

3001-0304160006

MOUND



**Environmental
Restoration
Program**



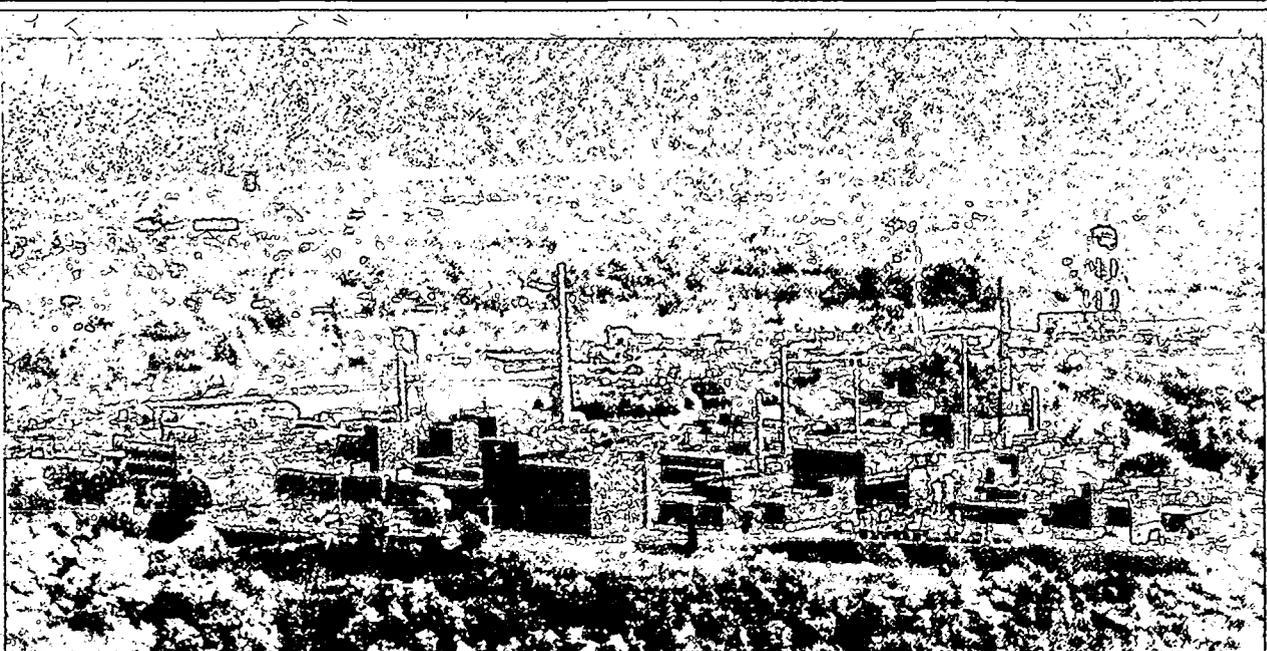
OhioEPA

MOUND PLANT

Potential Release Site Package

PRS 124

Public Review Draft
July 2002



MOUND



Environmental
Restoration
Program

**MOUND PLANT
POTENTIAL RELEASE
SITE PACKAGE**

Notice of Public Review Period



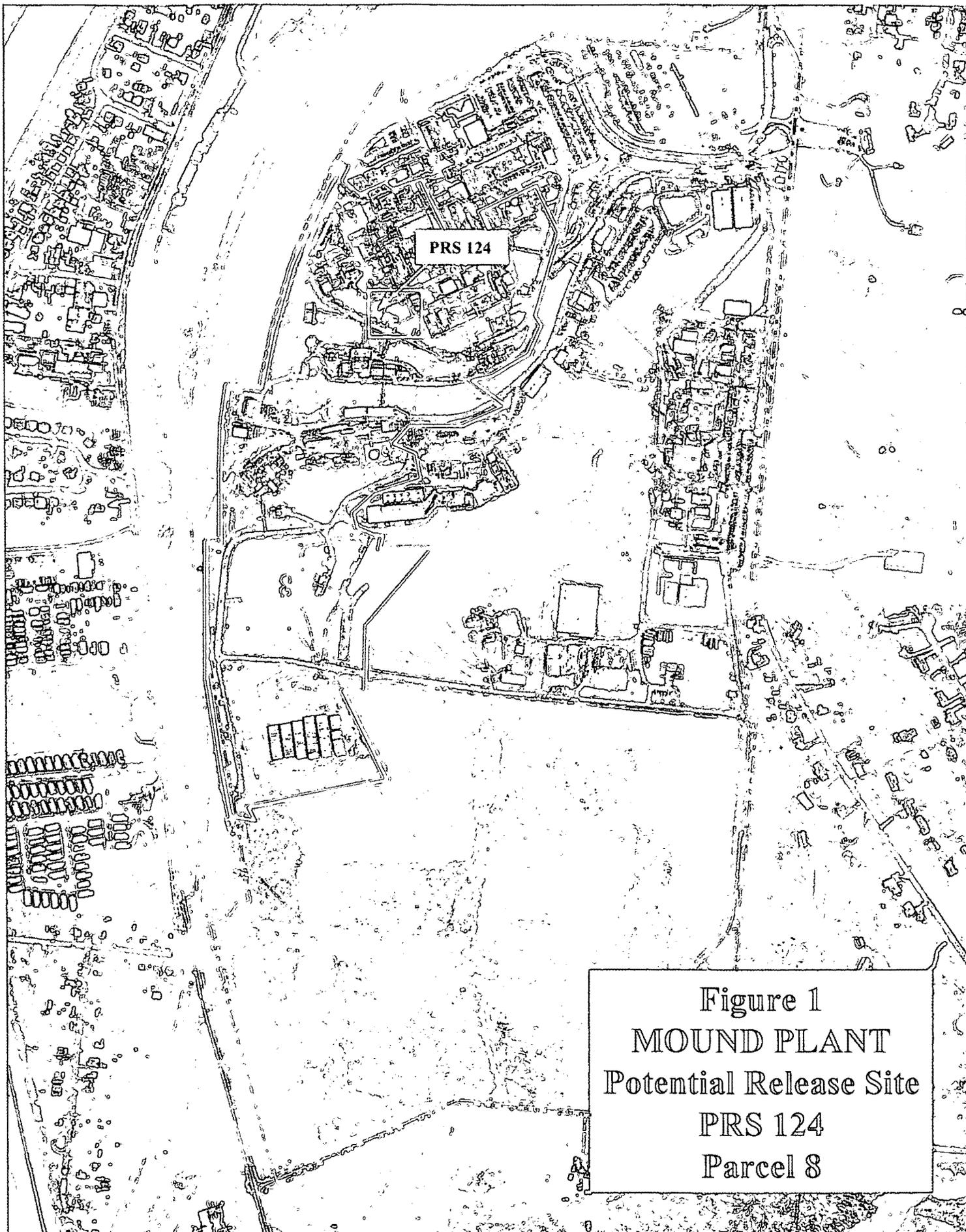
The following Potential Release Site (PRS) package is available for public review in the CERCLA Public Reading Room, 305 E. Central Ave., Miamisburg, Ohio. Public comment on this document will be accepted August 14, 2002 through September 14, 2002.

