EG&G MOUND-30-03-04-02--9611270014

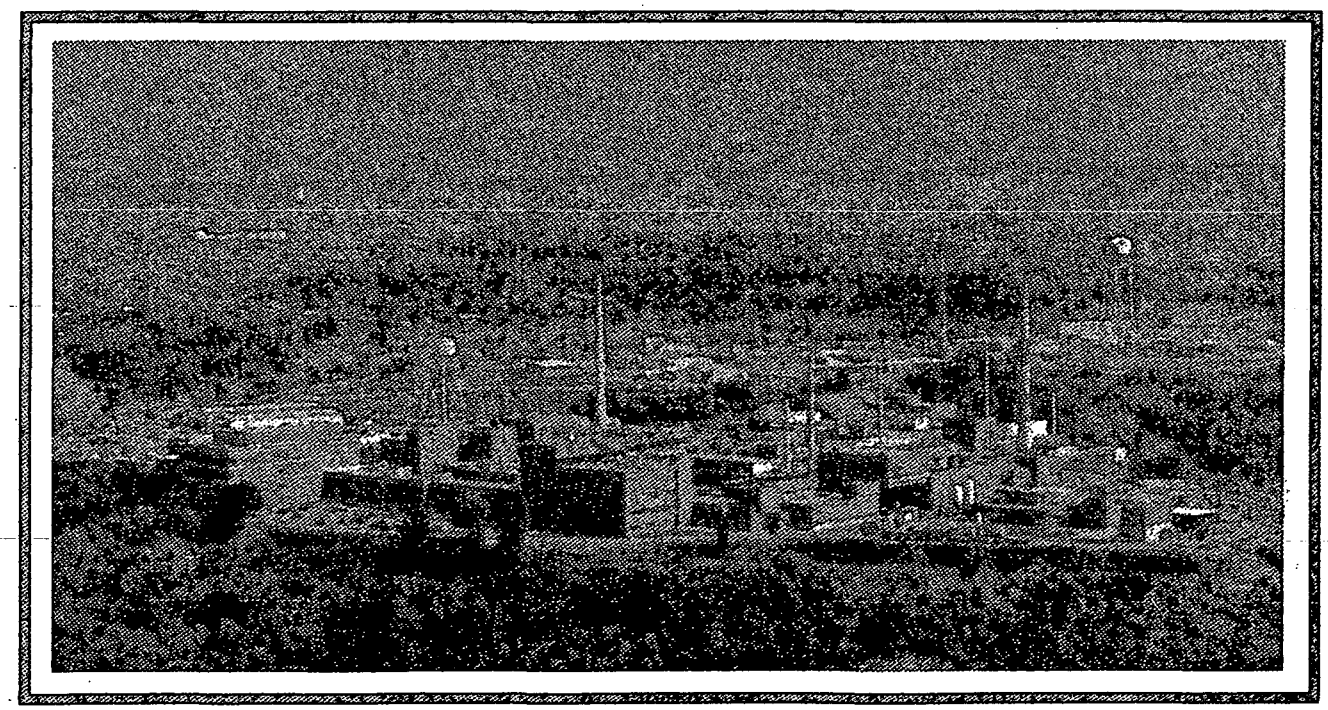
MOUND

Environmental
Restoration
Program

MOUND PLANT

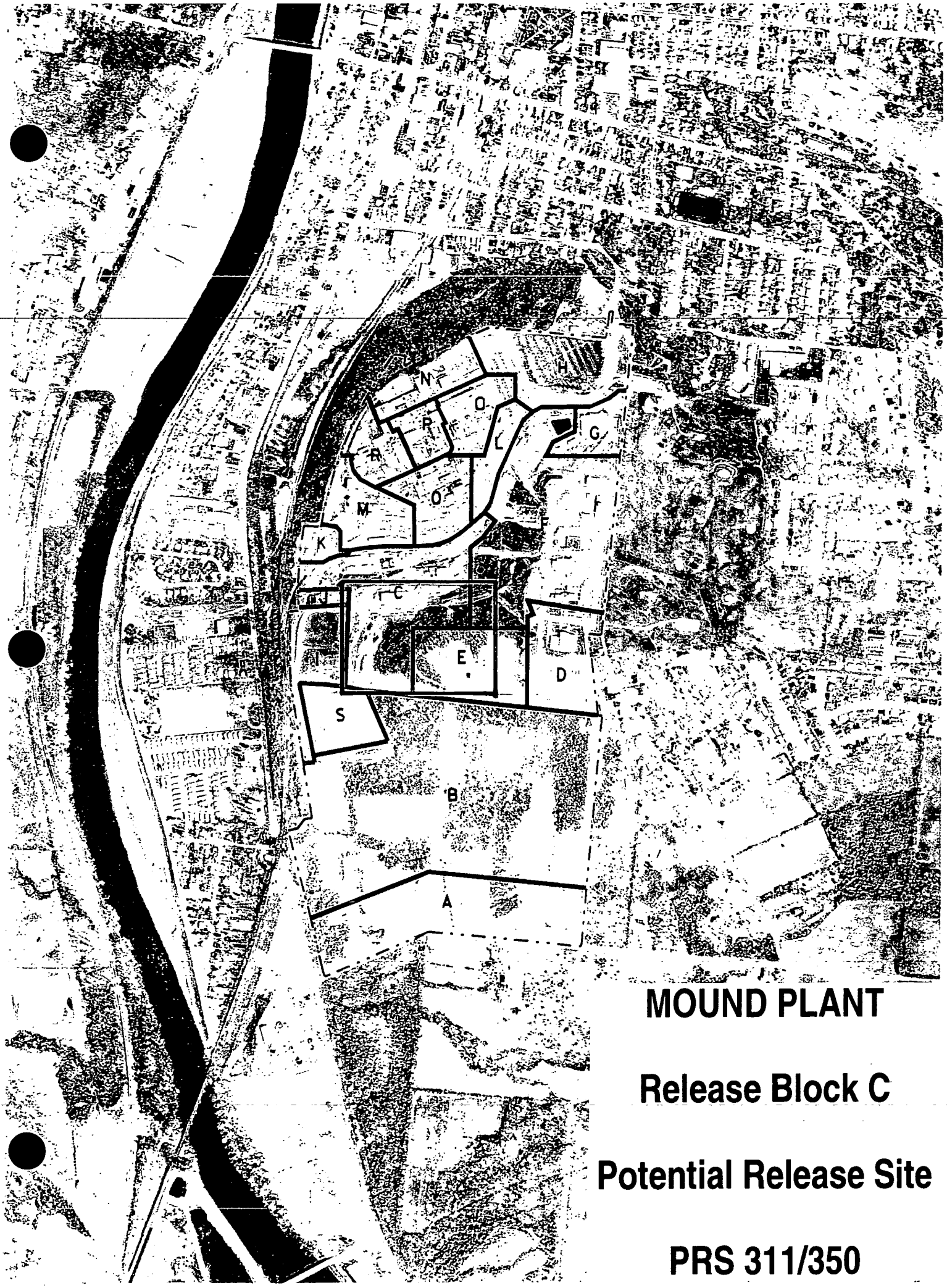
Potential Release Site Package

PRS # 311/350



PRS 311/350

REV	DESCRIPTION	DATE
PUBLIC RELEASE 0	Available for comment.	Mar. 4, 1996
FINAL 1	Comment period expired. No comments. Recommendation page annotated.	Oct. 10, 1996
FINAL 2	Signature page changed to show correct review period.	Nov. 19, 1996

