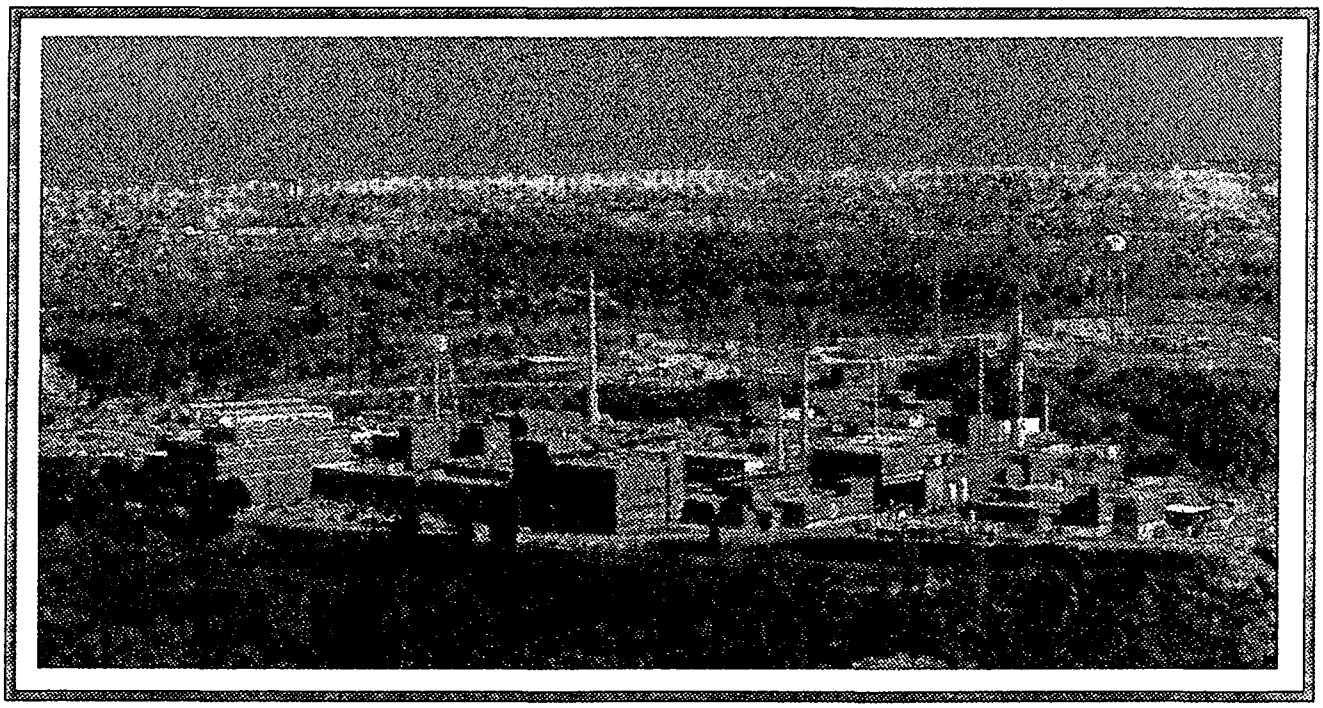
EG&G MOUND-30-03-03-03--9702130040

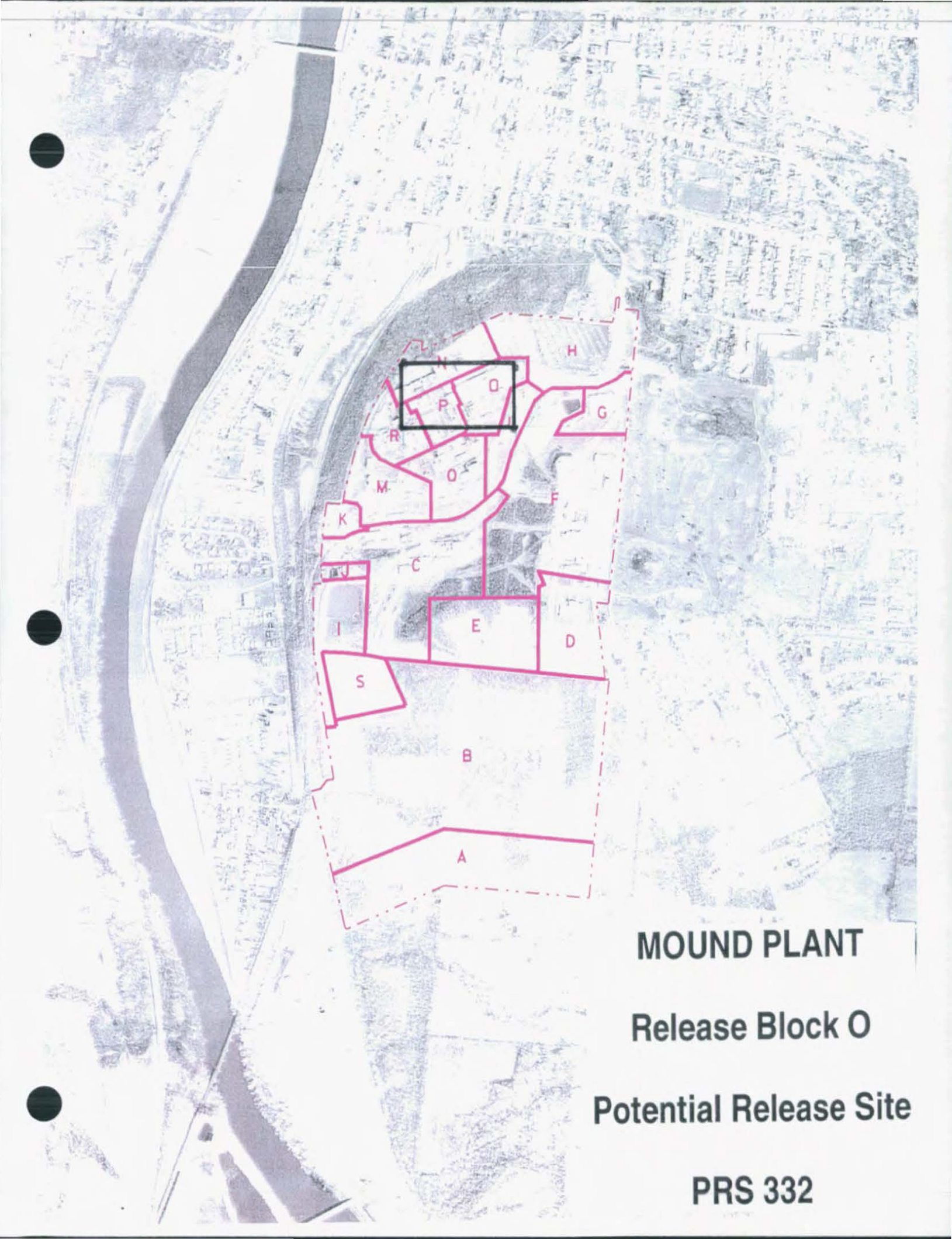
MOUND

Environmental
Restoration
Program

MOUND PLANT
Potential Release Site Package
PRS # 332



REV	DESCRIPTION	DATE
PUBLIC RELEASE **0**	Available for comment.	**Dec. 17, 1996**
FINAL **1**		