PRS 124: Building 48 Hillside

Questions can be referred to Paul Lucas at (937) 865-4578.

PRS 124 Package Tracking Sheet

REVISION	DESCRIPTION	DATE
WORKING DRAFT		11 April 2001
DRAFT	DOE/BWXTO review of working Draft on 16 April 2001. Distribute for Core Team evaluation (binning) in May 2001.	16 April 2001
DRAFT PROPOSED FINAL	PRS dispositioned by Core Team on 5/30/01 to require a Response Action. Regulator comments incorporated and document adjusted. Recommendation signed on 6/19/01.	20 June 2001
PUBLIC REVIEW DRAFT	Available for public review/comment 14 August – 14 September 2002.	July 2002
FINAL		



PRS 124

Figure 1
MOUND PLANT
Potential Release Site
PRS 124
Parcel 8

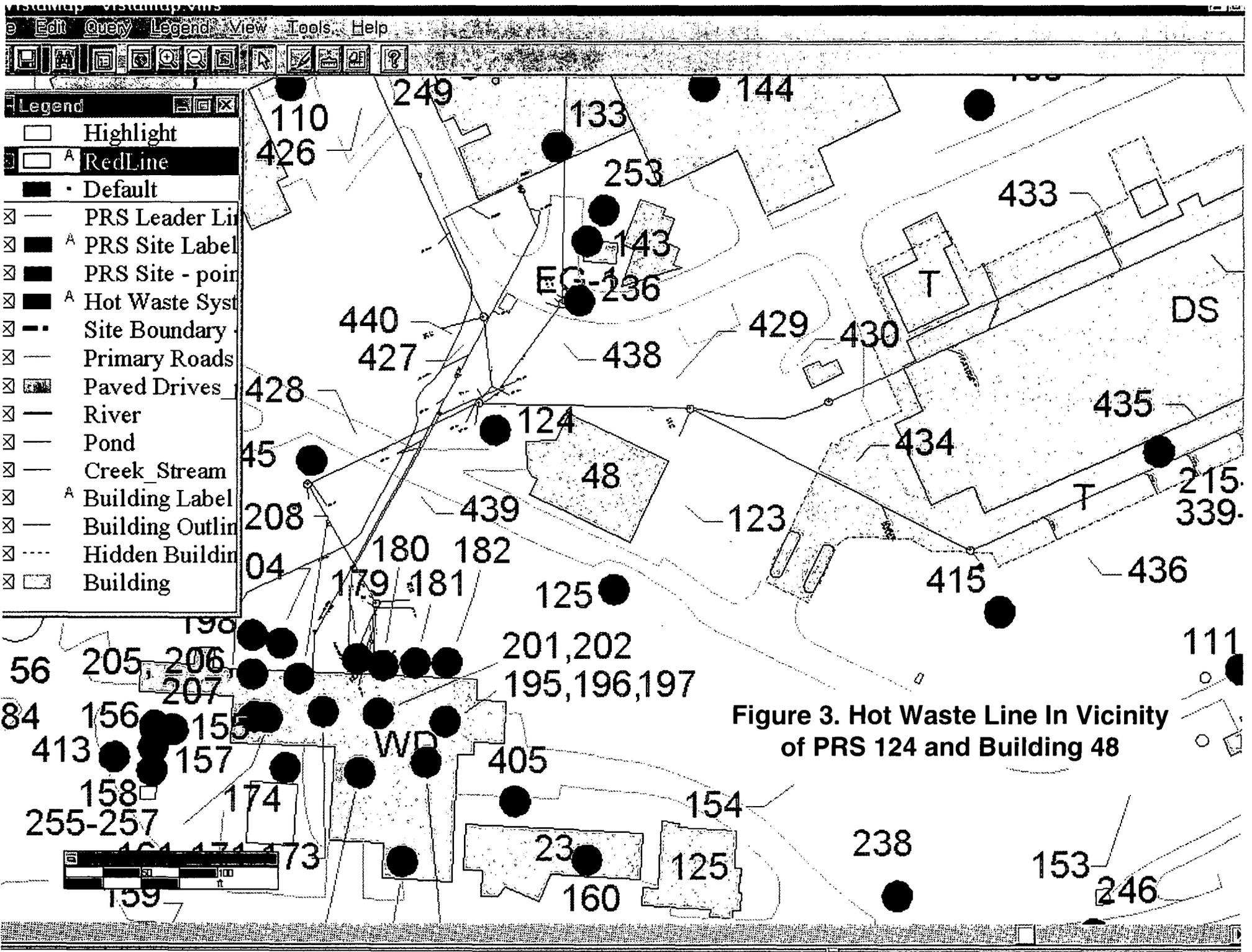


Figure 3. Hot Waste Line In Vicinity of PRS 124 and Building 48

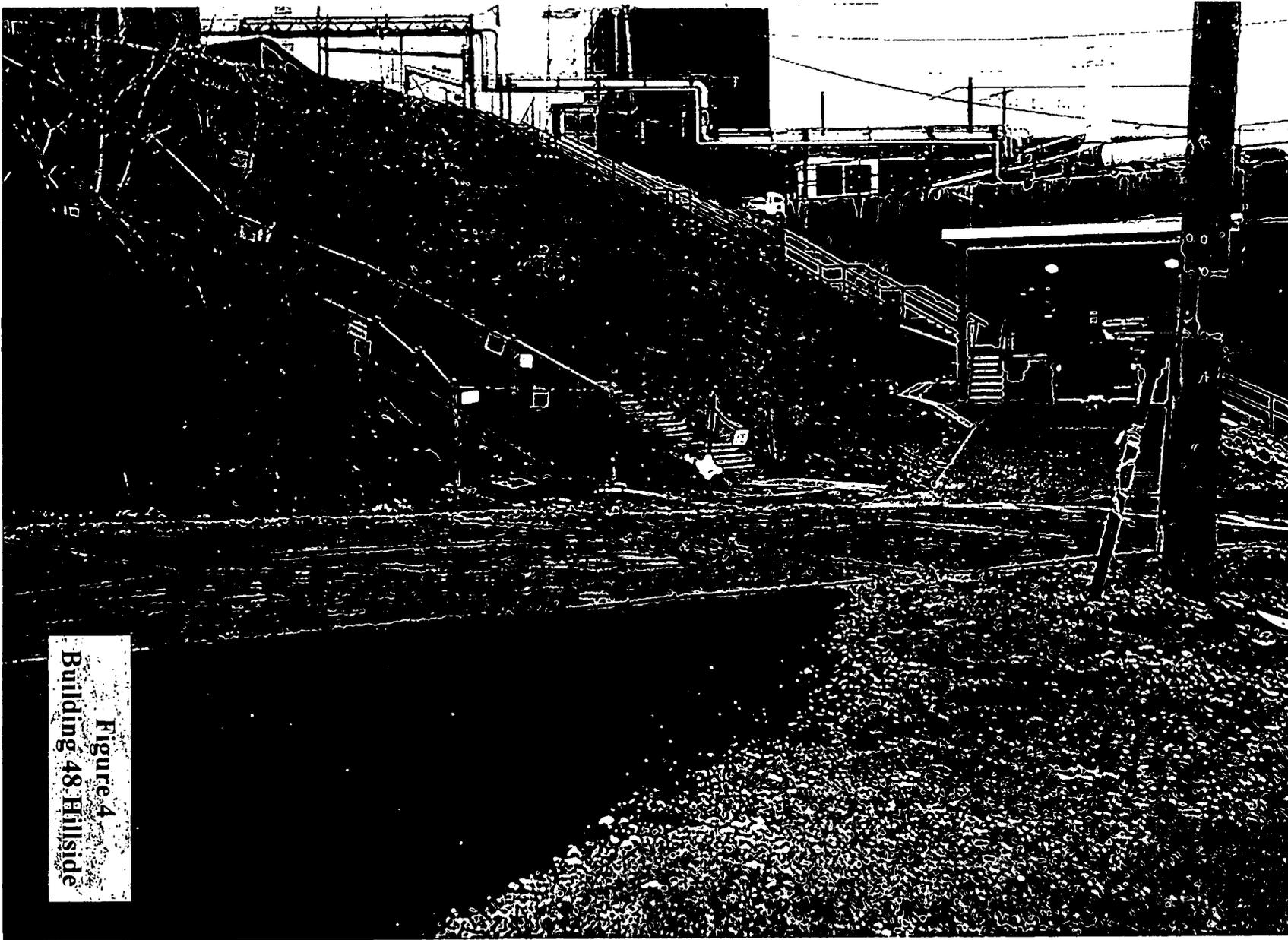


Figure 4
Building 48 Hillside

**PRS 124
Building 48 Hillside**

PRS HISTORY:

The document Operable Unit 9, Site Scoping Report: Volume 12—Site Summary Report (Reference 1) identifies PRS 124 as the Mound Plant Building 48 Hillside. This reference also declares that plutonium-238 in soil is the suspected contaminant of concern. GIS mapping/sampling information (Reference 2) indicates that the area of concern is located adjacent to a radiological process line manhole northwest of Building 48. Several Main Hill radiological process waste lines join near this location and continue to the Waste Disposal (WD) Building (Figure 3 and Reference 3). Reference 3 declares that “The contamination encountered at the Building 48 hillside is attributed to a release of 7.64 mCi of plutonium-238 in November 1967.” The same incident is also documented in the Site Scoping Report: Volume 11—Spills and Response Actions (Reference 4). Additionally, see Reference 5, the incident report addressing this occurrence. It is noted that the subject wastewater spilled across the nearby road and into the storm drains.

BACKGROUND:

On November 9, 1967, 1500-2000 gallons of low-level radioactive wastewater was accidentally release during waste line repair (Reference 4). Soil sampling accomplished in support of a construction project (circa 1986) indicated plutonium-238 concentrations as high as 32 nCi/g. These concentrations required that the construction project be abandoned. Construction borings were backfilled and contamination was left in place for future D&D activities.