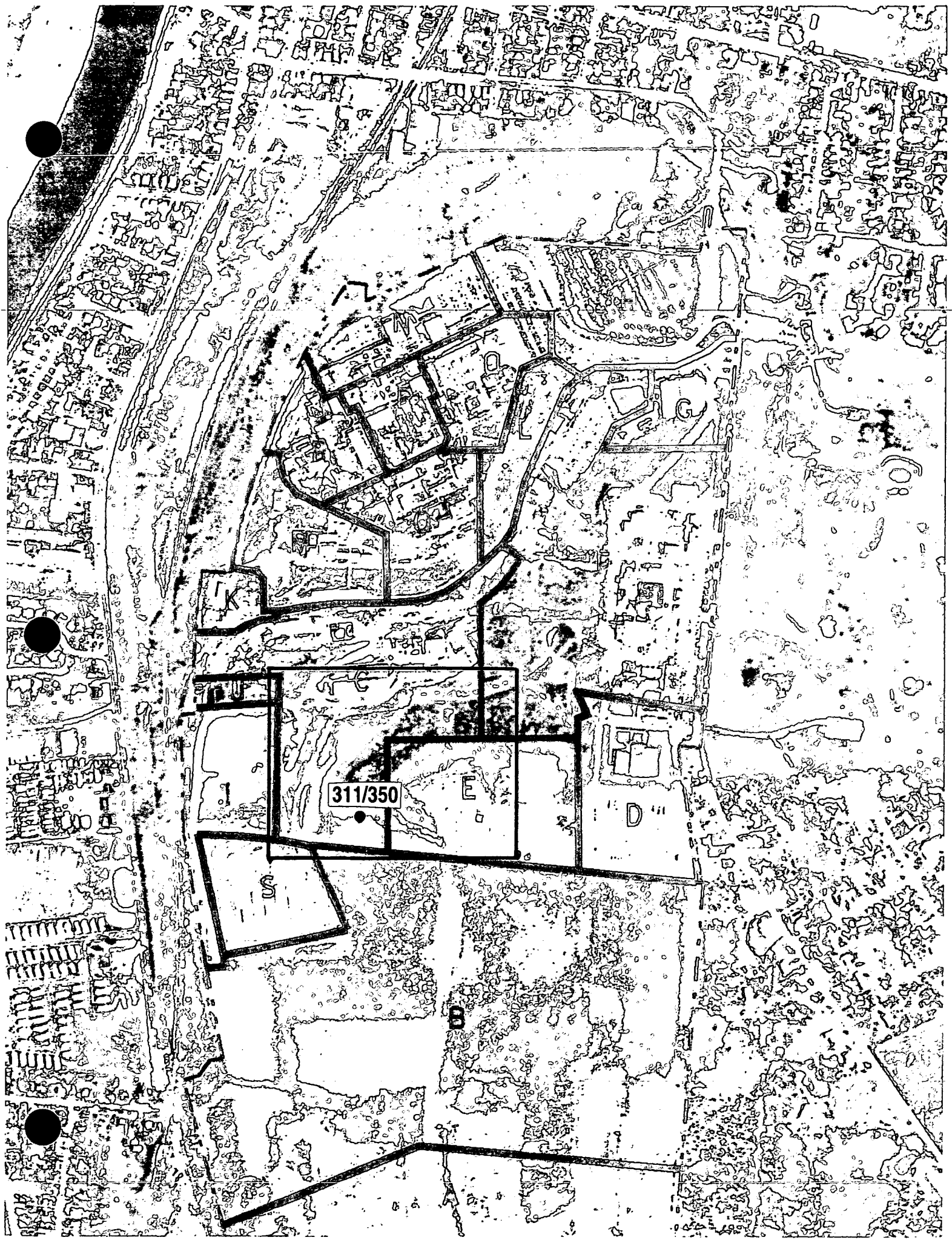


MOUND PLANT

Release Block C

Potential Release Site

PRS 311/350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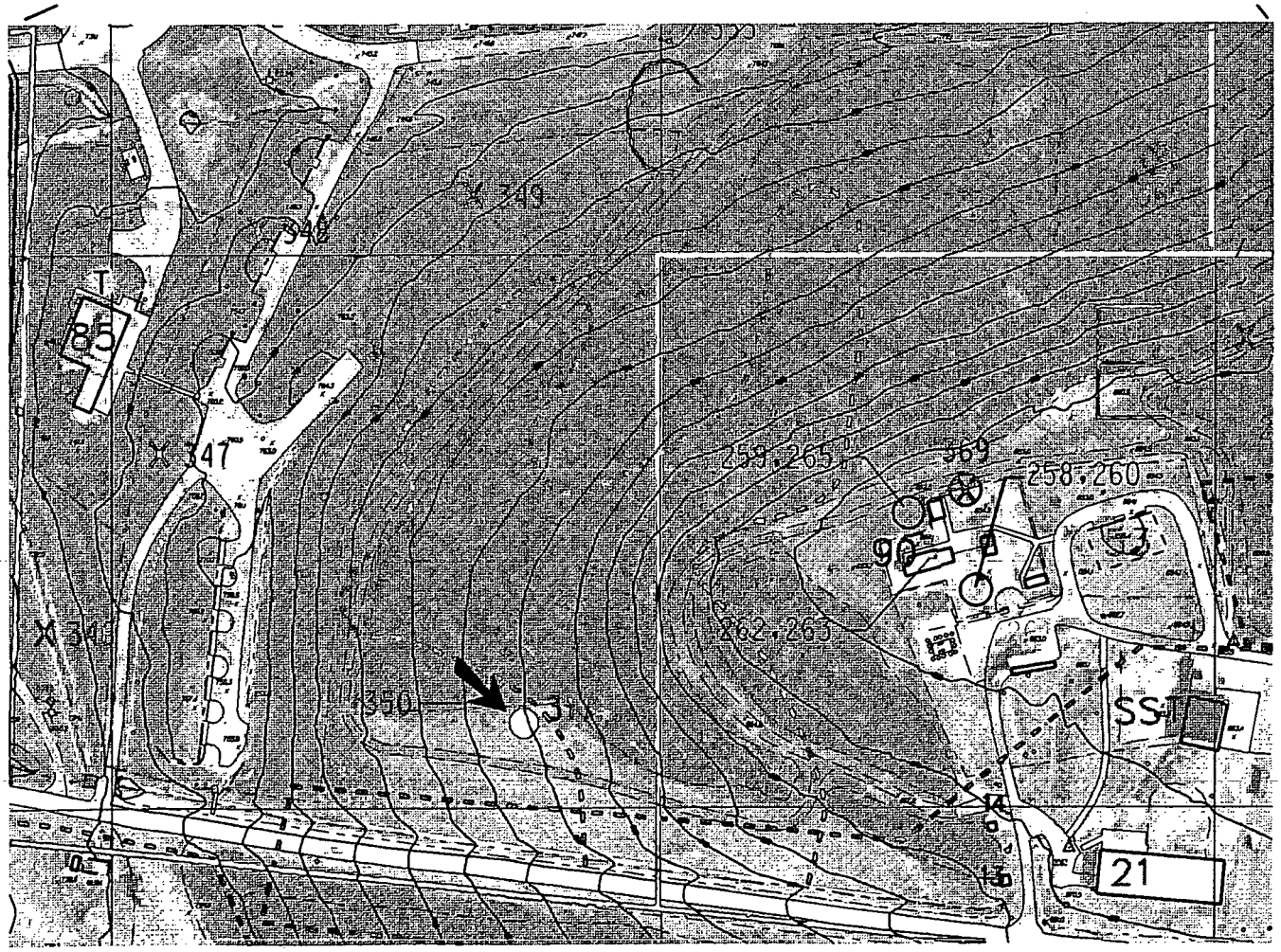
MOUND PLANT

Release Block C

Potential Release Site

PRS 311/350



311/350

PRS 311/350

PRS HISTORY:

PRS 350 consists of approximately 5 acres of soil west of Building 21. PRS 350 was created due to reported plutonium-238 detections.[3] PRS 311 is a soils location residing approximately 500 feet east of Building 21 and just outside the PRS 350 area.[1] PRS 311 was created due to a single plutonium detection.[1] No radioactive or hazardous processes or activities are known to have occurred at the location of PRS 350 or PRS 311.

CONTAMINATION:

In December 1994, several soil samples ranging from 25 to 50 pCi/g plutonium-238 were reported in the PRS 350 area.[3] In July of 1983, 28.9 pCi/g of plutonium-238 was identified in a single surface soil sample at location PRS 311.[2]

All reported plutonium-238 detections at PRS 311/350 were less than the plutonium-238 removal criteria used for the Miami-Erie Canal Removal Action (75 pCi/g).

READING ROOM REFERENCES:

1) OU9, Site Scoping Report: Volume 12 - Site Summary Report. (pages 5-7)
2) OU9, Site Scoping Report: Volume 3 - Radiological Site Survey Report. (pages 8-14)
3) OU5, Area Phase I Investigation Report, December 1994. (pages 15-26)
4) OU5, Operational Area Phase I Investigation Non-AOC Report, Volume II, Appendices A-G. (pages 27-31))

PREPARED BY:

George Liebson, Member of EG&G Technical Staff
Eric Horstman, Member of EG&G Technical Staff

MOUND PLANT
PRS 311/350
SOIL CONTAMINATION AREA
WEST OF BUILDING 21

RECOMMENDATION:

Potential Release Site (PRS) 311 was identified during a 1983 site survey project which discovered an isolated plutonium-238 reading of 29 pCi/g. This value is below the DOE clean-up standard of 100 pCi/g and the OU4 canal clean-up level of 75 pCi/g for plutonium as well as the 10^{-5} risk guideline value of 55 pCi/g. An isolated thorium-232 measurement of 2 pCi/g was below the D&D clean-up level of 5 pCi/g surface and 15 pCi/g subsurface for thorium, therefore, NO FURTHER ASSESSMENT is recommended for PRS 311.