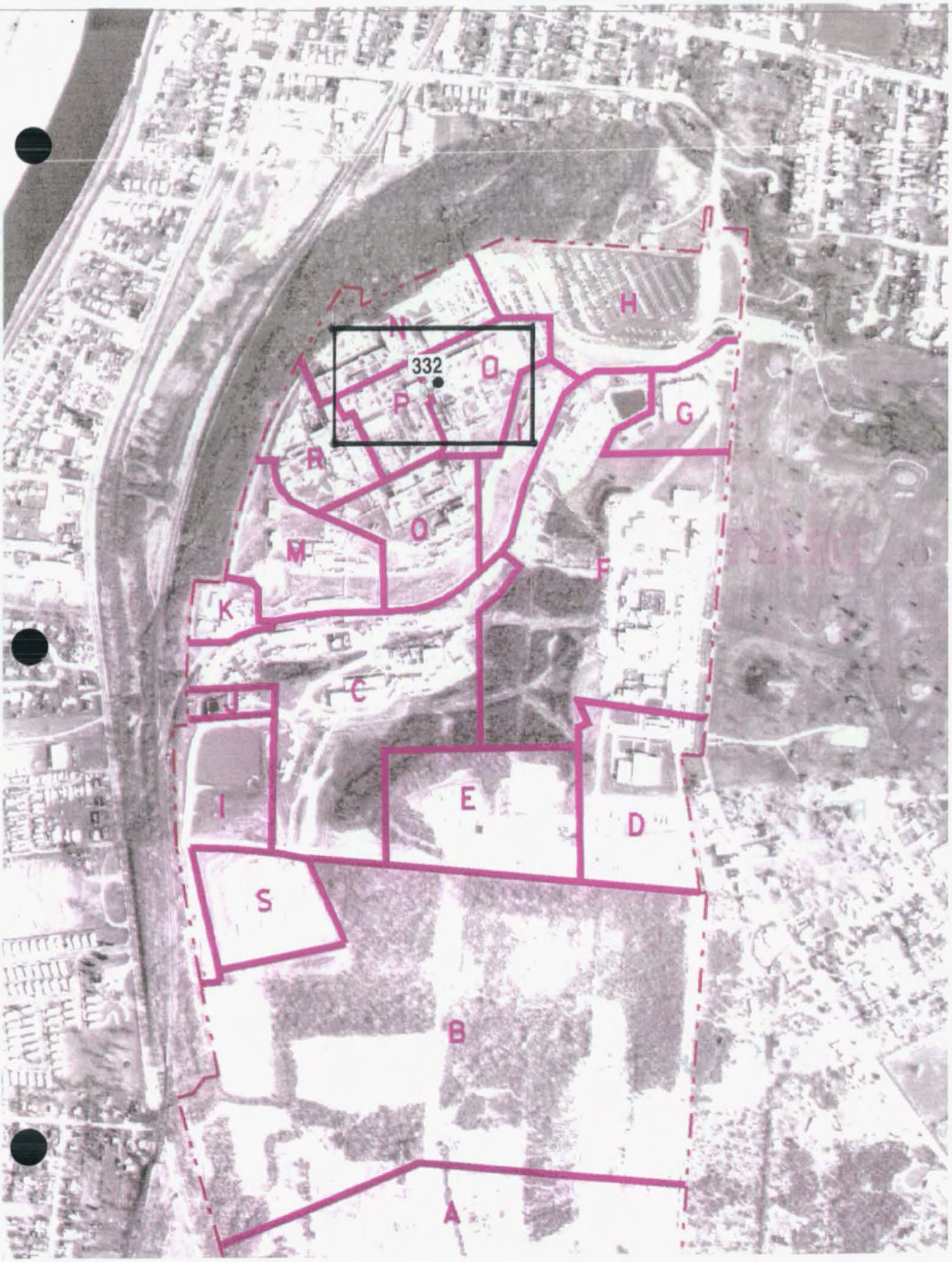


MOUND PLANT

Release Block O

Potential Release Site

PRS 332


332
N
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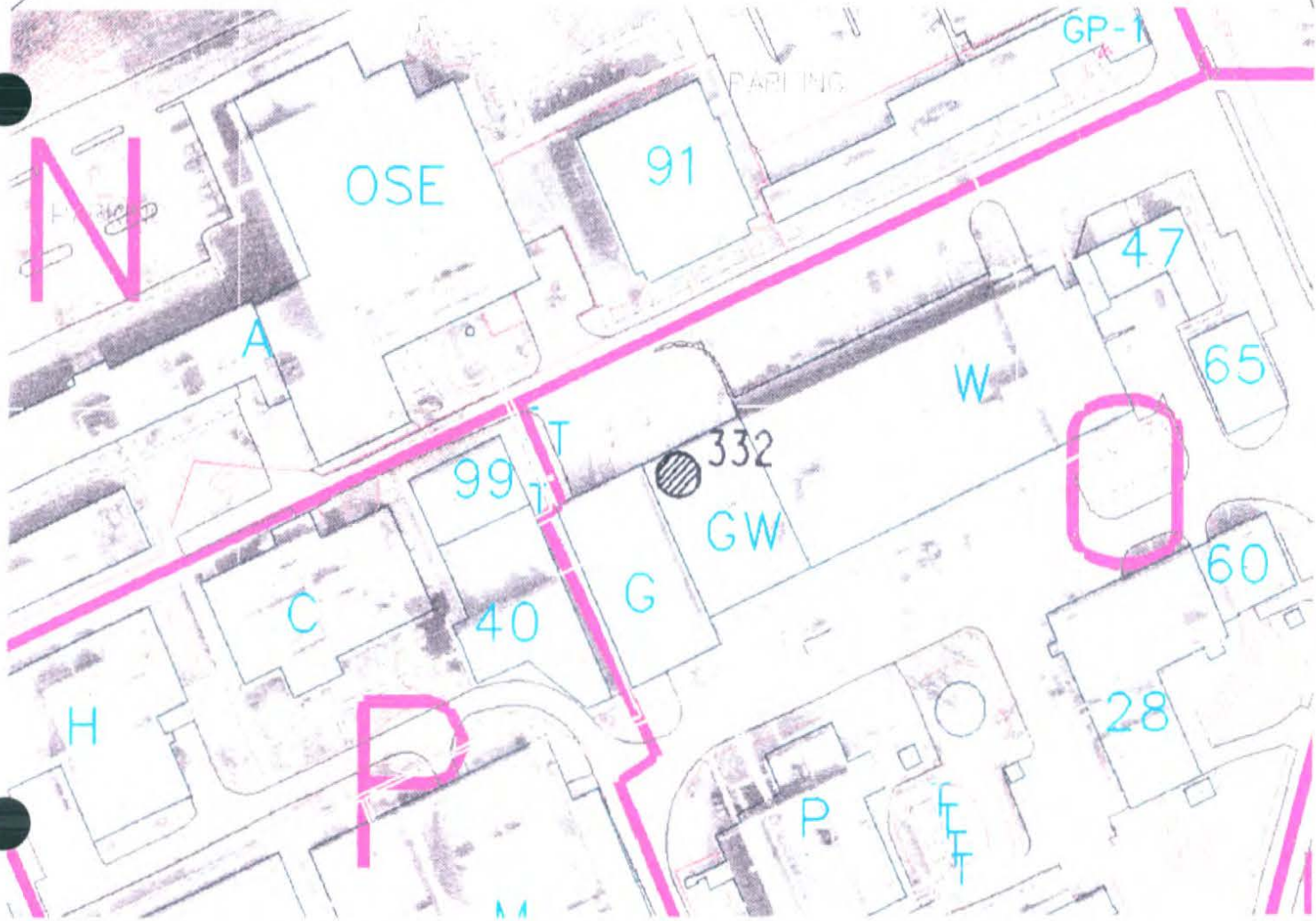
Mound Plant

Release Block O

Potential Release Site

PRS 332



PRS 332
99
100

PRS 332

PRS HISTORY:

PRS 332 is described as the Building G (garage) waste oil tank (Tank 261).[1] The tank, which has a 550 gallon capacity, was installed in 1947 as part of the Building G construction. It was installed approximately two feet below grade at the northeast corner, approximately eight (8) feet from the building.[3] The purpose of the tank was to contain used oil from routine oil change maintenance of government vehicles.[7] The tank was researched in 1994 as part of the Underground Storage Tank Program. The results of this research indicated that the tank was a concrete tank and that the history of spills or overflow was unknown. Also, there was no paper work indicating if the tank had been removed.[2]

In 1965 the area between Building G and Building W (warehouse) was enclosed and was identified as GW Building. The construction drawings of GW indicated that a concrete slab existed between the two buildings. There was no evidence, from the drawings, that the tank was still there. Historical accounts from personnel present during construction activities indicated that the tank was removed in the 1960's prior to the concrete slab being installed between Building G and Building W.[8] It was indicated that the removal of the tank and installation of the concrete slab was performed by Mound trades personnel and that there was no record of sampling at the time of removal.

There is no history of radioactive process being performed near the tank location or in Building G, GW, or W.

CONTAMINATION:

Soil Gas sampling was conducted in 1993 with three (3) samples taken to the north of Building G and Building GW (see reference section page 20). The results indicate no detection of any Volatile Organic Compounds (VOC's). No sampling was performed directly over the tank location due to Building GW being located there.[5]

Soil Gas sampling was also conducted in 1994 with two (2) samples taken to the north and four (4) samples to the south of Building G and Building GW (see reference section page 26). The results did not display elevated levels of any compounds associated with the use of this PRS. The compound 1,1,1 TCA was detected in two locations. The maximum concentration of 1,1,1 TCA detected was 2,983 ppb [7] (the calculated guideline criteria for 1,1,1 TCA is 173,400 ppb).[6, 10]

Soil sampling, as part of the 1988 Radiological Site Survey, analyzed 3 surface samples in the vicinity of PRS 332 for plutonium and thorium. Results showed no detections in excess of the guideline criteria for plutonium (25 pCi/g) or thorium (5 pCi/g).[4, 9]

There has not been any groundwater monitoring within the vicinity of the tank G, W, or GW buildings.

