyl Alcohol	ug/g	< 1
Isopropyl Alcohol	ug/g	< 1
Methylene Chloride	ug/g	< 1
Trichloroethylene	ug/g	< 1
Acetone	ug/g	< 1
GC Scan, as Hexane	ppm	< 1
Trifluorotrichloroethane	ppm	< 1

==========

PCS Sample # : 805009
Sample ID : #4
Sample Date : 05/02/88 Sample Priority : Emergency

Parameter	Units	Results / Comments
1,1,1-Trichloroethane	ug/g	< 1
Methyl Alcohol	ug/g	< 1
Isopropyl Alcohol	ug/g	< 1
Methylene Chloride	ug/g	< 1
Trichloroethylene	ug/g	< 1
Acetone	ug/g	< 1
GC Scan, as Hexane	ppm	< 1
Trifluorotrichloroethane	ppm	< 1

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LABORATORY ANALYSIS REPORT

Mr. Dave Gloekler
MONSANTO RESEARCH CORP.
Mound Facility
PO Box 32, Mail St. E113
Miamisburg, OH 45342

Page 3
Report Date : 05/06/88
PCS Task # : 88050011
PCS P/N, Acct:

==========

Note: 500mL Soil Sample was spiked with 100µL From TF 50mL Acetone

PCS Sample # : 805010
Sample ID : #5
Sample Date : 05/02/88 Sample Priority : Emergency

w.o. Dbell

Parameter	Units	Results	/ Comments
1,1,1-Trichloroethane	ug/g	< 1	
Methyl Alcohol	ug/g	< 1	
Isopropyl Alcohol	ug/g	< 1	
Methylene Chloride	ug/g	< 1	
Trichloroethylene	ug/g	< 1	
Acetone	ug/g	< 1	
GC Scan, as Hexane	ppm	14	'Unknown Peak
Trifluorotrichloroethane	ppm	2.7	

==========

Note: Duplicate to Sample #4

PCS Sample # : 805011
Sample ID : #6
Sample Date : 05/02/88 Sample Priority : Emergency

w. David Dbell

Parameter	Units	Results	/ Comments
1,1,1-Trichloroethane	ug/g	< 1	
Methyl Alcohol	ug/g	< 1	
Isopropyl Alcohol	ug/g	< 1	
Methylene Chloride	ug/g	< 1	
Trichloroethylene	ug/g	< 1	
Acetone	ug/g	< 1	
GC Scan, as Hexane	ppm	< 1	
Trifluorotrichloroethane	ppm	< 1	

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QA/QC DATA REPORT
MONSANTO RESEARCH CORP.

PARAMETER	Hexane, Xylenes, ppm
METHOD BLANK	< 1
PRECISION	
PCS # Duplicated	805006
Original Result	< 1
Duplicate Result	< 1
R	--
ACCURACY	
PCS # Spiked	805011
Original Result	< 1
Amount Spiked	5.0
Spiked S'Result	5.0
% Recovery	100.0
Spiked Blank (Known)	
Spiked Blank Result	
% Recovery	
EXTERNAL REF. QC	
Known Value	
Observed Result	
% Recovery	

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METHOD SUMMARY FOR ANALYSIS OF VOLATILE ORGANIC COMPOUNDS IN SOIL

The method used for the anaysis of volatile organic compounds in soil was SW846-5020 (Headspace Method). A 10.00 gram representative portion of the sample was weighed into a septum seal vial and heated at 90 degrees centigrade for 1 hour. Using a gas-tight syringe, a 1.0 mL aliquot of the sample headspace was injected into a GC operating under conditions specified in the appropriate method being used (8010, 8015, 8020, or 8030).

Laboratory Quality Assurance protocol includes analysis at 10% frequency of duplicates and matrix spikes . A method blank of an empty vial and a check standard is also analyzed with each set of samples.