PRS 350 consists of detectable plutonium-238 concentrations (25-50 pCi/g) discovered in the vicinity of PRS 311 during the OU5 Phase I Investigation in 1994. Plutonium concentrations were below the DOE clean-up standard of 100 pCi/g , the OU4 canal clean-up level of 75 pCi/g for plutonium , and the 10^{-5} risk guideline value of 55 pCi/g. . No radiological processes are known to have occurred at the location of PRS 350 and the age of the area's vegetation suggests that the area of PRS 350 did not experience any large scale earth moving operations that could have deposited contamination from another area of the plant. Based upon this information, PRS 350 is recommended for NO FURTHER ASSESSMENT.

CONCURRENCE:

DOE/MB: Arthur W. Kleinrath, 2/29/96
Arthur W. Kleinrath, Remedial Project Manager (date)

USEPA: Timothy J. Fischer, 3/4/96
Timothy J. Fischer, Remedial Project Manager (date)

OEPA: Brian K. Nickel, 3/4/96
Brian K. Nickel, Project Manager (date)

SUMMARY OF COMMENTS AND RESPONSES:

Comment period from ~~4/15/96~~ 3/15/96 to ~~5/15/96~~ 4/1/96.

☒ No comments were received during the comment period.

☐ Comment responses can be found on page_____ of this package.

REFERENCE MATERIAL
PRS 311/350

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
300	Area 19, Underground Waste Transfer Line	G-6 G-7 G-8 G-9	Historical	Plutonium-238, Nitric acid	1, 4, 5, 18	Plutonium-238	S	1, 6, 18	14	Tables B.1, B.6, B.7, and B.8	6, 8
301	Building 38 In-Line Incinerator	G-9	Historical	Plutonium-238	2, 4	None Suspected D&D 1986			No Data - pending verification		
302	Area D, Acid Leach Field	H-8 H-9 G-8 G-9	Historical	Plutonium-238, Thorium	1, 4, 5, 18	Plutonium-238	S	6	4, 6 14	Tables B.6, B.7, and B.8 Table B.1 (Table IV.10 in Ref. 6)	8 6
303	Warehouse 14 (AKA Pad 14)	G- 9	Grounds	Thorium sludge constituents Plutonium-238	4	None Suspected			14	Table B.9 RSS[c] Locations C0127 and C0128 (Appendix E in Ref. 6)	6
304	Excavated Materials Disposal Area (AKA Rader's Hill)	I-8	Grounds	Thorium	4	Thorium < 2 pci/gm	S	6	14	Table B.1	6
305	SM Stack	G-9	In service	Plutonium-238	4	None suspected beyond routine emissions	A	4, 18	No Data		
306	SM/PP Hill Seep 0609	L-9	NA	None suspected	5, 18	None suspected			No Data		
307	Site Survey Project Potential Hot Spot Location C0007	E-9	Grounds	Thorium	6	Isolated activity from unknown source			14	Table B.9 (Appendix E in Ref. 6)	6
308	Site Survey Project Potential Hot Spot Location C0028	F-10	Grounds	Thorium	6						
	Site Survey Project Potential Hot Spot Location S0307	F-9	Grounds	Thorium	6						
	Site Survey Project Potential Hot Spot Location S0647	H-9	Grounds	Cesium-137	6				15	Table B.9 (Appendix E in Ref. 6)	6

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.
311	Site Survey Project Potential Hot Spot Location S0706	I-6	Grounds	Plutonium-238	6	(Cont.)			13	Table B.9 (Appendix E in Ref. 6)	6
312	Site Survey Project Potential Hot Spot Location S0971	J-9	Grounds	Thorium	6				14	Table B.9 (Appendix E in Ref. 6)	6
313	Site Survey Project Potential Hot Spot Location S0982	I-8	Grounds	Thorium	6						
314	Farm Trash Area	M-5	Historical	Waste oil	5, 18	Suspected, not confirmed			3, 4, 5, 6 14	Tables B.6, B.7, and B.8 Table B.9 RSS[c] Location S0237 (Appendix E in Ref. 6)	7 6
315	Waste Transport Vehicles	SITE-WIDE	In service	Explosives Programs wastes Mixed wastes Laboratory chemicals Low activity wastewater from SM/PP Complex to WD Building	4, 5, 18	None Suspected			No Data		
316	Trash Dumpsters	SITE-WIDE	In service	Solid wastes	4, 5, 18	None Suspected			No Data		
317	Ventilation Hoods	SITE-WIDE	In service	Paint fumes, Acidic and caustic gases Asbestos, Acetone, Trichloroethylene, Benzene, Chloroform, Toluene	4, 5, 18	None Suspected			No Data		
	Transformers	SITE-WIDE	In service	Polychlorinated biphenyls	4	All PCB oils replaced			No Data		
	Epoxy Resin Disposal	G-7 H-7	In service	Epoxy resins	5, 18	None Suspected			No Data	Table B.9	6
	Dayton Unit I	Dayton	Historical	Radioisotopes (including plutonium-239) Spent acids (including hydrochloric acid)	1, 4	None Suspected			No Data		

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 Scping 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, OU6, (FINAL)."
9. Fentiman 1990 "Characterization of Mound's Hazardous, Radioactive and Mixed Wastes."
10. DOE 1992f "Operable Unit 9, Site Scpoing 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 1992l "Closure Report, Building 34 - Aviation Fuel Storage Tank."
"Closure Report, Building 51 - Waste Storage Tank."
"Operable Unit 1, Remedial Investigation Report."
"Active Underground Storage Tank Plan."

Document Control No. DGC
W.P. DAVIS

Environmental Restoration Program

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

MOUND PLANT
MIAMISBURG, OHIO

June 1993

FINAL

Department of Energy
Albuquerque Field Office

Environmental Restoration Program
EG&G Mound Applied Technologies

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

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

2.1.4. Sample Analyses

2.1.4.1. FIDLER Screening

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

2.1.4.2. Radiochemical Analysis for Plutonium-238

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

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

2.1.4.3. Radiochemical Analysis for Thorium

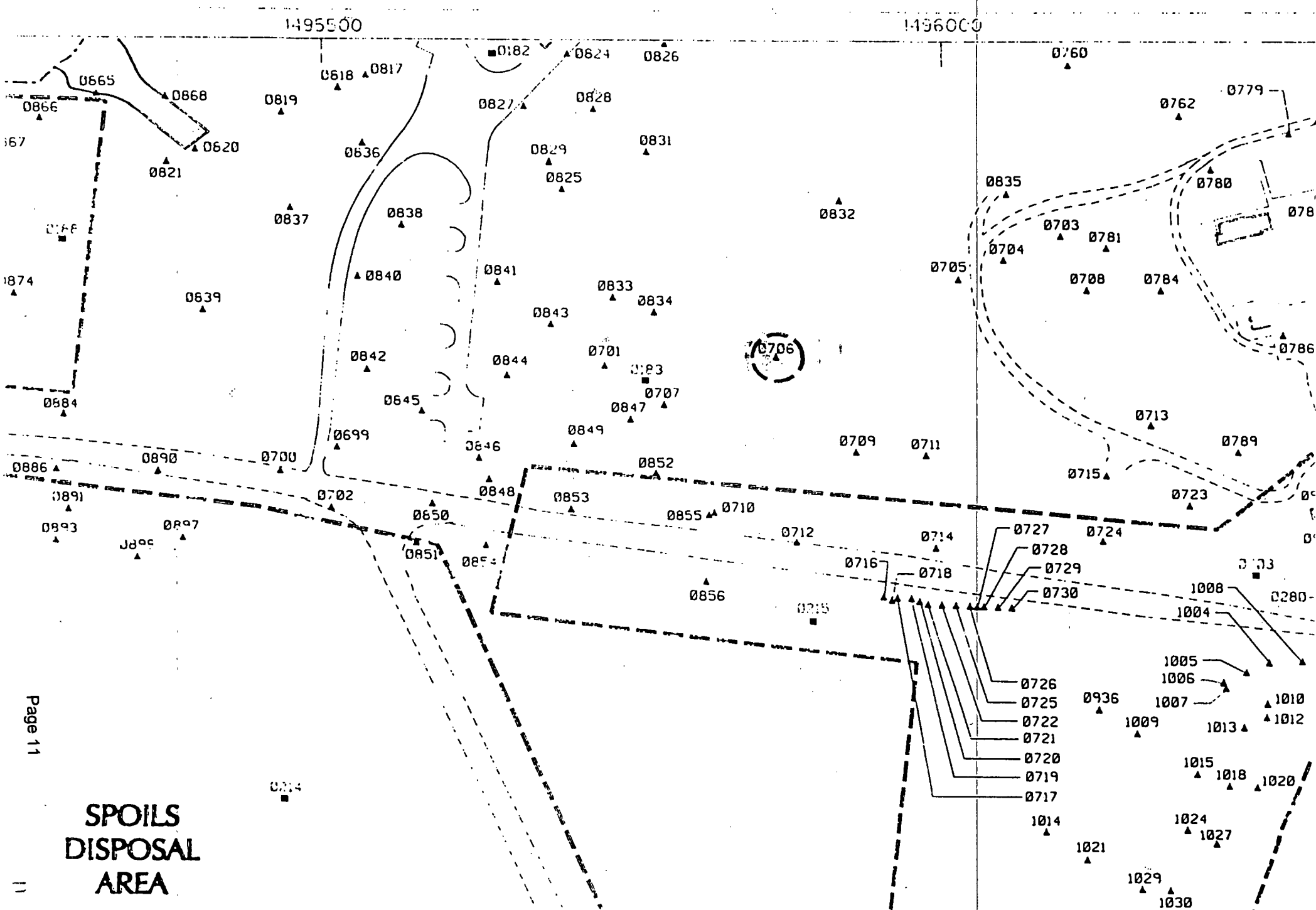
Samples with thorium concentrations in excess of 2 pCi/g by FIDLER screening were also radiochemically analyzed for thorium, resulting in the radiochemical analysis of about 12 percent of the samples. The LDLs for the thorium isotopes using radiochemical procedures were estimated to be