READING ROOM REFERENCES:

1) OU9, Site Scoping Report: Volume 12 - Site Scoping Summary Report, December 1994. (pages 5-7)
2) Active Underground Storage Tank Plan, November 1994. (pages 8-12)
4) OU9, Site Scoping Report: Volume 3 - Radiological Site Survey, June 1993. (pages 15-18)
5) Reconnaissance Sampling report, Soil Gas Survey and Geophysical Investigations, Mound Plant, Main Hill and SM/PP Hill, Appendices A, B and D, February 1993. (pages 19-20)
6) OU2, Soil Vapor Reconnaissance, Main Hill, Phase I Technical Memorandum, February 1995. (pages 21-26)
7) OU9, Site Scoping Report: Volume 7 - Waste Management, February 1993. (pages 27-29)

OTHER REFERENCES:

3) Engineering Construction Drawing "G Building", Dwg # 350400-04001, February 1947. (pages 13-14)
8) Phone conversation with W. Brunner and F. Thomas, April 17, 1996.
9) Code of Federal Regulations, 40 CFR 192.41 and 40 CFR 192.12.
10) Comparison of Actual Soil Gas Values with Calculated Acceptable Soil Gas Values, March 1996. (pages 30-32)

PREPARED BY:

Gary L. Coons, Member of EG&G Technical Staff

MOUND PLANT
PRS 332
WASTE OIL TANK - BUILDING G (Used engine oil)

RECOMMENDATION:

Potential Release Site (PRS) 332 was identified because of it being described as the Building G (garage) waste oil tank (tank 261). The tank was installed in 1947 as part of the Building G construction. It was installed approximately two feet below grade and had a capacity of 550 gallons. The purpose of the tank was to contain used oil from routine oil change maintenance of government vehicles. In 1965, the area between Building G and Building W (warehouse) was enclosed. Based on historical accounts, from personnel present during construction, it was indicated the tank was removed.

There is no history of radioactive processes being performed near the tank location or in adjacent buildings and the 1983 Radiological Site Survey resulted in no detections in excess of the guideline criteria for plutonium (25 pCi/g) or thorium (5 pCi/g).

Soil gas sampling was conducted in 1994 with two samples taken to the north of Building G. The maximum concentration of Volatile Organic Compounds (VOCs) detected was 1,1,1 TCA at 2,983 ppb as compared to the calculated guideline criteria of 173,400 ppb.

Therefore, NO FURTHER ASSESSMENT is recommended for PRS 332.

CONCURRENCE:

DOE/MB: Arthur W Kleinrath 11/27/96
Arthur W. Kleinrath, Remedial Project Manager (date)

USEPA: Timothy J. Fischer 12/3/96
Timothy J. Fischer, Remedial Project Manager (date)

OEPA: Brian K. Nickel 12/17/96
Brian K. Nickel, Project Manager (date)

SUMMARY OF COMMENTS AND RESPONSES:

Comment period from _____ to _____

☐ No comments were received during the comment period.

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

REFERENCE MATERIAL
PRS 332

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

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
321	Dayton Unit II	Dayton	Historical	Explosives (including ammonium picrate and ammonium nitrate) Rocket propellant	1, 4	None Suspected			No Data		
322	Dayton Unit III	Dayton	Historical	Polonium-210, Tellurium, Bismuth, Cobalt, Nickel, Beryllium, Thorium	1, 4	Suspected Cobalt-60	S	4	No Data		
323	Dayton Unit IV	Dayton	Historical	Contaminants listed under Dayton Unit III	1, 4	Suspected Cobalt-60	S	4	No Data		
324	Dayton Warehouse	Dayton	Historical	Polonium-210	4	None Suspected			No Data		
325	Scioto Facility (Marion)	Scioto	Historical	Facility never used	4	None Suspected			No Data		
326	Building 38 Sanitary Sump (Tank 254)	G-9	In Service	Sanitary wastewater	25	None Suspected			No Data		
327	R-111 Calorimetry Bath (Tank 255)	E-6	Inactive	Deionized water with potential alpha contamination	25	None Suspected			No Data		
328	R-111 Calorimetry Bath (Tank 266)										
329	Building 62 Hot Waste Sump (Tank 258)	E-6	In Service	Sanitary wastewater with potential alpha contamination	25	None Suspected Tank removed			No Data		
330	Building 2 Fuel Oil Tank (Tank 260)	H-7	Historical	Fuel oil	25	Unknown			No Data		
331	Building 2 Tank (Tank 261)	H-7	Historical	Sanitary Wastes	25	Unknown Closed in place			No Data		
332	Building G Waste Oil Tank (Tank 262)	E-7	Inactive	Waste oils	25	Unknown			No Data		
333	Building 87 Explosive Surge Tank (Tank 263)	H-7	In Service	Exhaust air from explosives testing	25	None Suspected			No Data		
334	Building 87 Explosive Surge Tank (Tank 264)										
	Building 87 Explosive Surge Tank (Tank 265)										

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." ←

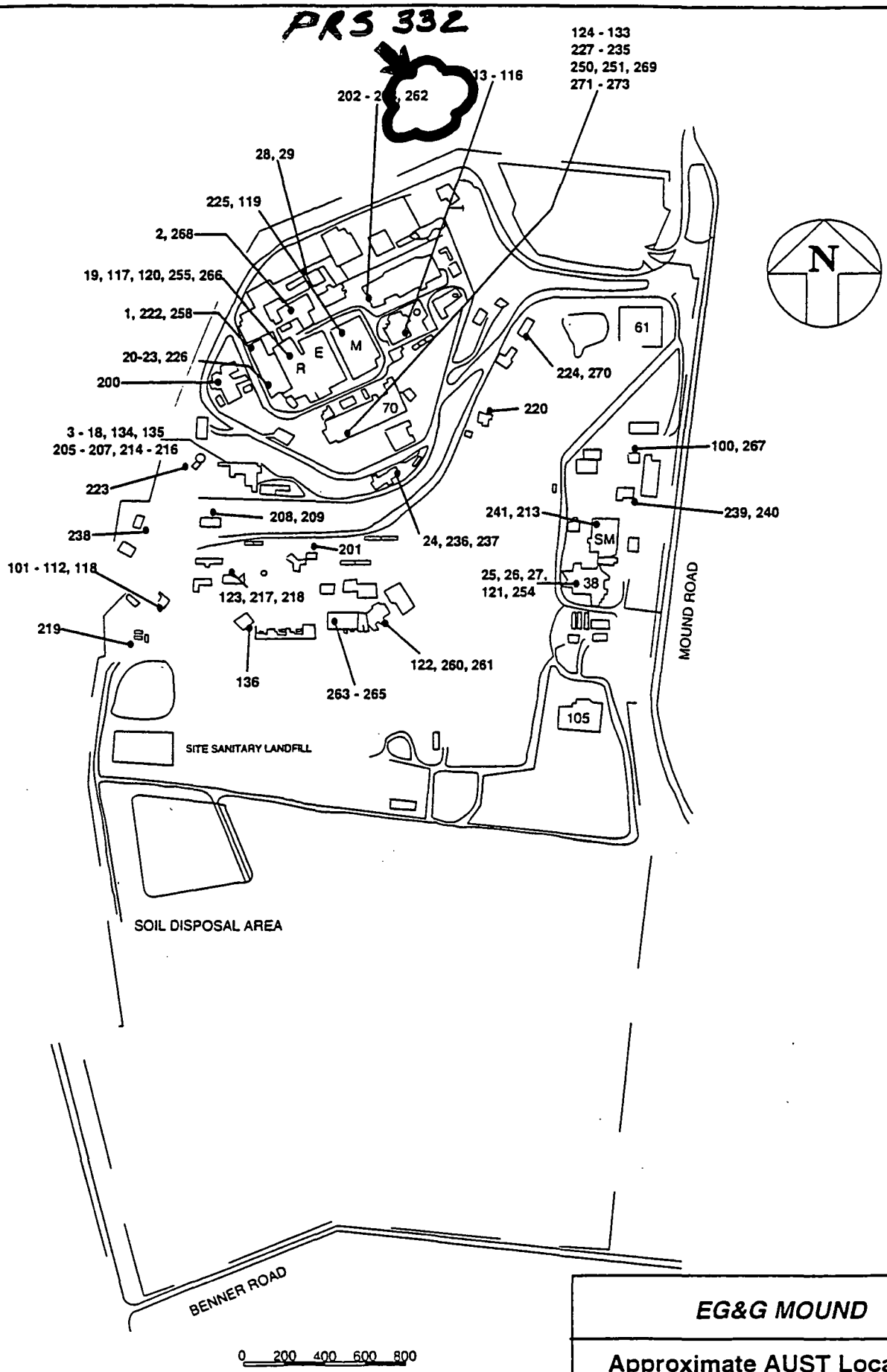
EG&G MOUND APPLIED TECHNOLOGIES

Active Underground Storage Tank Plan

November, 1994

Prepared for:

Project Management and Planning
EG&G Mound Applied Technologies
One Mound Road
Miamisburg, Ohio



EG&G MOUND

Approximate AUST Locations

DATE:10/28/94	JOB NO: 10804-794	FIGURE
DAMES & MOORE ONE BLUE HILL PLAZA, SUITE 530 PEARL RIVER, NEW YORK 10965		1

TABLE 4-2 EVALUATION OF IN SERVICE AUSTs			
AUST NO.	DESCRIPTION	STATUS	ACTION
117, 118 and 121	Diesel fuel storage.	BUSTR tanks. Operated and maintained in accordance with current requirements.	See Section 6 for planned actions to comply December, 1998 BUSTR leak detection requirements.
119	Metal plating rinse tank.	CWA tank. Operated and maintained in accordance with current SOPs.	No modifications planned or necessary.
124 through 135	Sumps used for collection of sanitary wastewater and cooling water.	CWA tanks. Operated and maintained in accordance with current SOPs.	No modifications planned or necessary.
263 through 265	Tanks used as noise dampeners from explosives testing.	RCRA tanks. Included as part of Mound Part B application.	No modifications planned or necessary.
268 and 269	Condensate sumps from heating systems in T and H buildings.	CWA tanks. Operated and maintained in accordance with current SOPs.	No modifications planned or necessary.
271 through 273	Collection of water from fire sprinkler system.	AEA tanks. Operated and maintained in accordance with current SOPs.	No modifications planned or necessary.