CONTAMINATION:

Table 1: Soil Analysis Report, Soils Identified with PRS 124 (Reference 2)

Contaminant	Maximum Level (pCi/g)	Guideline Value (10⁻⁶) (pCi/g)	Background (pCi/g)
Plutonium-238 (SCR191)	2902.0	55.0 (10 ⁻⁵)	0.13
Plutonium-238 (SCR159)	225.0	55.0 (10 ⁻⁵)	0.13
Plutonium-238 (SCR155)	74.0	55.0 (10 ⁻⁵)	0.13
Thorium-230 (MND17-5001)	5.23	0.12	1.90
Thorium-232 (SCR191)	182.2	0.09	1.40
Thorium-232 (SCR155)	2.20	0.09	1.40

READING ROOM REFERENCES:

- 1) Operable Unit 9, Site Scoping Report: Volume 12—Site Summary Report, Final, 1994
- 3) Operable Unit 9, Site Scoping Report: Volume 3—Radiological Site Survey, Final, 1993
- 4) Operable Unit 9, Site Scoping Report: Volume 11—Spills and Response Actions, Final, March 1992
- 5) Incident: Involving Accidental Release of Liquid Radioactive Waste at Excavation at Tie-in Area on Hillside, November 17, 1967

OTHER REFERENCES:

- 2) GIS Mapping/Sampling Information

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HISTORICAL/TECHNICAL REVIEWER:

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**MOUND PLANT
PRS 124**

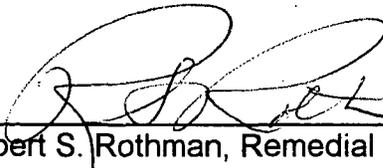
BUILDING 48 HILLSIDE

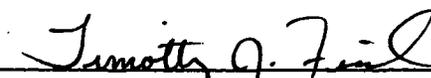
RECOMMENDATION:

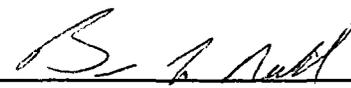
Potential Release Site (PRS) 124 was identified due to a release on Nov. 9, 1967. 1,500 to 2,000 gallons of low-level radioactive wastewater were accidentally released during waste line repair. Several Main Hill radiological process waste lines join near this location and continue to the Waste Disposal (WD) Building. Soil Sampling accomplished in support of a construction project (Circa 1986) indicated Plutonium-238 concentrations as high as 32,000 pCi/g.

Therefore, a RESPONSE ACTION is recommended for PRS 124.

CONCURRENCE:

DOE/MEMP:  6/19/01
Robert S. Rothman, Remedial Project Manager (date)

USEPA:  6/19/01
Timothy J. Fischer, Remedial Project Manager (date)

OEPA:  6/19/01
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 124

Reference 1

Classification Code:

Accession No.