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

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

2.1.4.4. Gamma Spectroscopy

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



SPOILS DISPOSAL AREA

RADIOCHEMICAL ANALYSIS

Map Location[a]	Coordinates South	Coordinates West	MRC ID No.	Mo-Yr	Depth (inch)	Pu-238 (pCi/g)	Thorium[b] (pCi/g)	Tritium (pCi/mL)	Co-60 (pCi/g)	Cs-137 (pCi/g)	Ra-226 (pCi/g)	Am-241 (pCi/g)
S0701	3275	4165	2937	10-83	0	0.37	b					
S0702	3295	4415	2934	10-83	0	0.16	b					
S0703	3325	3785	5851	07-84	0	0.51	b					
S0704	3325	3835	4019	10-83	0	0.11	b					
S0705	3325	3875	5852	07-84	0	0.24	b					
S0706	3325	4035	4021	07-84	0	28.90	b					
S0707	3325	4135	5853	07-84	0	0.37	b					
S0708	3375	3785	5850	07-84	0	0.05	b					
S0709	3425	4010	5855	07-84	0	7.67	b					
S0710	3425	4135	5854	07-84	0	0.30	b					
S0711	3450	3960	4018	10-83	0	1.88	b					
S0712	3475	4085	5856	07-84	0	7.84[c]	25.25[c]					
S0713	3500	3785	5849	07-84	0	0.23	b					
S0714	3525	3985	5857	07-84	0	3.01	b					
S0715	3525	3835	4017	10-83	0	0.45	b					
S0716	3545	4040	10466	08-85	0	3.06	b					
S0717	3550	4030	10465	08-85	0	12.05	b					
S0718	3550	4035	4020	10-83	0	0.28	b					
S0719	3555	4020	10464	08-85	0	17.10	b					

f Map Location[e]	Coordinates South	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)
C0289	2422.7	2081.0	None[d]	07-84	0	NR	0.6					
			None[d]	07-84	12	NR	1.1					
			None[d]	07-84	24	NR	0.5					
			None[d]	07-84	36	NR	0.8					
			None[d]	07-84	48	NR	1.0					
			None[d]	07-84	60	NR	0.8					
C0290	2401.5	2102.1	None[d]	07-84	0	NR	0.7					
			None[d]	07-84	12	NR	0.8					
			None[d]	07-84	24	NR	0.8					
			None[d]	07-84	36	NR	0.8					
			None[d]	07-84	48	NR	0.6					
			None[d]	07-84	60	NR	0.9					
			None[d]	07-84	72	NR	0.8					
C0291	2915.3	2490.3	None[d]	07-84	0	NR	0.6					
			None[d]	07-84	12	NR	0.4					
			None[d]	07-84	24	NR	0.5					
			None[d]	07-84	36	NR	0.4					
			None[d]	07-84	48	NR	0.4					
			None[d]	07-84	60	NR	0.3					
			None[d]	07-84	72	NR	0.5					
			None[d]	07-84	84	NR	0.4					
			None[d]	07-84	96	NR	0.7					
			None[d]	07-84	108	NR	0.6					
			None[d]	07-84	120	NR	0.3					
			None[d]	07-84	132	NR	0.3					
S1092	2185	3362	8413	12-84	f	0.31	323.5[g]					

[redacted] location on Plate 1.

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

[redacted]

[d]No MRC ID assigned because *in situ* gamma spectrometry was performed for thorium-232.

[e]Gamma results could not be confirmed using the gamma spectroscopy printout given in this appendix.

[f]This sample was given as "SS". For mapping purposes (Plates 1 and 5), this is assumed to be a surface sample.

[g]Results were given isotopically for this sample and included 0.99 pCi/g thorium-228; 321 pCi/g thorium-230; and 1.5 pCi/g thorium-232, for a total of 323.5 pCi/g.

LDL - The sample result was below the Lower Detection Limit, which was estimated to be 0.5 pCi/g for cesium-137, cobalt-60, and americium-241. The LDL for radium-226 or actinium-227 was estimated to be 1 pCi/g.

NR - No result provided. (Note: no samples were taken for plutonium-238 when *in situ* gamma spectrometry was performed.)

Document Control No: _____

Environmental Restoration Program

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

MOUND PLANT
MIAMISBURG, OHIO

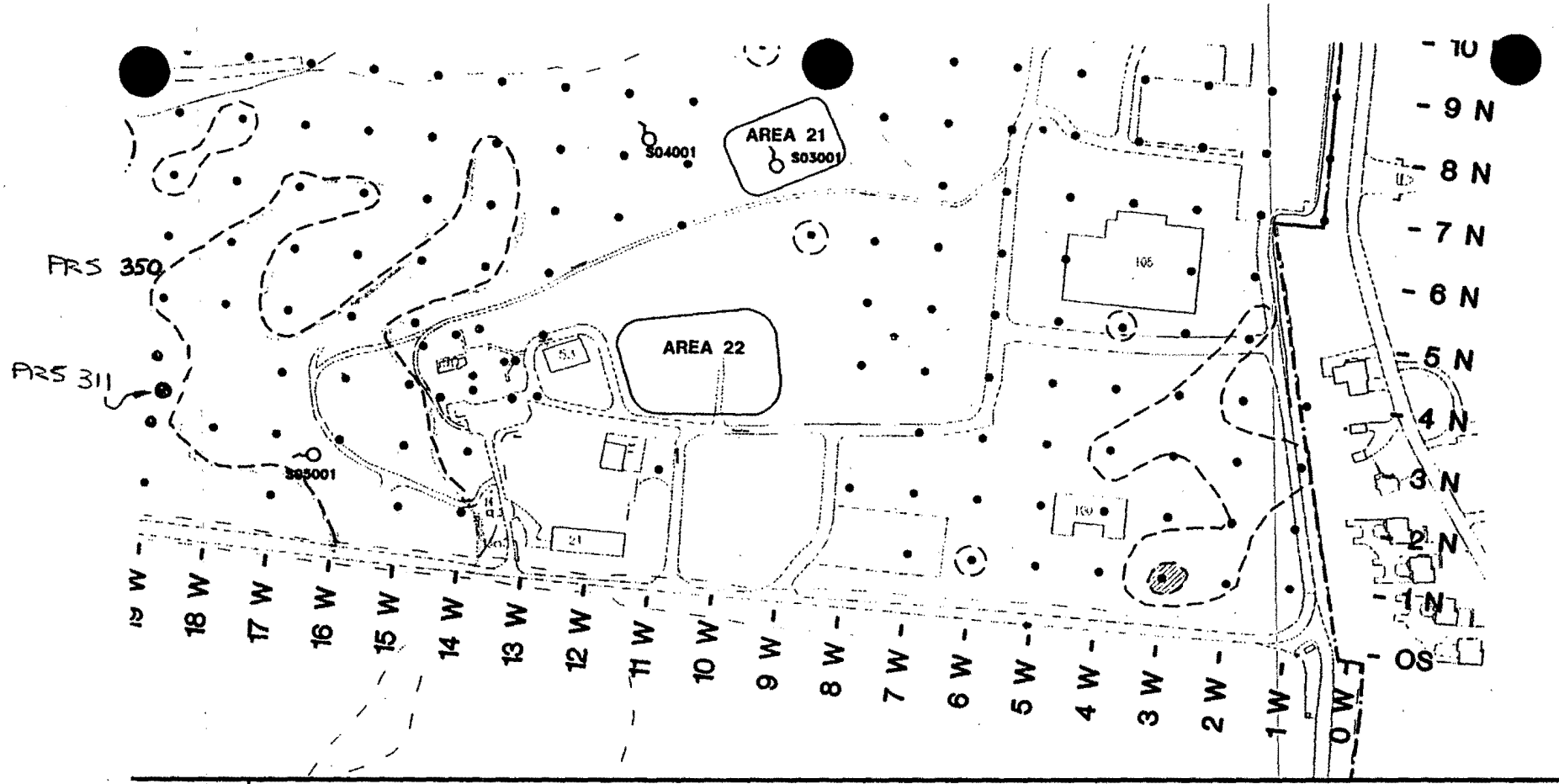
VOLUME I - TEXT

June 1995

Final (Revision 0)