4.2 Inactive Tanks

Inactive tanks are surplus systems which are still present on the site but are no longer in use and are not likely to be used. A field survey and drawing/records review was also conducted for these USTs with a copy of survey results provided in Appendix C. Table 4-3 provides a summary of the evaluation and identifies the program responsible for the removal or closure of these systems.

TABLE 4-3 EVALUATION OF INACTIVE TANKS			
AUST NO.	DESCRIPTION	STATUS	ACTION
2, 23	Sump for radioactive waste water.	AEA Tank No modifications planned or needed.	To be scheduled for inclusion in D&D Program.
205 through 207, and 214 through 216	Sumps and tanks used for collection of radioactive and sanitary waste water.	To be addressed as part of OU6.	D&D Program
136, 200, 201, 217, and 218	Sumps, tanks and basins used in solvent and fuel storage.	To be addressed as part of OU5.	FFA Program
225	Metal plating rinse sump.	To be addressed as part of OU2.	FFA Program
226	Sump used for collection of radioactive waste water.	AEA Tank No modifications planned or needed.	To be scheduled for inclusion in D&D Program.
236	Beta wastewater sump	AEA Tank No modifications planned or needed.	To be scheduled for inclusion in D&D Program.
262	Storage of waste oil.	AEA Tank No modifications planned or needed.	To be scheduled for inclusion in D&D program.
255, 266	Calorimeter bath.	AEA Tanks No modifications planned or needed.	To be scheduled for inclusion in D&D Program.
267	Low risk waste tank.	AEA Tank No modifications planned or needed.	To be scheduled for inclusion in D&D Program.
270	Former septic tank.	AEA Tank No modifications planned or needed.	To be scheduled for inclusion in D&D program.

UST removals and closures will be performed within the ER or D&D programs. Following removal of D&D tanks, final site assessment and closure verification will be performed. OU6 has been designated for D&D closure verification.

DAMES & MOORE - INSPECTION & DOCUMENT REVIEW NOTES

CLIENT	JOB NUMBER	DATE
EG&G Mound Applied Technologies	10805-794	4/19/94

JOB TITLE	D&M TEAM
Active Underground Storage Tank Program	Giantell & DiSpirito

TANK NO.	BLDG/LOCATION	EG&G SPONSOR	OWNER
262	G	D&D - Proposed	U.S. DOE

TANK STATUS	TANK CAPACITY (gallons)	INSTALLATION DATE	INTERVIEWED WITH	INTERVIEW DATE
Inactive	550	1947	Cloud	2/24/94

TANK DESCRIPTION, Purpose of Tank: Waste Oil Storage

Tank Material
- ___ Bare Steel (unprotected)
- ___ Composite (steel & FRP)
- ___ Fiberglass Reinforced Plastic
- ___ Stainless Steel Lined Concrete
- ___ Steel Lined Concrete
- ✓ Concrete
- ___ Other - Specify
- ___ Unknown

Tank Cathodic Protection
- ___ Internal Lining - Specify
- ___ Sacrificial Anodes
- ___ Impressed Current
- ___ Composite (Steel & FRP)
- ___ Other - Specify
- ___ Unknown
- ✓ None

Inlet of Tank: Fill Cap

Outlet of Tank: 6" Funnel

History of Spills: Unknown

Spill/Overfill Prevention
- ___ Float Vent Valve
- ___ High Level Alarm
- ___ Auto Shutoff
- ___ Other - Specify
- ___ None

n/a

Piping Material
- ___ Cathodically Protected Steel
- ___ Bare Steel (unprotected)
- ___ Fiberglass Reinforced Plastic
- ___ Double Walled or Jacketed
- ___ Other - Specify
- ✓ Unknown

Substance Currently/Last Stored
- ___ Gasoline
- ___ Diesel
- ___ Kerosene
- ✓ Used Oil
- ___ Hazardous Substances - Specify
- ___ Other - Specify
- ___ Unknown

Tank Site Description
- ___ Indoor
- ___ Outdoor
- ___ Soil
- ___ Asphalt/Concrete
- ___ Storm Drains, Potential Surface water runoff
- ___ Soil Staining

n/a

DOE / AEC / PM No: n/a

Calibration Records

Maintenance Records

Tank Release Detection Method
- ___ Inventory Control
- ___ Manual Tank Gauging
- ___ Tank Tightness Testing
- ___ Automatic In-Tank Monitor & Inventory Control
- ___ Vapor Monitoring
- ___ Groundwater Monitoring
- ___ Secondary Containment with Interstitial Monitoring
- ___ Other - Specify
- ✓ None N/a

Piping Release Detection Method
- ___ Pressure Piping Automatic Line Flow Restrictor
- ___ Pressure Piping Automatic Line Shutoff Device
- ___ Line Tightness Test (Pressure Annual, Suction Every 3 yrs)
- ___ Vapor Monitoring
- ___ Groundwater Monitoring
- ___ Approved Suction Piping
- ___ Other - Specify
- ✓ None n/a

Closure
Date of Last use: Unknown
Intended Replacement
Closure Plan
Part of Operable Unit

Primary Regulatory Jurisdiction: AEA

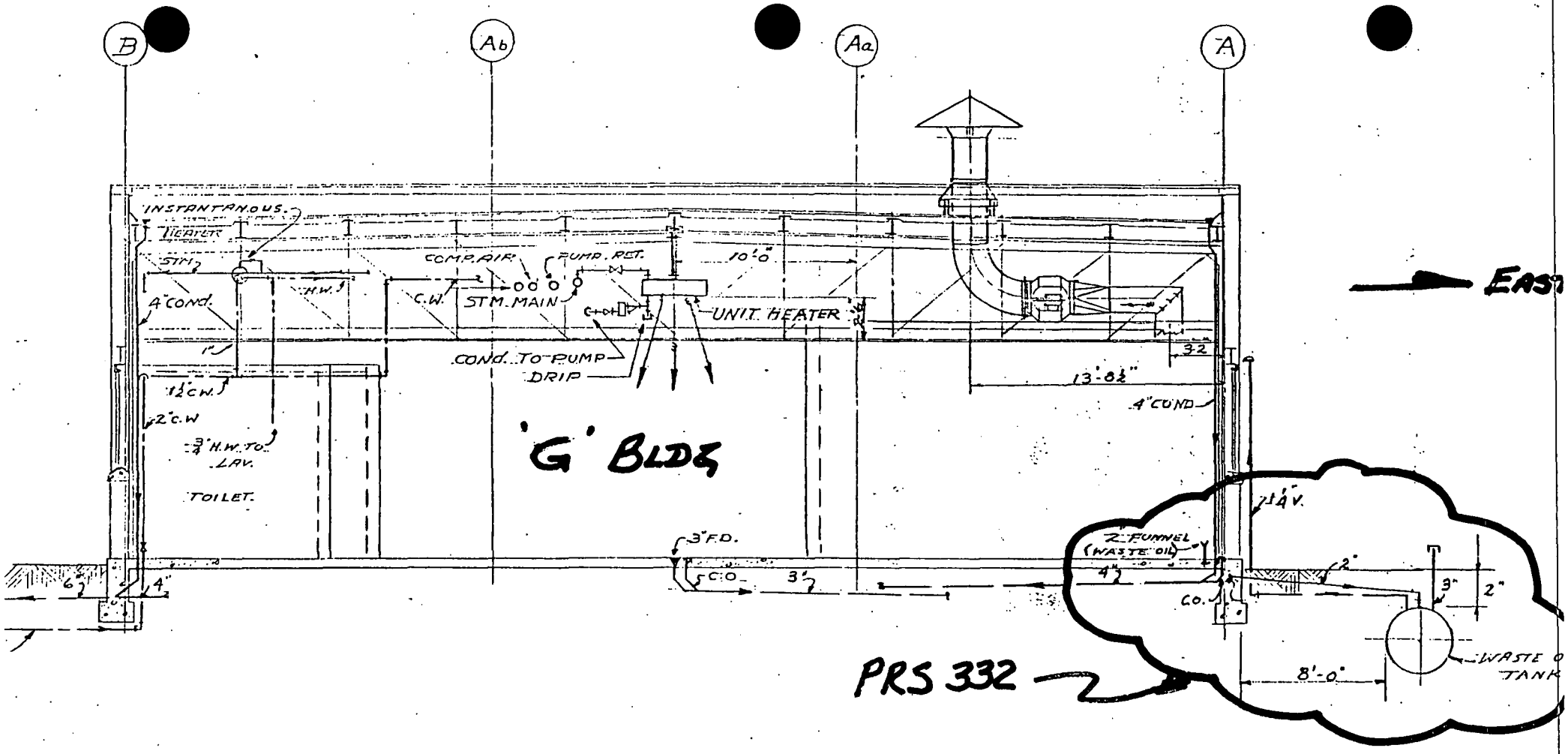
Spill Jurisdiction: AEA

Regulated Units

DOCUMENTS, REFERENCES USED: Dwg No. 46-142-M-105

COMMENTS: Tank found on drawings. No paperwork indicating if this tank was removed.