DUPLICATE

24-C-1-01-07-12

95-032800-5

ENVIRONMENTAL RESTORATION PROGRAM

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

**MOUND PLANT
MIAMISBURG, OHIO**

December 1994

**U.S. DEPARTMENT OF ENERGY
OHIO FIELD OFFICE**

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

FINAL

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
118	M Building Soils	E-7	Grounds	Copper cyanide, Silver cyanide	4	Oils, Copper cyanide, Silver cyanide	S	10	1	SGS ^b Table B.4 Locations 1050, 1051, 1062	12
				Machine oils, Solvents					14		
119	Room M-38 Metal Plating Rinse Water Sump (Tank 225)	E-7	Surplus	Rinse waters from metal plating operations. Possible contaminants include nickel, cadmium, silver, gold, manganese, cyanide, and aluminum. Sodium hydroxide solution Potassium permanganate	3, 4	None Suspected			No Data		
120	Room M-108 Metal Plating Rinse Water Tank (Tank 119)	E-7	In service	Rinse waters from metal plating operations. copper, gold, silver, nickel, aluminum, and uranium	3, 4	Silver cyanide	SW	10	No Data		
121	Vapor Degreasers	E-7	In service	Perclene D (perchloroethylene)	4, 5, 18	None Suspected			No Data		
122	Underground Radioactive Waste Lines (Main Hill)	E-6 F-6	Inactive	Alpha wastes from SW Bldg., R Bldg., and H Bldg. Wastewater from B Building Plutonium-238, Cobalt-60	4, 18	Suspected	S	4, 10	No Data		
123	Area 5, Radioactive Waste Line Break	F-6 F-7	Grounds	Cobalt-60, Cesium-137, Plutonium-238	1, 5, 18	Cobalt-60	S	1, 18	2, 14, 16	Table B.1 (Table III.3 in Ref. 6)	6
124	Building 40 Hillside	F-6	Inactive	Plutonium-238		Plutonium-238	S	6	14	Table B.1	6
125	Underground Sanitary Sewer Line G24	F-6	In service	Organic solvents, Plating Solutions, Laboratory chemicals, Nitric acid, Hydrochloric acid, Methylene chloride, Strong acids and bases		Suspected	S	5, 18	3, 4, 5, 6, 14, 16	Tables D.6, B.7, and B.8	7
126	Building 28 Solvent Storage Area	E-8	Grounds	Organic solvents (including alcohol, methylene chloride, and acetone)	4, 5, 9, 18	Suspected	S	4	1	SGS ^b Table B.4 Location 1054	12

Scoping Report
Vol. 12
Table A.1

- 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

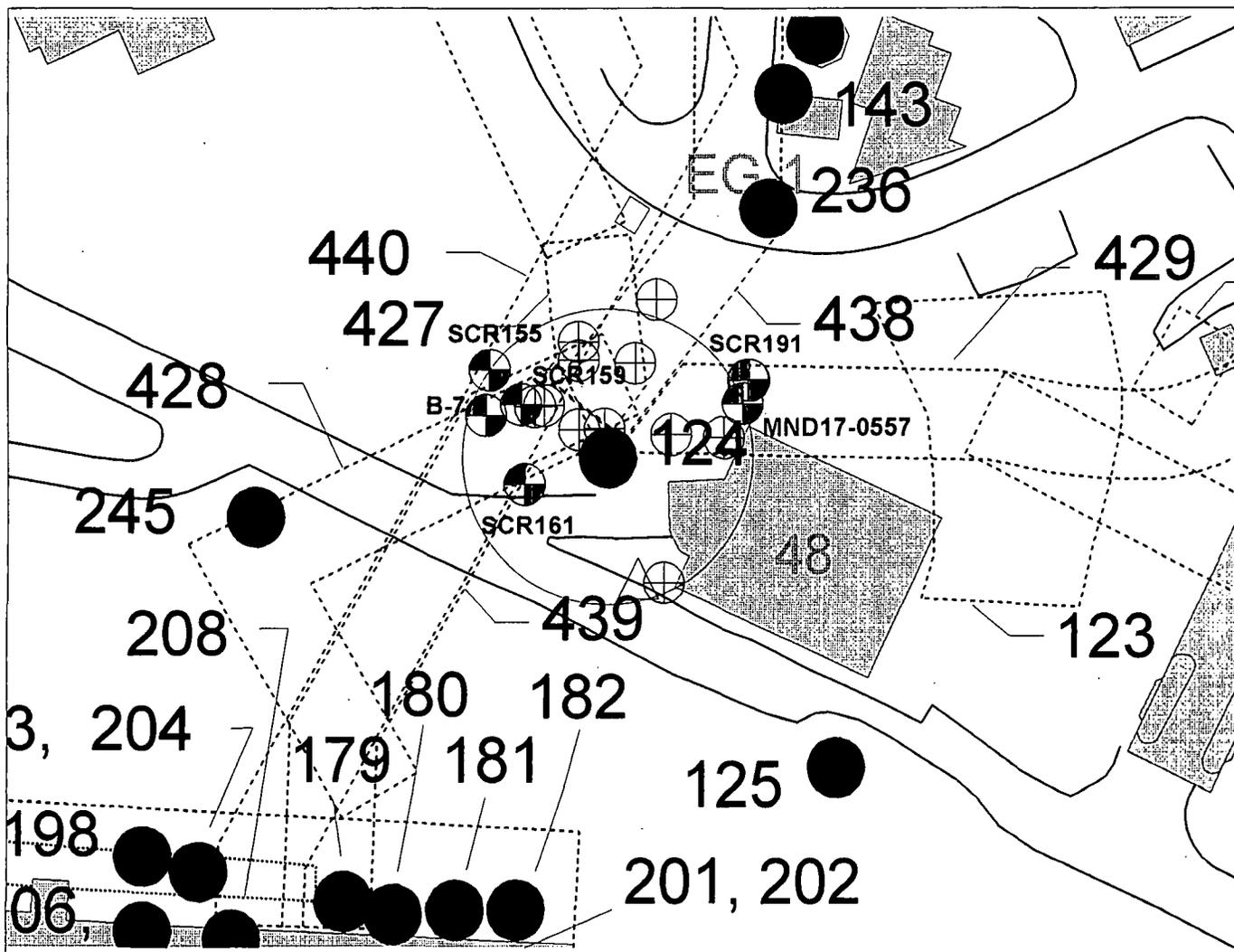
Reference List

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: Vol. 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: Vol. 3 - Radiological Site Survey (FINAL)."
7. DOE 1993c "Operable Unit 3, Misc. Sites Limited Field Investigation Report."
8. DOE 1992d "Reconnaissance Sampling Report Decontamination & Decommissioning Areas, OUG, (FINAL)."
9. Fantiman 1990 "Characterization of Mound's Hazardous, Radioactive and Mixed Wastes."
10. DOE 1992f "Operable Unit 9, Site Scoping Report: Vol. 9 - 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: Vol. 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 1976a, 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."