U.S. Department Of Energy
Ohio Field Office

EG&G Mound Applied Technologies



TE 3

TITLE:

LOCATIONS OF ELEVATED SURFACE SOIL PU-238 ACTIVITY

Structures

Plant Boundary

Paved/Unpaved Roadway

Ephemeral Stream

OU5 Boundary

Non-AOC Sampling and Survey Locations: Soil Gas Samples, Soil Screening Facility Radiological Samples, and FIDLER Survey

Monitoring Well

Piezometer

1 N - 1 W - Grid Lines

Seeps

Contour for Pu-238 Concentrations Between 25 - 50 pCi/g

Contour for Pu-238 Concentrations 50 pCi/g

Note: Information on Basemap is Derived from the Weston OU9 Site Scoping Report, 1993, & Referenced to the 1927 Ohio State Plane Coordinate System

AREAS OF SPECIAL INTEREST AND ADDITIONAL SAMPLI

- Surface Soil Sampling Locations (Area H Pyrotechnic Waste Disposal Area and Building 34 Firefighting Training Area
- Soil Gas and Soil Screening Facility Radiological Sampling Locations (Fuel Area and Additional Sampling[a])
- Soil Screening Facility Radiological Sampling Locati (Additional Sampling[a])
- Surface and Subsurface Soil Sampling Locations (Building 24)

a OU5 Discussion Paper (See Appendix B)

FIDLER DATA

Table II.2. Summary of Elevated Surface Radiological Activity in Non-AOC (FIDLER Survey)
Page 1 of 5

Location	Channel 1 (cpm)		Channel 2 (kcpm)		Out Channel (kcpm)
	CC	RDG	CC	RDG	RDG
1N2	114.9	130	6.4	8.0	a
1N3		--		8.0	a
1N4		--		7.0	a
1N5		--		8.0	a
1N6		--		7.5	a
1N14		120		9.0	a
1N15		--		9.0	a
2N2	102.1	--	5.4	9.0	a
2N3		--		8.5	a
2N5		--		6.5	a
2N6		--		6.0	a
2N8		--		6.5	a
2N14		--		8.0	a
2N15	173.2	--	8.7	9.0	a
2N16		--		9.5	a
2N18		--		9.5	a
2N19		--		10.0	a
3N1	114.9	--	6.4	6.5	a
3N2	149.4	--	6.7	8.5	a
3N3		150		8.5	a
3N4		150		9.0	a
3N5	136.8	--	5.2	7.0	a
3N6		--		6.0	a
3N16	200.1	--	9.7	10.0	a
3N17		--		10.5	a
3N18		--		10.0	a
3N19	173.2	--	8.7	9.0	a

FIDLER DATA

Table II.2. Summary of Elevated Surface Radiological Activity in Non-AOC (FIDLER Survey)
Page 2 of 5

Location	Channel 1 (cpm)		Channel 2 (kcpm)		Out Channel (kcpm)
	CC	RDG	CC	RDG	RDG
3N20	130	--	5.2	9.0	a
3N21		--		8.0	a
3N22	138	150	7.3	8.5	a
4N4	136.8	--	5.2	7.0	a
4N6.5		1000		80.0	45.0
4N5		--		5.5	a
4N7		--		6.0	a
4N13	165.3	--	7.6	8.5	a
4N19	173.2	--	8.7	9.5	a
4N20	130	--	5.2	5.5	a
4N22	154	--	6.7	8.0	a
5N13	173.2	--	8.7	9.5	a
5N15		--		9.5	a
5N16	200.1	--	9.7	11.0	a
5N18		--		10.5	a
5N19	130	--	5.2	9.5	a
5N20		--		6.5	a
5N21		--		6.0	a
5N23	138	--		6.5	a
6N3	154	--	6.7	9.0	a
6N7	123.1	140	4.5	9.0	a
6N8	177.7	--	9.3	9.5	a
6N9		--		9.5	a
6N11	173.2	--	8.7	9.5	a
6N12		--		10.0	a
6N13		190	8.7	9.5	a
6N14		---		11.0	a

FIDLER DATA

Table II.2. Summary of Elevated Surface Radiological Activity in Non-AOC (FIDLER Survey)
Page 3 of 5

Location	Channel 1 (cpm)		Channel 2 (kcpm)		Out Channel (kcpm)
	CC	RDG	CC	RDG	RDG
6N15	173.2	--	8.7	10.0	a
6N16		--		10.0	a
6N17		--		10.0	a
6N18	130	--	5.2	9.0	a
6N19		155		7.5	a
6N20		--		6.5	a
6N21		180		6.5	a
7N7	123.1	--	4.5	5.5	a
7N11	173.2	--	8.7	9.5	a
7N12		175		10.5	a
7N15		--		9.5	a
7N16		--		10.0	a
7N18	130	150	5.2	10.0	a
7N19		--		5.5	a
7N21	154	--	6.7	7.5	a
7N23	141.4	--	5.3	8.0	a
7N27		--		8.5	a
8N7	123.1	--	4.5	8.5	a
8N8		--		7.5	a
8N12	202.4	--	10.4	10.5	a
8N16	130	--	5.2	6.0	a
8N17		--		6.0	a
8N20		--		5.5	a
8N23	118.4	--	6.9	7.0	a
8N24	154	--	6.7	7.0	a
9N1	123.1	--	9.9	10.5	a
9N3		125	4.5	5.0	a

Table II.3. Summary of Elevated Surface Soil Radiological Activity in the Non-AOC
Page 1 of 2

MOUND SOIL SCREEN DATA

Grid Location*	Mound Soil Screening Facility Data	
	Plutonium-238 (pCi/g)	Thorium-232 (pCi/g)
1N2	25	0.9
1N3	60	ND
1N6	25	ND
1N14	38	ND
1N15	34	ND
2N2	25	ND
2N15	37	ND
2N16	28	ND
2N17	31	ND
2N18	40	ND
3N1	38	ND
3N2	49	ND
3N3	25	ND
3N4	31	ND
3N15	28	ND
3N16	36	ND
3N17	35	ND
3N18	46	ND
4N3	25	ND
4N16	31	ND
4N18	37	ND
4N19	35	ND
5N2	30	ND
5N4	27	ND
5N14	25	ND
5N15	41	ND
5N18	39	ND

MOUND SOIL SCREEN DATA

Table II.3. Summary of Elevated Surface Soil Radiological Activity
Page 2 of 2

Grid Location[a]	Mound Soil Screening Facility Data	
	Plutonium-238 (pCi/g)	Thorium-232 (pCi/g)
6N9	33	ND
6N14	30	ND
6N16	29	ND
6N17	25	ND
6N19	39	ND
7N14	27	ND
7N18	26	ND
7N23	25	1
9N10	25	ND
11N11	25	ND
12N15	85	ND
15N7	30	ND
16N4	78	ND
16N5	243	ND
19N7	56	15.9
19N8	25 39	2.4 ND
20N6	27	2.6
20N7	37	14.7
22N4	ND	2.0
23N1	25	ND
23N2	26	1
23N5	25	ND
B18001 (Building 24)	38	6.7
21.5N2.5	25	ND

[a] See Plate 1 for grid location

ND Radiological contamination not detected above the Mound Plant Soil Screening Facility detection limits of 25 pCi/g for Pu-238 and 2 pCi/g for Th-232