SIGNATURE



SECTION B-B

SCALE ⅛" = 1'-0"

MONSANTO CHEMICAL COMPANY

ST. LOUIS, MO. — DAYTON, OHIO, UNIT 5

JOB TITLE: G BUILDING

TITLE OF DRAWING: HEATING & PLUMBING PLAN & DETAIL

GIFFELS & VALLET, INC.
ENGINEERS

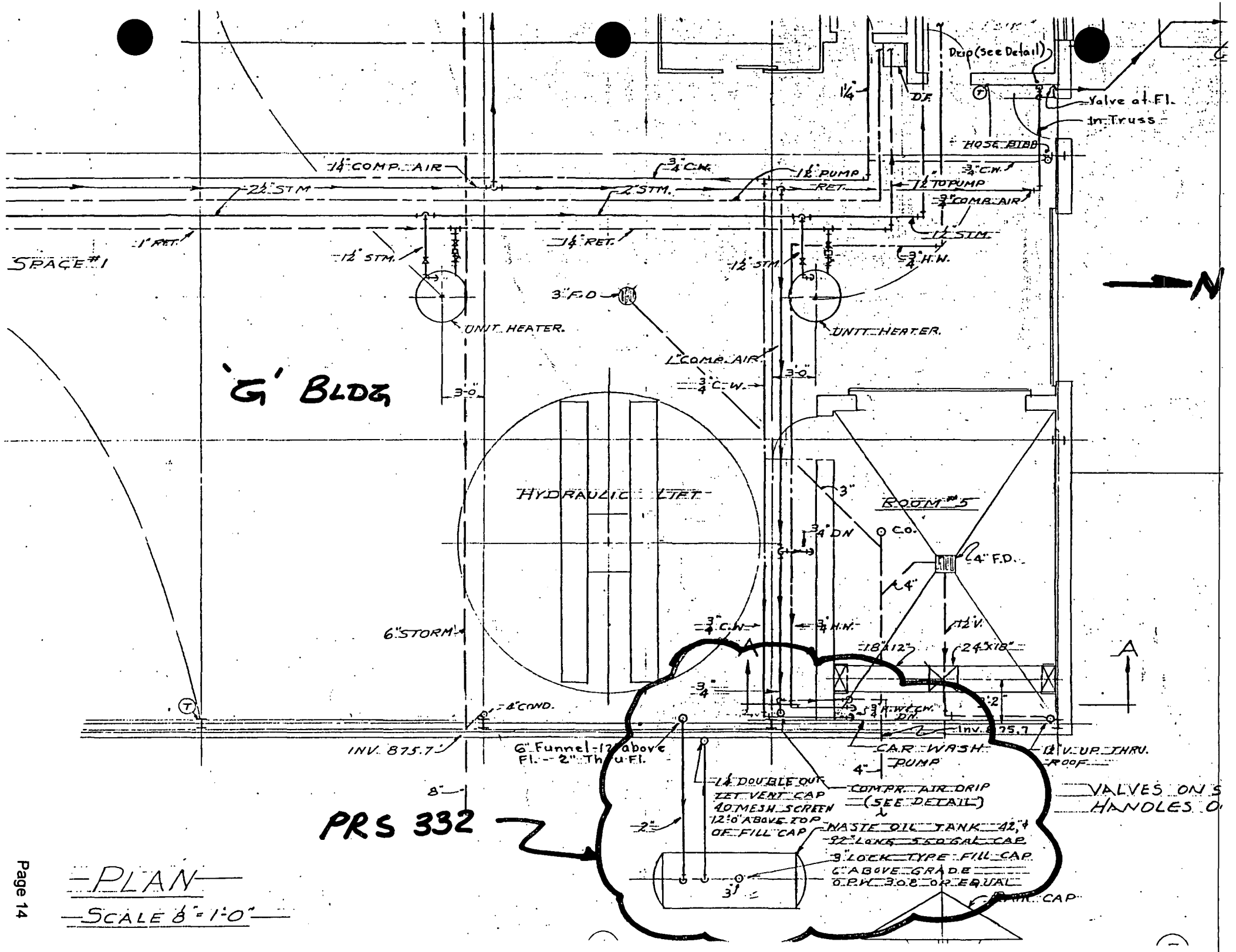
753 PENOBSCOT BLDG. — DETROIT 26, MICH.

DRAWING APPROVED DATE	DRAWING APPROVED DATE	DRAWING APPROVED DATE	SERIAL NO.
C. J. Steigleder 2/8/47 ENGINEERS	W. B. Boom 2/10/47; M. J. Haring 2/10/47 MONSANTO CHEM. CO.	Robert J. Cash 2/10/47 AREA ENGINEER	

DRAWN: L. A. MARTIN	DATE	PROJECT CHIEF: C. J. STEIGLEDER	JOB: 46-142 G
TRACED		IN CHARGE: W. D. RAUSCH	SHEET: M-105
CHECKED: L. MAURER		DATE: 2-19-47	

350400-04001

6



Drip (See Detail)
Valve at Fl.
In Truss
HOSE BIBB
D.F.
1¼"
1¼" COMP. AIR
¾" C.W.
1½" PUMP RET.
1½" TO PUMP
¾" COMP. AIR
2½" STM
2" STM.
1" RET.
1¼" RET.
1½" STM.
¾" H.W.
SPACE #1
3" F.D.
UNIT HEATER.
1" COMP. AIR
¾" C.W.
3'-0"
'G' BLDG
HYDRAULIC LIFT
ROOM #5
3"
¾" DN
C.O.
4" F.D.
4"
6" STORM
¾" C.W.
¾" H.W.
1½" V.
18"x12"
24"x18"
A
4" COND.
INV. 875.7
6" Funnel - 12" above Fl. - 2" Thru Fl.
CAR WASH PUMP
1½" V. UP THRU. ROOF
1¼" DOUBLE OUT LET VENT CAP 40 MESH SCREEN 12'-0" ABOVE TOP OF FILL CAP
COMPR. AIR DRIP (SEE DETAIL)
WASTE OIL TANK 42" ϕ 92" LONG 550 GAL CAP
3" LOCK TYPE FILL CAP 6" ABOVE GRADE O.P.W. 308 OR EQUAL
VALVES ON S
HANDLES O
PRS 332
PLAN
SCALE 1/8" = 1'-0"