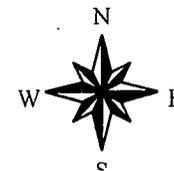
Update 1/29/96
Seep Rpt Vol 12

Reference 2

PRS 124 Sample Locations Plutonium and Thorium Detects



20 0 20 40 60 80 100 120 140 160 Feet



Location_name	Sample_id	Location_type	Collection_date	Value_name	Measured	Value_unit	Detectio	Chem_c	Start_date	End_date	CAS_number	Lab_q	Data	Project_code	Media	Collection_m	Comments
MND17-0557	0557-5001	Borehole	19950822	Thorium-230	5.23	PCI/G		RAD	0.0	0.5	14269-63-7			MND17	Soil	Split spoon	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
MND17-0557	0557-5001	Borehole	19950822	Thorium-232	0.25	PCI/G		RAD	0.0	0.5	7440-29-1			MND17	Soil	Split spoon	
MND17-0557	0557-5004	Borehole	19950823	Thorium-232	0.69	PCI/G		RAD	0.5	4.0	7440-29-1			MND17	Soil	Split spoon	
MND17-0557	0557-5008	Borehole	19950823	Thorium-232	0.72	PCI/G		RAD	4.0	8.0	7440-29-1			MND17	Soil	Split spoon	
SCR191	8802151	Borehole	19880215	Plutonium-238	2902.00	PCI/G		RAD	0.0	0.0	13981-16-3			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR191	8802151	Borehole	19880215	Thorium-232	182.20	PCI/G		RAD	0.0	0.0	7440-29-1			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR191	8802154	Borehole	19880215	Plutonium-238	1279.00	PCI/G		RAD	0.0	0.0	13981-16-3			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR191	8802154	Borehole	19880215	Thorium-232	59.90	PCI/G		RAD	0.0	0.0	7440-29-1			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR191	8802152	Borehole	19880215	Plutonium-238	1118.00	PCI/G		RAD	0.0	0.0	13981-16-3			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR191	8802152	Borehole	19880215	Thorium-232	106.90	PCI/G		RAD	0.0	0.0	7440-29-1			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR191	8802155	Borehole	19880215	Plutonium-238	195.00	PCI/G		RAD	0.0	0.0	13981-16-3			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR191	8802155	Borehole	19880215	Thorium-232	8.20	PCI/G		RAD	0.0	0.0	7440-29-1			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR191	8802153	Borehole	19880215	Plutonium-238	39.00	PCI/G		RAD	0.0	0.0	13981-16-3			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR191	8802153	Borehole	19880215	Thorium-232	2.80	PCI/G		RAD	0.0	0.0	7440-29-1			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value.
SCR161	9312024-Q	Borehole	19931202	Plutonium-238	26.00	PCI/G		RAD	0.0	0.0	13981-16-3			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR159	90072559	Borehole	19900725	Plutonium-238	26.00	PCI/G		RAD	0.0	0.0	13981-16-3			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR159	90072555	Borehole	19900725	Plutonium-238	29.00	PCI/G		RAD	0.0	0.0	13981-16-3			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR159	90072560	Borehole	19900725	Plutonium-238	30.00	PCI/G		RAD	0.0	0.0	13981-16-3			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR159	90072557	Borehole	19900725	Plutonium-238	225.00	PCI/G		RAD	0.0	0.0	13981-16-3			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR159	90072561	Borehole	19900725	Plutonium-238	31.00	PCI/G		RAD	0.0	0.0	13981-16-3			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR159	90072554	Borehole	19900725	Plutonium-238	27.00	PCI/G		RAD	0.0	0.0	13981-16-3			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR155	88022511	Borehole	19880224	Plutonium-238	37.00	PCI/G		RAD	0.0	0.0	13981-16-3			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR155	8802251	Borehole	19880224	Plutonium-238	27.00	PCI/G		RAD	0.0	0.0	13981-16-3			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR155	88022517	Borehole	19880224	Plutonium-238	31.00	PCI/G		RAD	0.0	0.0	13981-16-3			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR155	8802253	Borehole	19880224	Plutonium-238	74.00	PCI/G		RAD	0.0	0.0	13981-16-3			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR155	8802253	Borehole	19880224	Thorium-232	2.20	PCI/G		RAD	0.0	0.0	7440-29-1			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value.
SCR155	8802256	Borehole	19880224	Plutonium-238	26.00	PCI/G		RAD	0.0	0.0	13981-16-3			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR155	8802255	Borehole	19880224	Plutonium-238	26.00	PCI/G		RAD	0.0	0.0	13981-16-3			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR155	88022525	Borehole	19880224	Plutonium-238	35.00	PCI/G		RAD	0.0	0.0	13981-16-3			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
SCR155	88022523	Borehole	19880224	Plutonium-238	28.00	PCI/G		RAD	0.0	0.0	13981-16-3			SCRDATA	Soil	Unknown	1-Exceeds soil 10-6 GV. 2-Exceeds background value. 3-Exceeds other criteria.
B-7	4007-0005	Borehole	19930823	Plutonium-238	0.68	PCI/G	0.16	RAD	3.5	5.0	13981-16-3			MND16	Soil		2-Exceeds background value.
B-7	4007-1007	Borehole	19930823	Plutonium-238	0.69	PCI/G	0.14	RAD	3.5	5.0	13981-16-3			MND16	Soil		2-Exceeds background value.

Reference 3

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

was detected in the samples from this location (a maximum of 0.98 pCi/g of plutonium-238 and less than 2 pCi/g of thorium).

Area D was not identified in the original Site Survey Project Report (Stought et al. 1988), but it has always been included as one of the sites to be addressed by the Mound Plant D&D Program. No significant radioactive contamination was identified during the Site Survey Project, either in the original report or by this evaluation. This is consistent with the site history for this area, which indicates that any nitric acid released would have been raw material prior to processing and, therefore, not contaminated. The D&D of Area D is being conducted as part of the D&D of Building 38 and its utility systems.

The maximum depth sampled in Area D was 180 inches. Borehole data in Mound Plant drawing #FSE16472, reproduced in the Site Scoping Report: Volume II Addendum (DOE 1992f) indicate that the depth to bedrock in this area of the SM/PP Hill ranges from approximately 108 to 228 inches, but this may vary greatly due to the presence of fill dirt. The boring log for location C0146 is not available, so it cannot be determined if bedrock was reached during the sampling.