APPENDIX D

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

	FIDLER SURVEY DATA					MOUND SOIL SCREENING FACILITY DATA			
SMPID	Contamination Criteria CH1	FIDLER Readings CH1	Contamination Criteria CH2	FIDLER Readings CH2	FIDLER Readings Out Channel	Plutonium - 238		Thorium - 232	
	Units: CPM	Units: CPM	Units: KCPM	Units: KCPM	Units: KCPM	Units: pCi/g		Units: pCi/g	
	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	Note:	RESULTS	Note:
01N01	113	60	8.06	3.2	NC	3	a	1	a
01N02	113	130	8.06	8.01	NC	25	b	0.9	a
01N03	113	110	8.06	8.0	NC	60	b	1.1	a
01N04	113	75	8.06	7.0	NC	6	a	0.7	a
01N05	113	100	8.06	8.0	NC	15	a	1.3	a
01N06	113	90	8.06	7.5	NC	25	b	1.1	a
01N07	113	40	8.06	3.5	NC	10		0.3	a
01N14	113	120	8.06	9.0	NC	38	b	1.1	a
01N15	113	105	8.06	9.0	NC	34	b	1	a
01N16	210.6	130	12.22	9.0	NC	NR		NR	
01N17	210.6	135	12.22	9.0	NC	21	a	0.7	a
01N18	210.6	120	12.22	9.0	NC	24	a	0.6	a
01N19	210.6	135	12.22	9.0	NC	NR		NR	
01N21	170.3	110	9.72	7.5	NC	NR		NR	
01N22	210.6	135	12.22	7.0	NC	20	a	0.6	a
01N23	210.6	145	12.22	7.0	NC	17	a	0.9	a
02N01	98.8	70	6.76	4.4	NC	12	a	0.5	a
02N02	98.8	90	6.76	9.0	NC	25	b	1	a
02N03	98.8	90	6.76	8.5	NC	21	a	0.9	a
02N04	98.8	30	6.76	4.5	NC	NR		NR	
02N05	98.8	60	6.76	6.5	NC	19	a	0.8	a
02N06	98.8	60	6.76	6.0	NC	17	a	0.8	a
02N07	98.8	60	6.76	4.5	NC	1	a	0.4	a
02N08	98.8	100	6.76	6.5	NC	NR		NR	
02N11	157.3	55	8.45	3.5	NC	0	a	0.5	a
02N14	98.8	110	6.76	8.0	NC	6	a	0.5	a
02N15	179.4	120	10.92	9.0	NC	37	b	1	a
02N16	179.4	140	10.92	9.5	NC	28	b	1	a
02N17	179.4	130	10.92	6.0	NC	31	b	0.9	a

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

	FIDLER SURVEY DATA					MOUND SOIL SCREENING FACILITY DATA			
SMPID	Contamination Criteria CH1	FIDLER Readings CH1	Contamination Criteria CH2	FIDLER Readings CH2	FIDLER Readings Out Channel	Plutonium - 238		Thorium - 232	
	Units: CPM	Units: CPM	Units: KCPM	Units: KCPM	Units: KCPM	Units: pCi/g		Units: pCi/g	
	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	Note:	RESULTS	Note:
02N18	179.4	170	10.92	9.5	NC	40	b	1	a
02N19	179.4	150	10.92	10.0	NC	20	a	1	a
02N20	130	85	6.5	6.5	NC	18	a	1.3	a
02N21	130	90	6.5	6.5	NC	NR		NR	
02N22	179.4	115	10.92	7.0	NC	21	a	0.8	a
02N23	179.4	80	10.92	6.5	NC	15	a	1	a
03N01	113	105	8.06	6.5	NC	38	b	0.7	a
03N02	152	145	8.45	8.5	NC	49	b	0.9	a
03N03	152	150	8.45	8.5	NC	25	b	1	a
03N04	152	150	8.45	9.0	NC	31	b	0.8	a
03N05	137.8	100	6.5	7.0	NC	9	a	0.9	a
03N06	137.8	100	6.5	6.0	NC	21	a	0.7	a
03N07	137.8	100	6.5	5.0	NC	13	a	0.8	a
03N13	170.3	90	9.72	6.0	NC	6	a	0.6	a
03N14	170.3	75	9.72	5.5	NC	9	a	0.5	a
03N15	210.6	150	12.22	9.5	NC	28	b	1.4	a
03N16	210.6	155	12.22	10.0	NC	36	b	0.8	a
03N17	210.6	150	12.22	10.5	NC	35	b	0.8	a
03N18	210.6	150	12.22	10.0	NC	46	b	0.7	a
03N19	179.4	160	10.92	9.0	NC	19	a	1.1	a
03N20	130	80	6.5	9.0	NC	24	a	1.6	a
03N21	130	100	6.5	8.0	NC	22	a	0.9	a
03N22	139	150	9.23	8.5	NC	1	a	1.1	a
03N23	139	100	9.23	6.5	NC	17	a	0.6	a
04N01	157.2	65	8.45	6.1	NC	0	a	0.8	a
04N02	98.8	70	6.72	4.5	NC	7	a	0.4	a
04N03	98.8	90	6.72	5.0	NC	25	b	0.8	a
04N04	137.8	120	6.5	7.0	NC	10	a	1.1	a
04N05	137.8	110	6.5	5.5	NC	20	a	1	a

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

	FIDLER SURVEY DATA					MOUND SOIL SCREENING FACILITY DATA			
SMPID	Contamination Criteria CH1	FIDLER Readings CH1	Contamination Criteria CH2	FIDLER Readings CH2	FIDLER Readings Out Channel	Plutonium - 238		Thorium - 232	
	Units: CPM	Units: CPM	Units: KCPM	Units: KCPM	Units: KCPM	Units: pCi/g		Units: pCi/g	
	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	Note:	RESULTS	Note:
04N06	137.8	100	6.5	5.0	NC	0	a	0.3	a
04N6.5	137.8	1000	6.5	80	45	NC		NC	
04N07	137.8	100	6.5	6.0	NC	19	a	0.8	a
04N08	179.4	100	10.92	8.5	NC	0	a	1.1	a
04N13	170.3	130	9.72	8.5	NC	13	a	0.7	a
04N14	170.3	110	9.72	6.0	NC	16	a	1.4	a
04N15	179.4	170	10.92	8.5	NC	19	a	1.2	a
04N16	179.4	140	10.92	8.0	NC	31	b	0.8	a
04N17	179.4	170	10.92	8.0	NC	15	a	1	a
04N18	179.4	160	10.92	8.5	NC	37	b	1	a
04N19	179.4	150	10.92	9.5	NC	35	b	1.5	a
04N20	130	75	6.5	5.5	NC	21	a	1.1	a
4N21	130	50	6.5	4.5	NC	11	a	0.1	a
4N22	157.3	120	8.45	8.0	NC	0	a	0.9	a
4N23	139	100	9.23	6.5	NC	16	a	0.6	a
5N02	253.5	115	12.48	9.0	NC	30	b	1.2	a
5N03	253.5	95	12.48	5.5	NC	16	a	1.3	a
5N04	253.5	115	12.48	7.5	NC	27	b	1.1	a
05N05	253.5	105	12.48	7.0	NC	1	a	0.8	a
05N06	184.6	70	11.7	4.0	NC	0	a	0.3	a
05N07	184.6	160	11.7	6.5	NC	0	a	0.8	a
05N08	184.6	125	11.7	8.5	NC	18	a	1.2	a
05N13	179.4	145	10.92	9.5	NC	16	a	1.2	a
05N14	179.4	120	10.92	7.0	NC	25	b	0.2	a
05N15	179.4	140	10.92	9.5	NC	41	b	0.5	a
05N16	210.6	140	12.22	11.0	NC	16	a	1.1	a
05N17	210.6	145	12.22	9.0	NC	18	a	1	a
05N18	210.6	165	12.22	10.5	NC	39	b	0.8	a
05N19	130	105	6.5	9.5	NC	7	a	0.9	a