ENVIRONMENTAL RESTORATION PROGRAM

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

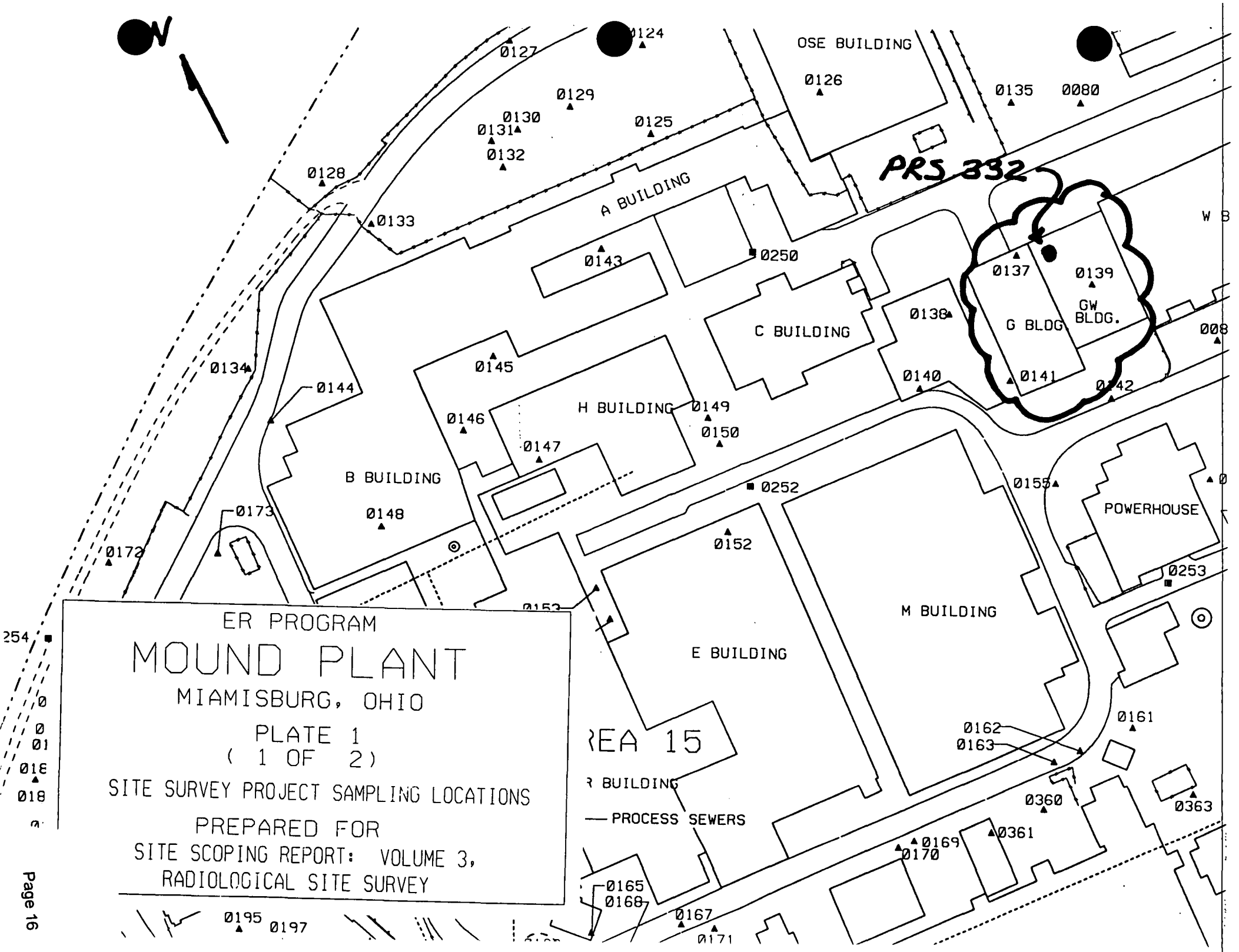
MOUND PLANT
MIAMISBURG, OHIO

June 1993

DEPARTMENT OF ENERGY
ALBUQUERQUE FIELD OFFICE

ENVIRONMENTAL RESTORATION PROGRAM
EG&G MOUND APPLIED TECHNOLOGIES

FINAL


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
OSE BUILDING
A BUILDING
C BUILDING
H BUILDING
B BUILDING
G BLDG
GW BLDG.
POWERHOUSE
M BUILDING
E BUILDING
PRS 332
PROCESS SEWERS
0124
0127
0129
0130
0131
0132
0125
0126
0135
0080
0128
0133
0143
0250
0137
0139
0138
0140
0141
0142
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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)
C0251	0980	2850	8509	12-84	36	0.05	b					
S0124	1050	2945	4071	10-83	0	0.30	b	0.75				
S0125	1125	2970	4072	10-83	0	0.25	b					
S0126	1150	2820	4073	08-83	0	0.40	b					
S0127	1000	3050	4075	10-83	0	0.30	b					
S0128	1050	3250	4077	10-83	0	0.26[c]	b					
S0129	1075	3025	4074	10-83	0	0.51	b	0.20				
S0130	1075	3075	7101	09-84	0	0.95	b					
S0131	1075	3100	4076	10-83	0	0.26	b					
S0132	1100	3100	7100	09-84	0	0.67	b					
S0133	1100	3225	4078	10-83	0	0.03	b					
S0134	1175	3375	4079	10-83	0	0.47	b					
S0135	1225	2670	3033	10-83	0	0.64	b					
C0250	1255	2930	8395	12-84	36	0.01	b					
S0137	1350	2720	6177	08-84	0	0.18[c]	b					
S0138	1375	2795	6178	08-84	0	0.12	b					
S0139	1400	2670	3034	10-83	0	0.23	b					
S0140	1425	2845	3037	10-83	0	0.36	b					
S0141	1450	2770	6179	08-84	0	0.68	b					

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)
S0142	1500	2695	6181	08-84	0	0.43	b					
S0143	1200	3050	3049	10-83	0	0.46	b	1.34				
S0144	1225	3375	3045	10-83	0	0.03	b	6.33				
S0145	1250	3175	6182	08-84	0	0.02	b					
S0146	1300	3225	6183	08-84	0	0.64	b					
S0147	1350	3175	3047	10-83	0	0.02	b					
S0148	1350	3325	3046	10-83	0	0.20	b					
S0149	1375	3025	3044	10-83	0	0.15	b					
S0150	1400	3025	3048	10-83	0	0.06[c]	b					
C0252	1445	3015	8400	12-84	36	0.13	b					
S0152	1475	3050	6184	08-84	0	0.20	b					
S0153	1475	3175	6185	08-84	0	0.20	b					

[a]Map locations are given using a "C" to designate core locations and an "S" to designate surface locations.
[b]A "b" indicates that the total thorium concentration was less than the background level of 2 pCi/g, using FIDLER screening. Therefore, radiochemical analysis was not performed.
[c]The boring log for this location indicates that sampling was not performed to bedrock (Appendix B).
[d]Contaminated soil was excavated from this location in 1984. Post-cleanup soil concentrations of cesium-137 were less than 2 pCi/g (Draper 1984).
[e]The depth given for this sample was "SS." For mapping purposes (Plate 1), this is assumed to be a surface sample.
[f]Isotopic results are available for this sample and include 0.99 pCi/g of thorium-228; 321 pCi/g of thorium-230, and 1.5 pCi/g of thorium-232, for a total of 323.5 pCi/g of thorium.
FIDLER - field instrument for the detection of low-energy radiation
LDL - The measured concentration was below the lower detection limit, estimated to be 0.5 pCi/g for cobalt-60, cesium-137, and americium-241; and 1 pCi/g for radium-226.
MRC ID - Monsanto Research Corporation identification
NR - No result given
pCi/g - picocuries per gram
pCi/mL - picocuries per milliliter

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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

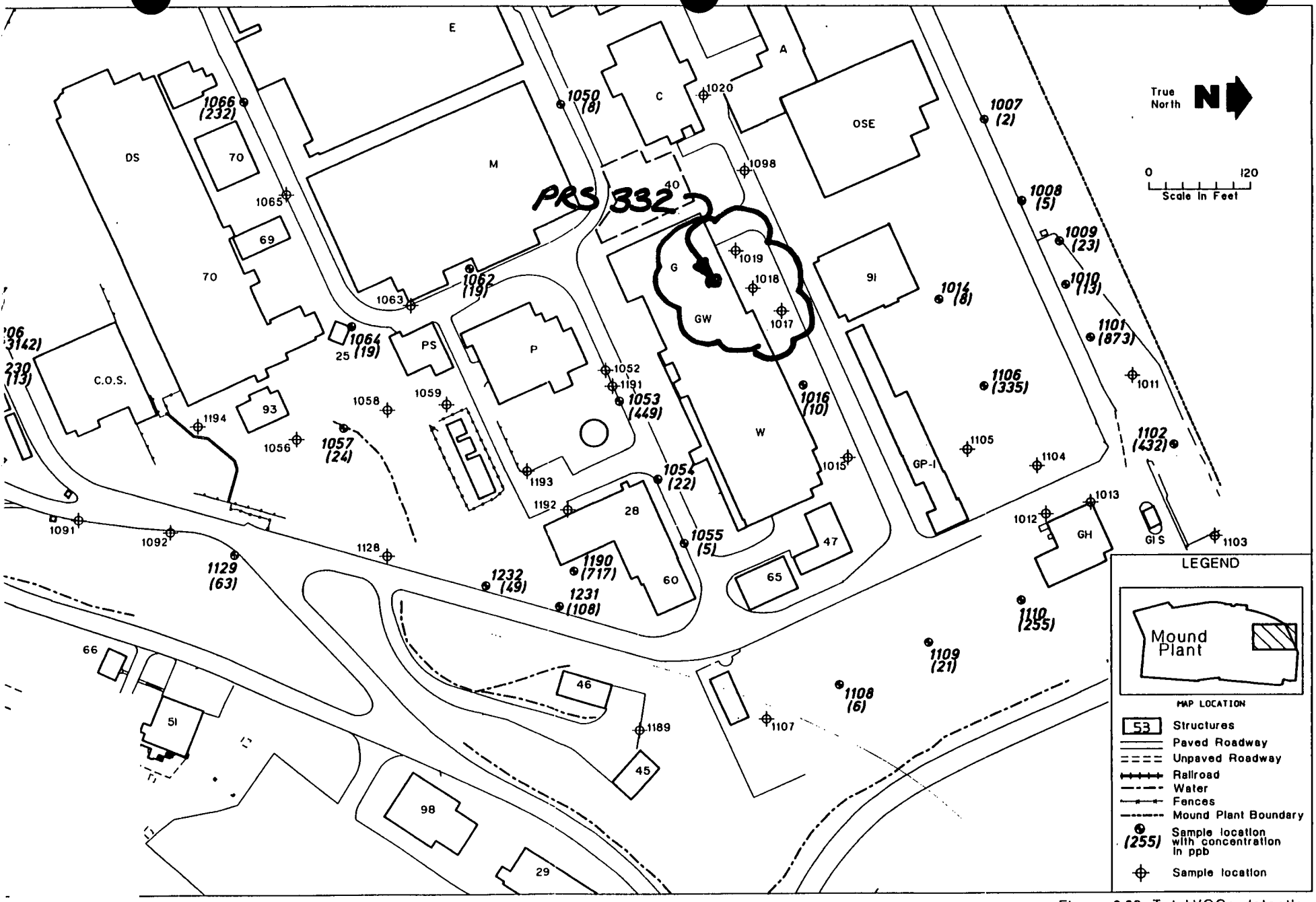

Figure 2.22. Total VOCs detection map for Main Hill East.