4.1.9. Building 48 Hillside

A note in the Site Survey Project Report (Table 2.1 in Stought et al. 1988) indicated that elevated levels of plutonium-238 were discovered in an area designated as Block 19. The area of concern is actually located adjacent to a process sewer manhole northwest of Building 48 on the south slope of the Main Hill (Plate 1). This area is referred to as the Building 48 hillside in this report. The Building 48 hillside is also west of Area 5, but is not currently included in the boundaries of Area 5. Internal Mound Plant memoranda reviewed for this report substantiate the note in the project report (Stought et al. 1988) that plutonium-238 concentrations are as high as 32 nCi/g (Draper 1986a). The data sheets are included in Appendix E. The levels of plutonium-238 encountered required that the construction project be abandoned, so the initial holes were simply backfilled and the contamination left in place. The contamination encountered at the Building 48 hillside is attributed to a release of 7.64 mCi of plutonium-238 in November 1967. This incident is listed in the Site Scoping Report: Volume 11: Spills and Response Actions (DOE 1992h). As the Building 48 hillside is associated with the soils adjacent to the alpha waste water sewer lines, similar problems may be anticipated along the length of the lines. These lines are scheduled to undergo D&D.

SOIL SCANNING FACILITY MCA RECORD

SAMPLE TYPE : CONSTRUCTION
 SAMPLE CONDITION : WET
 DATE (When Collected) : 4/18/86
 DATE (When Screened) : 4/21/86
 SAMPLE TAKEN BY : [REDACTED] 5385

SAMPLE TYPE

SM
 PP
 WTS
 CONT.
 SS
 41

DISTRIBUTION:

R.R. DAILY
 D.G. DRAPER
 FILE

MCA WELL "B"

SAMPLE# :GRAMS :Pu Wt.FACTOR: GROSS Ct Th : GROSS Ct Pu : Pu-238 pCi/g : Th-232 pCi/g : LOCATION AND DEPTH
 12609 : 300 : 0.167 : 555 : 491 : 3 : 0.2 : BLDG 48 HILLSIDE #1

SCREEN BY:

Review By: _____ Approved By: _____

MCA WELL "B" WEEKLY CALIBRATION LOG

MCA DOE#: 87679
 MCA SN#: 80545
 PROBE DOE#: 97385
 PROBE SN#: DR593

STANDARDS	::CT./400 sec. Pu Window	: CT./400 sec. Th Window	: CT - BKG	: Ct/pCi
BKG STANDARD	:: 393	: 376	:	:
Pu-238 STANDARD #1044 = 169.4 pCi/gr	:: 11700	: 11307	:	66.75
Pu-238 STANDARD #1045 = 746.8 pCi/gr	:: 4765	: 4372	:	5.85
Pu-238 STANDARD #1046 = 2216 pCi/gr	:: 10174	: 9781	:	4.41
Th-230 STANDARD #2244 = 44.5 pCi/gr	:: 26557	: 26181	:	588.34

PREPARED BY: [REDACTED] 5315 DATE 4/21/86

REVIEWED BY: _____ DATE: _____ APPROVED BY: _____ DATE: _____

SOIL SCANNING FACILITY NCA RECORD

SAMPLE TYPE

DISTRIBUTION:

SAMPLE TYPE : CONSTRUCTION
 SAMPLe CONDITION : WET
 DATE (When Collected) : 4/17/86
 DATE (When Screened) : 4/18/86
 SAMPLe TAKEN BY : [REDACTED] 5385

SM
 PP
 WTS
 CONT.
 SS
 41

R.R. DAILY
 D.G. DRAPER
 FILE

NCA WELL "A"

SAMPLE#	: GRAMS	: Pu WT.FACTOR:	GROSS Ct Th	: GROSS Ct Pu	: Pu-238 pCi/g	: Th-232 pCi/g	: LOCATION AND DEPTH
12605	: 300	: 0.167	: 2415	: 209788	: 38861	: 4.2	: BLDG 48 HILLSIDE #1

NCA WELL "B"

SAMPLE#	: GRAMS	: Pu Wt.FACTOR:	GROSS Ct Th	: GROSS Ct Pu	: Pu-238 pCi/g	: Th-232 pCi/g	: LOCATION AND DEPTH
12606	: 300	: 0.167	: 4149	: 67129	: 11602	: 5.4	: BLDG 48 HILLSIDE #1

SCREEN BY [REDACTED] 5315

Review By: _____ Approved By: _____

4-18-86

HfGe :	Pu238	Am241
12605	31.7 uCi/g	✓
12606	23.0 uCi/g	✓

I BLDG

UPPER ROADWAY

STEPS TO WD
←

HILL SIDE

STEPS TO BLDG. 48
←

2" LOW LEVEL WASTE LINE WHICH IS WHY THERE ARE DIGGING IN THIS AREA.

VENT PIPE

MAN HOLE 03

X ← LOCATION WHERE DIRT SAMPLES WERE TAKEN
O ← OTHER PLACES I'M GETTING HIGH FIDLER READINGS

↑
WHERE THE DIGGING HAS BEEN TAKING PLACE.

BLDG. 48
DUST

BLDG. 48

LOWER ROADWAY

STEPS TO WD
←

Reference 4

ENVIRONMENTAL RESTORATION PROGRAM

**OPERABLE UNIT 9,
SITE SCOPING REPORT
VOLUME 11 - SPILLS AND RESPONSE ACTIONS**

**MOUND PLANT
MIAMISBURG, OHIO**

March 1992

**DEPARTMENT OF ENERGY
ALBUQUERQUE FIELD OFFICE**

**ENVIRONMENTAL RESTORATION PROGRAM
TECHNICAL SUPPORT OFFICE
LOS ALAMOS NATIONAL LABORATORY**

**FINAL
(Revision 0)**

Table II.1. Summary of Spills and Environmental Releases from Records of the Safety Office