APPENDIX D

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

	FIDLER SURVEY DATA					MOUND SOIL SCREENING FACILITY DATA			
SMPID	Contamination Criteria CH1	FIDLER Readings CH1	Contamination Criteria CH2	FIDLER Readings CH2	FIDLER Readings Out Channel	Plutonium - 238		Thorium - 232	
	Units: CPM	Units: CPM	Units: KCPM	Units: KCPM	Units: KCPM	Units: pCi/g		Units: pCi/g	
	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	Note:	RESULTS	Note:
05N20	130	105	6.5	6.5	NC	18	a	0.9	a
05N21	130	95	6.5	6.0	NC	3	a	0.6	a
05N22	157.3	65	8.45	4.0	NC	20	a	0.9	a
05N23	139	105	9.23	6.5	NC	23	a	0.8	a
06N02	157.3	75	8.45	6.5	NC	19	a	1.3	a
06N03	157.3	120	8.45	9.0	NC	1	a	1.1	a
06N05	253.5	90	12.48	5.0	NC	14	a	1	a
06N06	122.2	90	5.59	4.5	NC	11	a	0.8	a
06N07	122.2	140	5.59	9.0	NC	0	a	1.7	a
06N08	184.6	115	11.7	9.5	NC	24	a	1.4	a
06N09	184.6	150	11.7	9.5	NC	33	b	1	a
06N11	179.4	150	10.92	9.5	NC	20	a	0.8	a
06N12	179.4	175	10.92	10.0	NC	10	a	0.8	a
						13	a	0.8	a
06N13	179.4	190	10.92	9.5	NC	13	a	0.8	a
06N14	179.4	160	10.92	11.0	NC	30	b	1.3	a
06N15	179.4	165	10.92	10.0	NC	6	a	1	a
06N16	179.4	140	10.92	10.0	NC	29	b	0.8	a
06N17	179.4	150	10.92	10.0	NC	25	b	1.3	a
06N18	130	125	6.5	9.0	NC	7	a	0.9	a
06N19	130	155	6.5	7.5	NC	39	b	1.2	a
06N20	130	130	6.5	6.5	NC	18	a	1.1	a
06N21	130	80	6.5	6.5	NC	1	a	0.7	a
06N22	139	125	9.23	5.5	NC	NR		NR	
06N23	139	85	9.23	4.0	NC	18	a	0.5	a
07N01	253.5	140	12.48	8.5	NC	22	a	1.3	a
07N02	115.7	65	6.11	4.5	NC	24	a	0.7	a
07N03	253.5	140	12.48	9.5	NC	21	a	1.5	a
07N04	253.5	135	12.48	8.5	NC	0	a	1.2	a

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

	FIDLER SURVEY DATA					MOUND SOIL SCREENING FACILITY DATA			
SMPID	Contamination Criteria CH1	FIDLER Readings CH1	Contamination Criteria CH2	FIDLER Readings CH2	FIDLER Readings Out Channel	Plutonium - 238		Thorium - 232	
	Units: CPM	Units: CPM	Units: KCPM	Units: KCPM	Units: KCPM	Units: pCi/g		Units: pCi/g	
	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	Note:	RESULTS	Note:
07N05	253.5	125	12.48	8.5	NC	11	a	0.8	a
07N06	122.2	85	5.59	4.5	NC	3	a	0.3	a
07N07	122.2	120	5.59	5.5	NC	12	a	0.9	a
07N11	179.4	170	10.92	9.5	NC	0	a	0.7	a
07N12	179.4	175	10.92	10.5	NC	24	a	0.9	a
07N13	179.4	120	10.92	6.5	NC	7	a	0.6	a
07N14	179.4	100	10.92	8.5	NC	27	b	0.8	a
07N15	179.4	140	10.92	9.5	NC	6	a	1.2	a
07N16	179.4	170	10.92	10.0	NC	13	a	0.9	a
07N17	179.4	150	10.92	8.5	NC	0	a	0.8	a
07N18	130	150	6.5	10.0	NC	26	b	1.3	a
07N19	130	85	6.5	5.5	NC	20	a	1.1	a
07N20	157.3	120	8.45	6.0	NC	12	a	0.6	a
07N21	157.3	90	8.45	7.5	NC	7	a	0.7	a
07N22	143	95	6.63	5.0	NC	5	a	0.4	a
						12	a	0.8	a
07N23	143	115	6.63	8.0	NC	11	a	0.8	a
						25	b	1.0	a
07N24	143	100	6.63	5	NC	12	a	0.5	a
						19	a	0.6	a
07N25	143	70	6.63	5	NC	10	a	0.5	a
07N26	143	90	6.63	4.5	NC	4	a	0.3	a
						0	a	0.5	a
07N27	143	110	6.63	8.5	NC	10	a	0.9	a
						3	a	0.7	a
08N01	253.5	175	12.48	9.5	NC	4	a	0.9	a
08N02	122.2	75	5.59	4.5	NC	WIPE	c	WIPE	c
08N03	122.2	85	5.59	4.0	NC	WIPE	c	WIPE	c
08N04	130	80	6.5	3.5	NC	WIPE	c	WIPE	c

Document Control No.

Environmental Restoration Program

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

MOUND PLANT
MIAMISBURG, OHIO

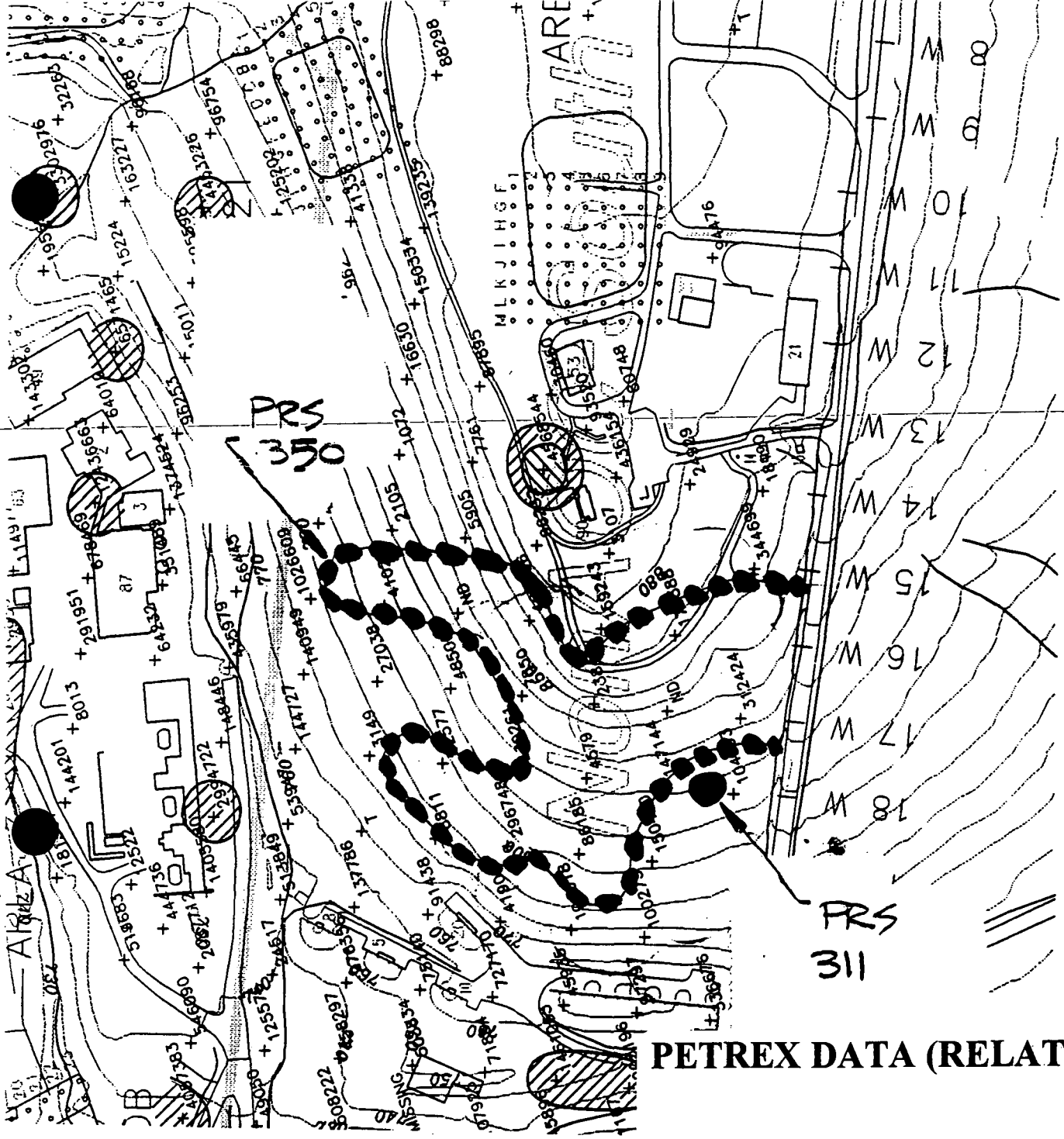
VOLUME II - APPENDICES A-G

June 1995

Final (Revision 0)