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

from three to 23,142 ppb. Most of the detections were in the B Building Solvent Storage Shed area, HH Building and Building 17.

Based on the results of this investigation, "hot spots" of contamination were centered at the B Building Solvent Storage Shed, Building 17, and the west side of the B Building.

The contamination at the B Building Solvent Storage Shed lead to an interim remedial action to remediate the soils in the area (DOE 1993). Soil vapor extraction (SVE) was the selected method of remediation and remedial efforts began in May of 1994. Initial soil vapor results indicated that concentrations of TCE ranged from less than 50 ppb to 2,650 ppb and 1,2-DCE (cis and trans) ranged from 100 ppb to 277.9 ppm (DOE 1994b). Since remediation began, concentrations of TCE have dropped to a maximum of 1,560 ppb and 1,2-DCE to 1,410 ppb.

1.4. FACTORS INFLUENCING SAMPLE LOCATIONS

1.4.1. Historical and Current Use of Buildings

Historical and current use of buildings, along with the data gaps from previous investigations, had the greatest influence on sample locations. Contaminants of concern had been or had potentially been used in all of the buildings investigated. The exceptions are the degradation products of tetrachloroethene and trichloroethene which are 1,2-dichloroethene (cis and trans) and 1,1-dichloroethane. Toluene may not have been used in a building but is a chemical found in gasoline and oil. The following sections describe the historical and current use of buildings to provide a rationale for their use in selecting sample locations. Specific sample locations are shown in Figure 1.3.

1.4.1.1. G Building - Garage

The garage is used to maintain the automobiles, trucks, buses, and heavy duty equipment used at Mound. The building is approximately 122 ft by 62 ft and is made of structural steel and brick with concrete floors. The building contains a new parts storage area, offices, restrooms, and a custodial operations storage area. Maintenance operations include oil changes, antifreeze replacement, vehicle repair, and tire and battery replacement. Building G is also used to store janitorial supplies such as floor strippers, floor finishes, cleansers, deodorizers, hand soaps, sponges, and mops that are used throughout Mound. These materials are stored in locked cabinets and caged areas. The historical and current use of this building indicated that the underlying soils may be contaminated with either motor oil, antifreeze, or organic based cleaning material. For that reason, samples were collected from locations that were

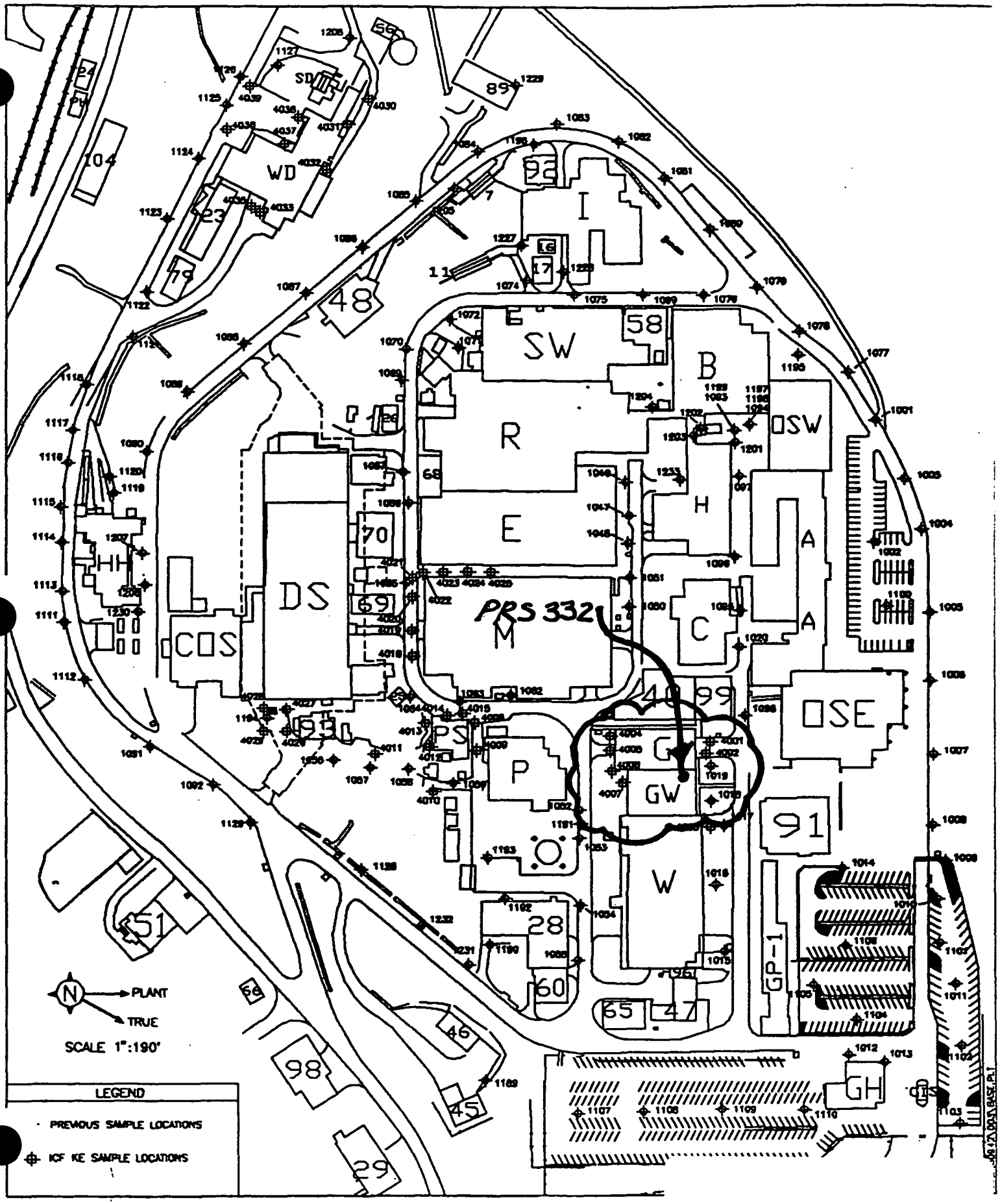

Figure 1.3. Sample Locations

judged to be areas where spills could collect or enter the soil. Specific locations were selected based on surface drainage patterns and obvious cracks in the overlying concrete.

1.4.1.2. Paint Shop

The paint shop began operating in 1963. The shop is used for both maintenance and production parts painting. Maintenance work includes the painting of such items as racks and furniture. Production work includes the painting of metal shipping containers, styrofoam shipping trays, and test panels. All painting is done inside spray booths. Based on the high use of solvents in this building, it was determined that samples should be collected around the building. Specific locations were based on the drainage patterns from the building to the surrounding areas, the surface drainage patterns of the surrounding areas and obvious cracks in the concrete. Some locations were also influenced by underground utilities.

1.4.1.3. Building M - Plating Shop

The Mound plating shop started in the M Building in the late 1940s (Figure 1.2). Plating processes and metal purification experiments were performed there. The shop itself consisted of eight to ten 150-gallon plating solution tanks that were handmade from boiler plate steel (Shawhan 1991). Sulfuric acid anodizing solution wastes and sodium hydroxide cleaning wastes were regenerated on an infrequent basis. The plating solutions were reused and generally recycled; but, when necessary, they were dumped into a large underground tank. The tank consisted of a concrete vault structure west of the original M Building that connected to the plant sanitary sewer. The cascade rinse systems also drained to the underground tank. The condition of this tank will be discussed in the OU-2 subsurface utility investigation. Soil sampling will be conducted as part of Phase II activities.

In 1962, a production plating shop and a general plating shop were installed in the M Building, and the old plating shop was dismantled. During the dismantling process, the plating solutions were removed from the equipment and neutralized. All of the old tanks and equipment were removed. The underground tank was retained and reconnected to the new equipment.

In 1981, a new production plating shop was built on the south end of the M Building. In 1985 or 1986, a new general plating shop was built next to it. The new shops were built to upgrade the old equipment and use modern technology. The old equipment still exists in the M Building, but has been cleaned out. The waste products were drummed and disposed of off-plant through the waste management system.