Date	Location	Material	Amount	Incident	Response
02/12/63	South end SW Bldg.	H-3	"Low-level"	Fire of paper covering metal during cutting and drumming for disposal (63-13).	MRC Incident Investigation Report No. 63-13 (2/14/63).
03/04/63	Historic landfill	Misc. chemicals	Unknown	Explosion of incompatible chemicals in deteriorated containers; no radioactivity.	MRC Incident Investigation Report No. 63-19 (2/19/63).
10/27/64	SM Bldg.	Pu-238	Unknown	Methanol vapors inside fumehood exploded; possible air release.	MRC Incident Investigation Final Report 11/23/64 - record incomplete. Use of flammable solvents within gloveboxes prohibited by AEC.
02/26/65	SM Bldg.	Pu-238	Unknown	Ruptured can of trash in Room 26; possible air release; possible water release.	MRC report 3/2/65 - record incomplete.
03/08/65	SM Bldg.	Pu-238	Unknown	Acid release in Room 59; possible air release.	MRC report 3/8/65 - record incomplete.
08/27/65	SM Bldg.	Pu-238	Unknown	Fire in Room 38; possible air release.	MRC report 9/7/65 - record incomplete.
05/20/66	SM Bldg.	H-3	Unknown	Unidentified release of tritium to SW stack.	MRC Incident Investigation Report No. 66-26 (5/27/66). Recommendations to re-evaluate mechanical and engineering conditions of ERS.
09/08/67	WTS west of SM Bldg.	Pu-238	Unknown	Flanges in line found unbolted; low-risk line contaminated, including soil to 15 ft downslope; high-risk line not in use yet.	MRC Incident Investigation Report No. 67-21 (10/10/67). Soil cleanup proposed (no cleanup guideline given) with periodic system inspections.
11/09/67	Wasteline south of SW/R Bldgs.	"Low-level radioactivity"	1,500-2,000 gals	During wasteline repair wastewater spilled across road to storm drains and then to drainage ditch; about 7.65 millicuries released.	MRC Incident Description 11/17/67. 10 on-plant and 7 off-plant water samples collected 5 to 20 minutes after spill; highest air reading 1200 dis/min/mL; highest water reading 216.0 dis/min/mL at culvert exit to drainage ditch.
03/30/68	SM Bldg.	Pu-238	Unknown	Reversal of air flow in SM stack; possible air release.	MRC Incident Investigation Report No. 68-8 (4/10/68).

Reference 5

DETAILS:

At approximately 11:00 A. M. on November 9, 1967, [REDACTED] a mason, was working on a tie-in of liquid radioactive waste lines on the hillside south of R. and S. W. Buildings, to divert "R" building waste-water to the new W. D. Building, referred to as W. D. A. Another tie-in was being made at this location to send laundry waste-water to the old W. D. Building. Water from the laundry and R-Building flowed through a common line to the old W. D. Building at the start of this job.

Since it was not possible to stop the flow of water through the common line completely during this work, a bypass was used consisting of a gasoline powered pump and fire hoses running from a manhole on the upper road to a manhole at the excavation site, approximately 100 feet south of the manhole on the upper road. Flow of water through the involved section of pipe was stopped by means of a rubber expansion plug inserted in the pipe at the upper manhole. Operation of this system had been started on Tuesday, November 7, 1967.

Prior to the incident [REDACTED] [REDACTED], W. D. Supervisor, had found the gasoline pump not operating, and the upper manhole nearly filled with water on several occasions. As a result he had requested closer attention to the pump and installation of a standby pump in case of failure of the original one. A five-gallon fuel tank was connected to the pump to provide longer continuous operation.

On the morning of the incident, [REDACTED] again observed that the pump engine had stopped and the manhole was filling, he then called the laundry and requested that they stop dumping water and proceeded to clean the screen on the pump intake to start it operating before the manhole overflowed to the roadway. A mechanic started the pump. The laundry had been informed that they could dump their water just before the incident occurred.

[REDACTED] was preparing to go to lunch when he observed that the pump engine was running but the pump was not operating and the upper manhole was filled to within a few feet of the top. At the time of the incident [REDACTED] had installed a new capped section of pipe at the lower end of the line. He then noticed a large flow of water through the excavation on the hillside. Seeing [REDACTED] [REDACTED] near the west tower of T-Building he immediately called him over to the manhole. [REDACTED] [REDACTED] observed the flow of water and called [REDACTED] [REDACTED] to request a shut-off of waste water from the laundry and T-Building.

November 17, 1967

About the same time [redacted], W. D. Area Health Physics Surveyor, arrived and was requested by [redacted] to collect downstream water samples to determine the radioactive concentration of the water as it flowed through the storm drains. While this was being done other Health Physics personnel were proceeding to collect samples outside the outer perimeter fence and from the Miami River, and to rope off the roadway and other contaminated areas.

When the water in the excavation had receded enough for him to enter it, [redacted] found the rubber plug wedged inside the section of pipe which had been installed on the end of the line. This section had been pushed off by the water. It was necessary for [redacted] to use a wrench to loosen the plug before it could be removed. He then took the plug up to the upper manhole and again inserted it into the line. Until the plug was installed, water had continued to flow through the open line at a reduced rate due to the cooperation of R-Building and laundry personnel in shutting down waste-water flow.

The following are the results of water samples taken on-site and off-site. Locations are indicated on the attached site plan drawing for on site samples.

<u>On-Site Samples</u>	<u>Disintegrations/minute/ml</u>	
1.	226	The onsite samples were taken from approximately 5 minutes to 20 minutes after the spill.
2.	1200	
3.	460	
4.	466	
5.	348	
6.	200	
7.	282	
8.	466	
9.	0	
10.	0	

<u>Off-Site Samples</u>	<u>Disintegrations/minute/ml</u>
-------------------------	----------------------------------

Locations

1. Exit of concrete culvert	216.0
2. Above small falls, 75 Ft. from culvert.	23.0
3. 50 Ft. downstream from #2	0.04
4. Old canal.	7.0
5. Just before river.	0.14
6. Outflow of sewer.	0.0
7. Below dam.	0.0

November 17, 1967

Samples taken at the river do not exceed the permissible level of 11 dis/min/ml for continuous operation. This water would also be further diluted by approximately 850,000 gallons of raw water in 24 hours, not including surface water and spring water.

CAUSES:

Some of the contributing factors leading up to the incident were: Originally the tie-in was scheduled for November 4, 1967 - W. D. supervisor and W. D. Health Physics supervisor were not notified, showing a lack of communication between Engineering and Health Physics and W. D. The November 4 date was set back to November 11, on Tuesday November 7, 1967 without notification to W. D. or Health Physics personnel showing further lack of coordination.

Another factor was lack of a standby man to keep the pump running on the by-pass system 100 percent of the time during day shift operations when the water flow is heavy.

There is also the possibility that the wrong type of plug may have been used. The possibility exists that the cleaning operation of the strainer on the dip-line of the pump may have cocked the plug in the tile by hooking the strainer on the clamp rod of the plug during the removal of line to clean the strainer. When the manhole again filled due to pump failure the excessive pressure along with the fact that the plug may have been cocked, reducing the friction edge and allowed the plug to work on through the approximate 100 feet of tile to the excavation. The reason for the pump failure was the foreign matter collecting on the strainer. This foreign matter gets to the waste line in large pieces due to the lack of screens or strainers at the source of the waste liquid, e.g., janitor's sinks, floor drains, etc., (foreign matter found in W. D. lines - rubber gloves, mop strings, rags, etc.)