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PART #1 – ORIGINAL – WHITE
PART #2 – LAB – CANARY
PART #3 – FIELD – PINK

CHAIN-OF-CUSTODY FORM

P.C.S. LABORATORY SAMPLE CHAIN-OF-CUSTODY

COMPANY OR SITE: Monsanto
PACKED BY: S Hatter
ADDRESS:
DATE PACKED: 5-1-88
CITY: STATE: Ohio ZIP:
SEAL NUMBER: 408
P.C.S. P/N: P.C.S. S/N:

SAMPLE HISTORY

SAMPLED BY NAME (PRINT): SIGNATURE:
AFFILIATION: SAMPLING DATE:
SAMPLE IDENTIFICATION: TIME (24 Hour Clock):

CONTAINER SUMMARY

CONTAINERS				ANALYSES	COMMENTS	
NO.	TYPE	SIZE	PRESERV.		FIELD OBSERVATIONS	LAB OBSERVATIONS
15	G	500mL	Teflon Cap	GC Analysis by Headspace - 1,1,1 trichloro ethane; acetone; trichloroethylene; methylene chloride; Freon TF; methanol; isopropanol		
#1	G	"		"		←
#2	G	"		" plus G.C. scan		
#3	G	"		"		
#4	G	"		"		
#5	G	"		"		
#6	G	"		"		

CHAIN-OF-CUSTODY CHRONICLE

1. CONTAINERS OPENED BY NAME (PRINT): W. David Glockler SIGNATURE: W. David Glockler
AFFILIATION: DATE: 5-2-88 TIME (24 Hour Clock): 11:00
COMMENTS/OBSERVATIONS: SEAL NUMBER: 408 SEAL INTACT ☒YES ☐NO

2. CONTAINERS REC'D. BY NAME (PRINT): SIGNATURE:
AFFILIATION: DATE: TIME (24 Hour Clock):
COMMENTS/OBSERVATIONS: SEAL INTACT ☐YES ☐NO

3. CONTAINERS REC'D. BY NAME (PRINT): SIGNATURE:
AFFILIATION: DATE: TIME (24 Hour Clock):
COMMENTS/OBSERVATIONS: SEAL INTACT ☐YES ☐NO

4. CONTAINERS SEALED BY NAME (PRINT): W. David Glockler SIGNATURE: W. David Glockler
AFFILIATION: DATE: 5-2-88 TIME (24 Hour Clock): 13:00
COMMENTS/OBSERVATIONS: SEAL NUMBER: 409 SEAL INTACT ☐YES ☐NO

OPENED BY NAME (PRINT): Deanna M Gains SIGNATURE: Deanna M Gains
SEAL NUMBER: 409 SEAL INTACT ☒YES ☐NO DATE: 5-3-88 TIME (24 Hour Clock): 1900

Sample Collection Data
for
E-bldg solvent shed demolition

Sample #	Volume 500mL	depth (ft)	distance from drain (ft)	Collection (time)	(date
# 1	"	2	0	13:05	5-2-
# 2	"	3	0	13:10	5-2-
# 3	"	2	4 - east	13:18	5-2-88
# 4	"	2	4 - west	13:25	5-2-
# 5 S	"	3	4 - west	13:40	5-2-88 *
# 6 D (duplicate to #4)	"	2	4 - west	13:30	5-2-88
# 7		4	0	10:00	5-5-88
# 8		4	0	10:05	5-5-88
Drum A		—	—	11:00	5-5-88
Drum E		—	—	11:09	5-5-88

* 500 mL sample spike with 100 µL of Freon TF
50 µL of Acetone
~~µL of~~

W. D. [illegible]
5-2-88 * 5-5-88

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:

$$Ct = (Cg/Pb)*[[Pb * Kd / H] + [pw / H] + [pt - pw]]$$

where

Cg	concentration of volatile chemical concentrations as soil vapor in ng/ml
Pb	Bulk density of the soil in g/ml
Kd	soil/water partition coefficient in ml/g
H	Dimensionless Henry's Law Constant
pw	water filled porosity
pt	total porosity
Ct	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:

$$Cg = (Pb*Ct)/[[Pb*Kd/H] + [pw/H] + [pt-pw]]$$

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

Pb	1.6	Bulk density of the soil in g/ml
pw	0.15	water filled porosity
pt	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	H	Kd	Calculated Acceptable Soil Screening Level Value	Calculated Acceptable Soil Gas Reading	Calculated Acceptable Soil Gas Reading
		ml/g	mg/kg (ppm)	ng/ml	ppb
Toluene	2.52E-01	3.42	22.06	1.56E+03	414600
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.