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 GM											
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

Table A.1. Soil Vapor Analytical Results

SAMPLE I.D.	Hole	DATE	DEPTH	Freon-11 ppb	Freon-113 ppb	trans-1,2-DCE ppb	1,1-DCA ppb	cis-1,2-DCE ppb	Total VOC ppb	Comments
BUILDING G										
M204-4004-0002.0	PH-04	4-18-94	2.0'	ND	ND	ND	ND	ND	2982.5	SOIL-GAS SAMPLE
M204-4005-0002.0	PH-05	4-18-94	2.0'	ND	ND	ND	< 1481.5	ND	1481.5	SOIL-GAS SAMPLE
M204-4000-4007	NA	4-18-94	NA	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK
M204-4006-0002.5	PH-06	4-19-94	2.5'	< 535.7	ND	ND	ND	ND	535.7	SOIL-GAS SAMPLE
M204-4002-0002.0	PH-02	4-19-94	2.0'	< 535.7	ND	ND	ND	ND	535.7	SOIL-GAS SAMPLE
M204-4001-0002.5	PH-01	4-19-94	2.5'	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4000-4009	NA	4-19-94	NA	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK
BUILDING GM										
M204-4000-4008	NA	4-19-94	NA	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK
M204-4007-3000	PH-07	4-19-94	NA	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	SOIL-GAS SAMPLE
M204-4007-0005.0	PH-07	4-19-94	5.0'	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	QC-DUPLICATE SAMPLE
M204-4003-0001.5	PH-03	4-19-94	1.5'	2321.4	ND	1767.7	ND	1767.7	7786.6	SOIL-GAS SAMPLE
BUILDING M										
M204-4019-0002.5	PH-19	4-27-94	2.5'	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4019-0005.0	PH-19	4-27-94	5.0'	< 3035.7	ND	ND	ND	ND	3035.7	SOIL-GAS SAMPLE
M204-4019-0007.5	PH-19	4-27-94	7.5'	< 3035.7	ND	ND	ND	ND	3035.7	SOIL-GAS SAMPLE
M204-4019-0010.0	PH-19	4-27-94	10.0'	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	SOIL-GAS SAMPLE
M204-4019-1012.5	PH-19	4-27-94	12.5'	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	SOIL-GAS SAMPLE
M204-4019-0016.0	PH-19	4-27-94	16.0'	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4000-4021	NA	4-27-94	NA	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK
M204-4000-4022	NA	4-28-94	NA	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK
M204-4018-3000	PH-18	4-28-94	NA	ND	ND	ND	ND	ND	ND	QC-PROBE ROD BLANK
M204-4018-0002.5	PH-18	4-28-94	2.5'	4285.7	ND	ND	ND	ND	4012	SOIL-GAS SAMPLE
M204-4018-0005.0	PH-18	4-28-94	5.0'	ND	ND	ND	ND	ND	3761.6	SOIL-GAS SAMPLE
M204-4018-0006.0	PH-18	4-28-94	6.0'	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4020-0002.5	PH-20	4-28-94	2.5'	22500.0	ND	4292.9	ND	3787.9	34966.8	SOIL-GAS SAMPLE
M204-4020-0005.0	PH-20	4-28-94	5.0'	3750.0	ND	<2020	ND	e 1767.7	9730.9	SOIL-GAS SAMPLE
M204-4020-0007.5	PH-20	4-28-94	7.5'	9107.1	ND	<2020	ND	1767.7	13684.5	SOIL-GAS SAMPLE
M204-4020-0010.0	PH-20	4-28-94	10.0'	ND	ND	ND	ND	ND	ND	SOIL-GAS SAMPLE
M204-4020-0012.5	PH-20	4-28-94	12.5'	6428.6	ND	ND	ND	ND	7832.1	SOIL-GAS SAMPLE
M204-4020-0015.0	PH-20	4-28-94	15.0'	5714.3	ND	ND	ND	e 1767.7	8885.5	SOIL-GAS SAMPLE
M204-4020-0017.5	PH-20	4-28-94	17.5'	5535.7	ND	<2020	ND	2777.8	10333.7	SOIL-GAS SAMPLE
M204-4020-0019.7	PH-20	4-28-94	19.7'	< 2857.1	ND	ND	ND	ND	2857.1	SOIL-GAS SAMPLE
M204-4000-4023	NA	4-28-94	NA	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK
M204-4000-4026	NA	5-3-94	NA	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK
M204-4021-3000	PH-21	5-3-94	NA	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	SOIL-GAS SAMPLE
M204-4022-0003.0	PH-22	5-3-94	3.0'	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	SOIL-GAS SAMPLE
M204-4024-0002.0	PH-24	5-3-94	2.0'	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	SOIL-GAS SAMPLE
M204-4000-4027	NA	5-3-94	NA	ND	ND	ND	ND	ND	ND	QC-SYSTEM BLANK

ND Non Detect

NA Not Applicable

QC Quality Control

J Qualified as Estimated

ppb Parts Per Billion

< Less Than

Document Control No. _____

Environmental Restoration Program

EG&G MOUND-29-01 -01 -07 -07 -9502080001

OPERABLE UNIT 9, SITE SCOPING REPORT: VOLUME 7 - WASTE MANAGEMENT

MOUND PLANT
MIAMISBURG, OHIO

February 1993

FINAL
(Revision 0)

Department of Energy
Albuquerque Field Office

Environmental Restoration Program
EG&G Mound Applied Technologies

rinses and the deionized water spray rinses, was disposed of in the sanitary sewer system. In 1989, the process of disposing of the sodium hydroxide and potassium permanganate solution in the sanitary sewer system was stopped. These solutions are now drummed and picked up by Mound waste management personnel. Currently, only the cascade rinse water drains to the small sump. The old tank is thought to still be connected to the sanitary sewer system as is the new sump. The old tank served as the sampling station for NPDES Outfall 001. The new sump in the production plating shop is currently sampled for that requirement.

Concrete containment pits with curbs are located under the plating shop process equipment to contain any spills or leaks. The pits are segregated so that acid materials do not mix with basic materials. Any material that collects in the pits is removed by pumping it into drums for disposal by Mound waste management. Floor drains within the building are connected to the sanitary sewer system. Administrative and physical controls prevent plating wastes from being disposed of in these drains (Johnson 1991).

When the original plating shop was dismantled in 1962, the plating solutions were neutralized and the solutes precipitated. The resulting wastes included sludges and a supernatant liquid. The liquid was released to the sanitary sewer through the old tank. The sludges were drummed in two 55-gallon steel drums and buried in the small parking lot on the northeast corner of the Main Hill. The old tanks were also buried at this location, as part of the expansion of the parking lot. This burial site is now known as Area F (DOE 1992g).

3.2.3. Vapor Degreaser

The vapor degreaser is in the plating shop in the M Building on the Main Hill (Figure 3.1). Small machined metal parts are cleaned by solvent vapors produced in the chamber of the degreaser. The fully enclosed metal chamber is approximately 3 ft long, 2 ft wide, and 4 ft deep and has a 15-gallon solvent capacity. The wastes produced in this unit are spent solvents. Spent solvents and vapors are retained in the degreaser cleaning chamber. The solvent used in the vapor degreaser is Perclene D. The unit began operating in the late 1970s and is still in use. Spent solvent is transferred to drums and transported to the hazardous waste storage area in Building 72.

3.3. MAINTENANCE SHOP

The Building G garage is used to maintain the automobiles, trucks, buses, and heavy-duty equipment used at Mound (Figure 3.1). The building is approximately 122 ft by 62 ft and is made of structural steel and brick with concrete floors. It has concrete floors and is located in the northwest corner of

the plant. The building contains a new parts storage area, offices, restrooms, and a custodial operations storage area. Maintenance operations include oil changes, antifreeze replacement, vehicle repair, and tire and battery replacement.

New oil is in 55-gallon drums and is pumped into a 65-gallon storage tank. Oil from the storage tank is metered through a discharge line directly into the vehicle crankcase. Used motor oil is drained from the crankcase into a temporary storage container and is then transferred into a 55-gallon drum. Antifreeze is received in 55-gallon drums and is pumped into a 65-gallon storage tank. The antifreeze is metered from the discharge tank directly into the vehicle radiator. Used antifreeze is placed in 55-gallon drums. The empty drums that contained the new oil and antifreeze are used to receive used materials of the same type. Failed vehicle parts are returned for redemption of the core charge. Parts that have no core charge, such as used filters, hoses, and spark plugs, are discarded as non-hazardous trash, which is transported off-plant for disposal.

Brake repair is now performed in confined conditions to prevent worker exposure to asbestos. A containment system with glove ports is placed around the wheel and maintained at a negative pressure. The containment system is connected to two HEPA filters. Asbestos or other dusts generated by the maintenance process are removed from the air by HEPA filters prior to discharge. Loaded HEPA filters are removed and packaged as asbestos waste.

A ventilation system contains the vehicle exhaust emissions inside the building. A hose is placed around the vehicle's tail pipe and when the vehicle is running, fans pull the exhaust fumes from the tailpipe and discharge them outside the building (Deel 1991).

Historically, the waste oils and antifreeze were disposed of in the historic landfill. A few tires and batteries were also dumped in the landfill, but most were sent off-plant for recycling. In the late 1960s, on-plant dumping was stopped, materials were collected for pickup by Industrial Waste Disposal, Inc., and shipped to an approved off-plant waste disposal facility (Vaughters 1991). Briefly, in 1972, waste oil was staged in a 1,000-gallon tank and burned in the incinerator in Building 51. Currently, the waste oil, used antifreeze, old batteries, worn out tires, and filters containing asbestos are placed outside the south side of the building. Mound waste management personnel collect these wastes weekly for proper off-plant disposal or recycling (Deel 1991).

Building G is also used to store janitorial supplies such as floor strippers, floor finishes, cleansers, deodorizers, hand soaps, sponges, and mops that are used throughout Mound. These materials are stored in locked cabinets and caged areas, because they do not generate any hazardous waste streams.

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	Calculated Acceptable	Calculated Acceptable
			Soil Screening Level Value	Soil Gas Reading	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.