RECOMMENDATIONS:

The following recommendations are the results of discussions with the Investigating Committee, Supervisors and Personnel involved in the incident.

1. Investigate the possibility that the plug used to cut off water flow in line in manholes could be designed so that it does not depend entirely upon expansion to hold it in place.

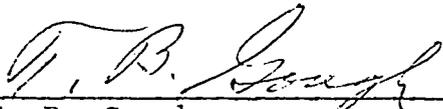
Example

Possibly a plywood template cut to fit in conjunction with the

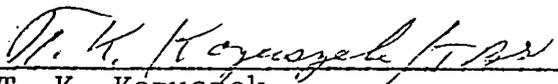
November 17, 1967

expansion plug, with the template and plug fastened together or some other arrangement.

2. Standby man 100 percent of the time during operations of this type.
3. The use of (2) two pumps in case one pump fails the other can be put in service immediately, thereby keeping the water level in the manhole to a minimum.
4. Inspect all sources of radioactive waste to Hot Waste Lines and see that strainers are installed and used.
5. Install vacuum breaker on discharge side of pumps used in operations of this type to prevent siphonage from suction line of pump thereby reducing the time it takes for the pump to be effective on intermittent flow such as is present in Hot Waste Lines.
6. Either a written procedure or form should be used to notify all personnel involved when an operation of this type is to be performed to avoid breakdown of communication.



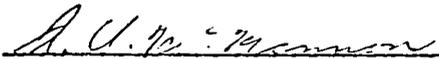
T. B. Gough



T. K. Kozuszek



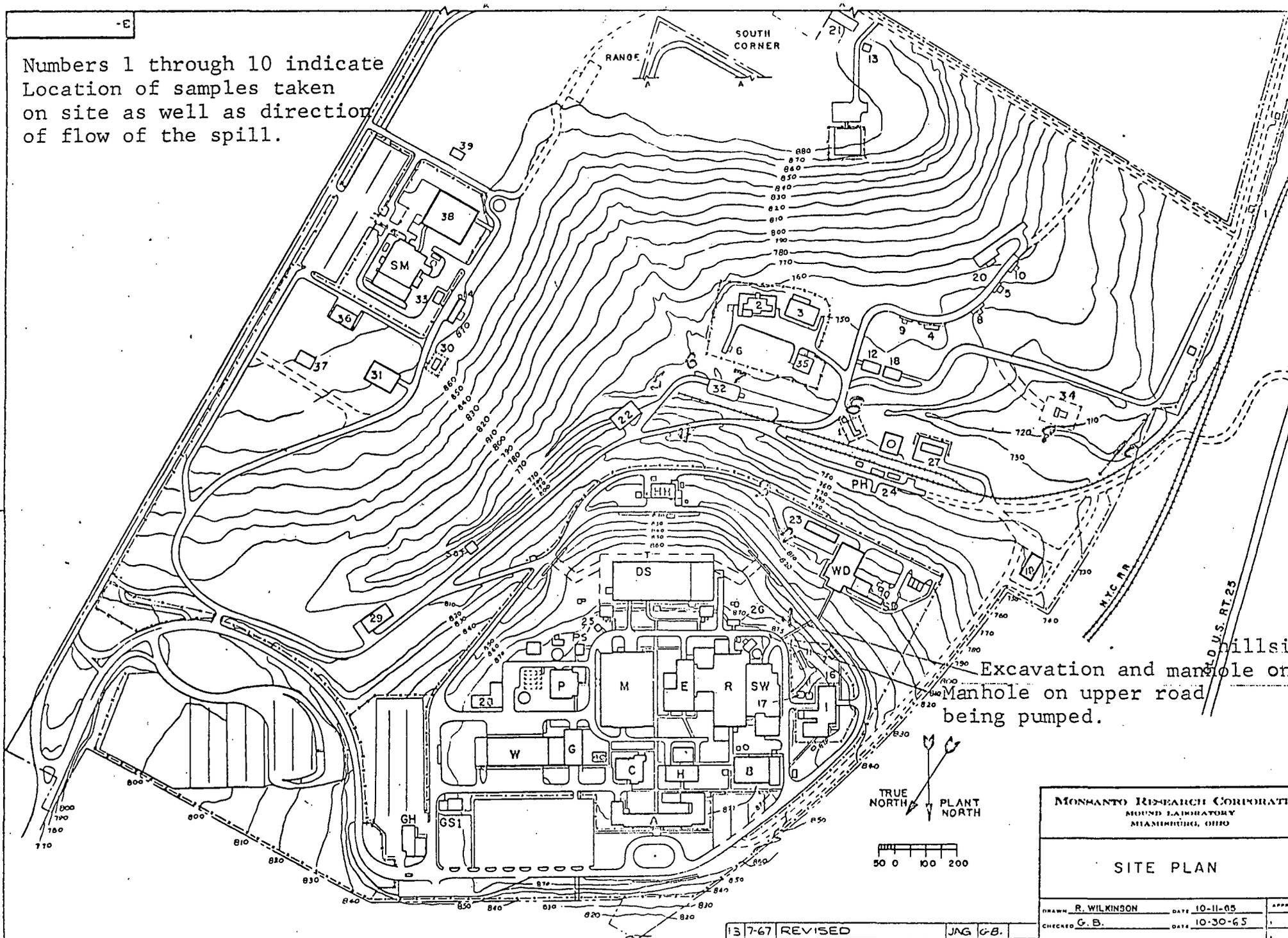
A. R. Mann



R. U. McMannon

TBG/me

Numbers 1 through 10 indicate Location of samples taken on site as well as direction of flow of the spill.



Excavation and manhole on upper road being pumped.

MONSANTO RESEARCH CORPORATION
MOUND LABORATORY
MIAMI, OHIO

SITE PLAN

DRAWN	R. WILKINSON	DATE	10-11-65	APP
CHECKED	G. B.	DATE	10-30-65	1
APPROVED		DATE		2
JDR NO.	769			3
SCALE	1" = 200'			4

DWG. No. 3-

13	7-67	REVISED	JAG	G.B.
12	1-67	REVISED	HE	G.B.
11	9-66	REVISED	GW	
10	10-65	REDRAWN	RW	G.B.
NO.	DATE	REVISION	BY	CHK'D APPROV'D

CLASSIFICATION
Unclassified