U.S. Department of Energy
Ohio Field Office

EG&G Mound Applied Technologies

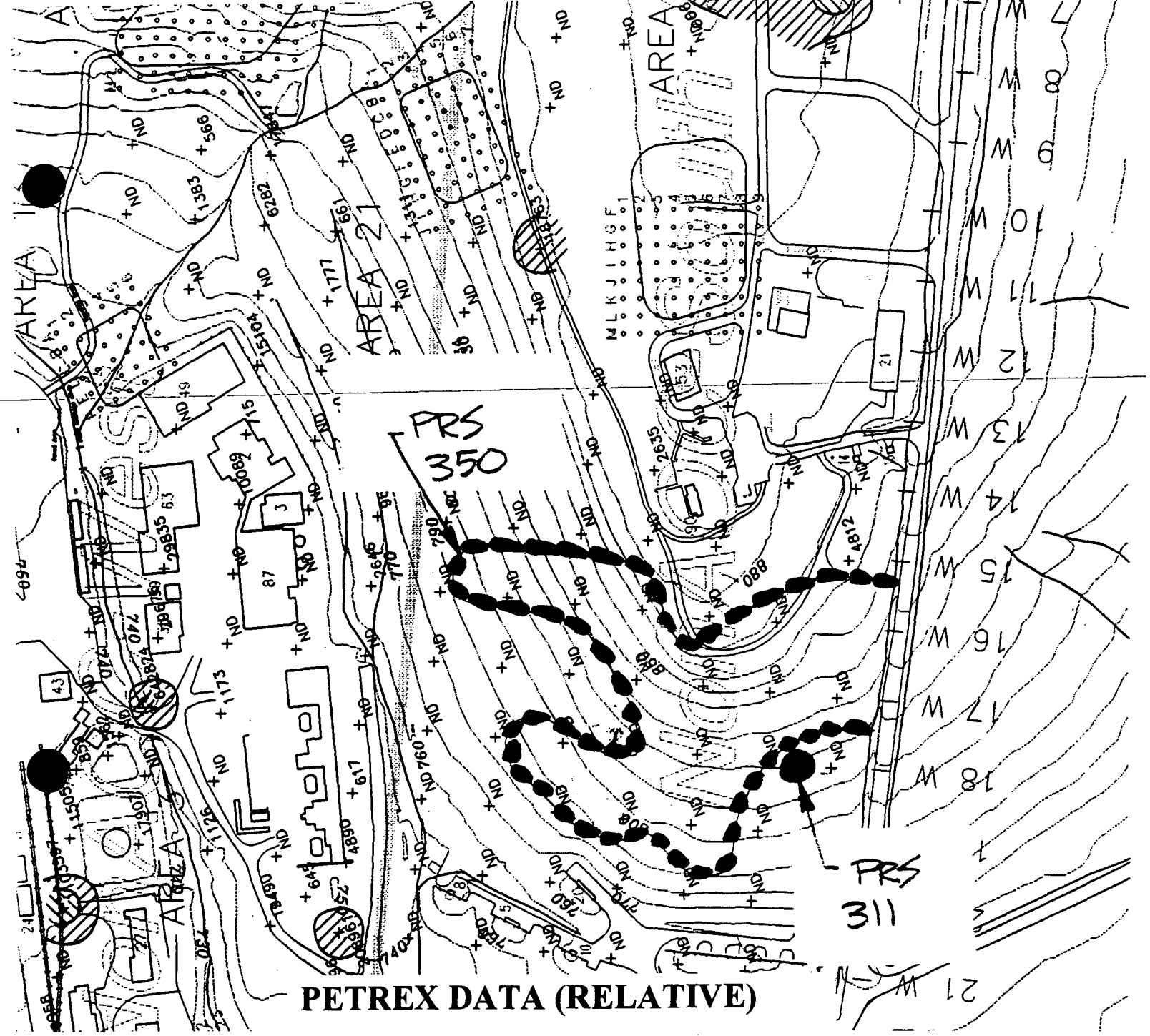


LEGEND				
Relative Response Values (in ion counts):				
NonAOC–South	NonAOC–West	NonAOC–East	NonAOC–North	Area 61
≥ 4,200,000	≥ 20,000,000	≥ 5,000,000	≥ 10,000,000	≥ 5,800,000
850,000–4,199,999	2,600,000–19,999,999	850,000–4,999,999	1,500,000–9,999,999	1,400,000–5,799,999

Relative Response

Total Aromatic Hydrocarbons

Plate 2

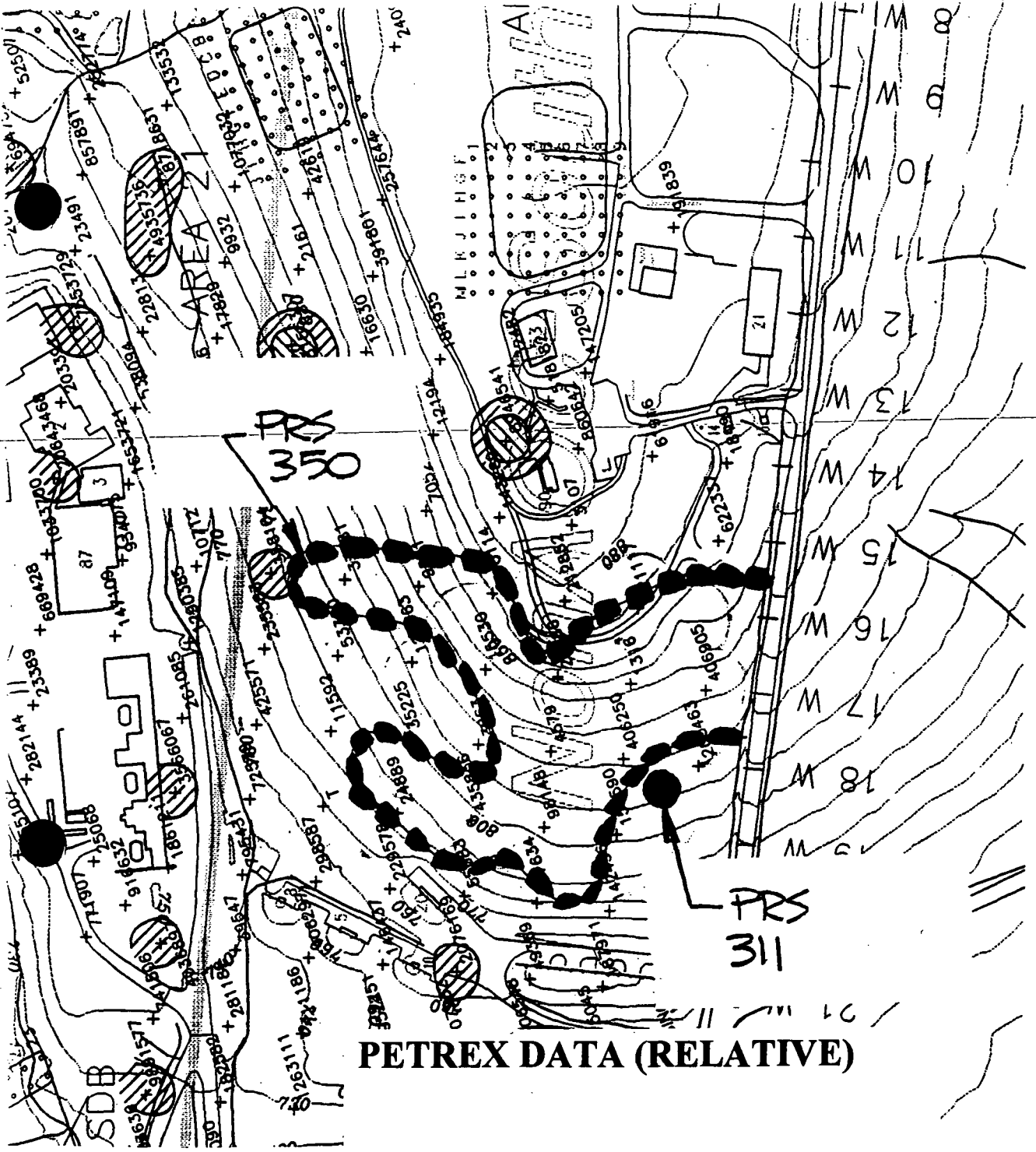


LEGEND				
Relative Response Values (in ion counts):				
NonAOC–South	NonAOC–West	NonAOC–East	NonAOC–North	Area 51
≥ 70,000	≥ 1,000,000	≥ 300,000	≥ 800,000	≥ 1,400,000
7,000–69,999	100,000–999,999	30,000–299,999	80,000–799,999	180,000–1,399,999

Relative Response

Total Semivolatile Hydrocarbons

Plate 3



LEGEND				
Relative Response Values (in ion counts):				
NonAOC-South	NonAOC-West	NonAOC-East	NonAOC-North	Area 61
≥ 8,000,000	≥ 29,000,000	≥ 11,500,000	≥ 23,000,000	≥ 25,000,000
1,500,000-7,999,999	3,000,000-28,999,999	1,600,000-11,499,999	4,000,000-22,999,999	3,000,000-24,999,999

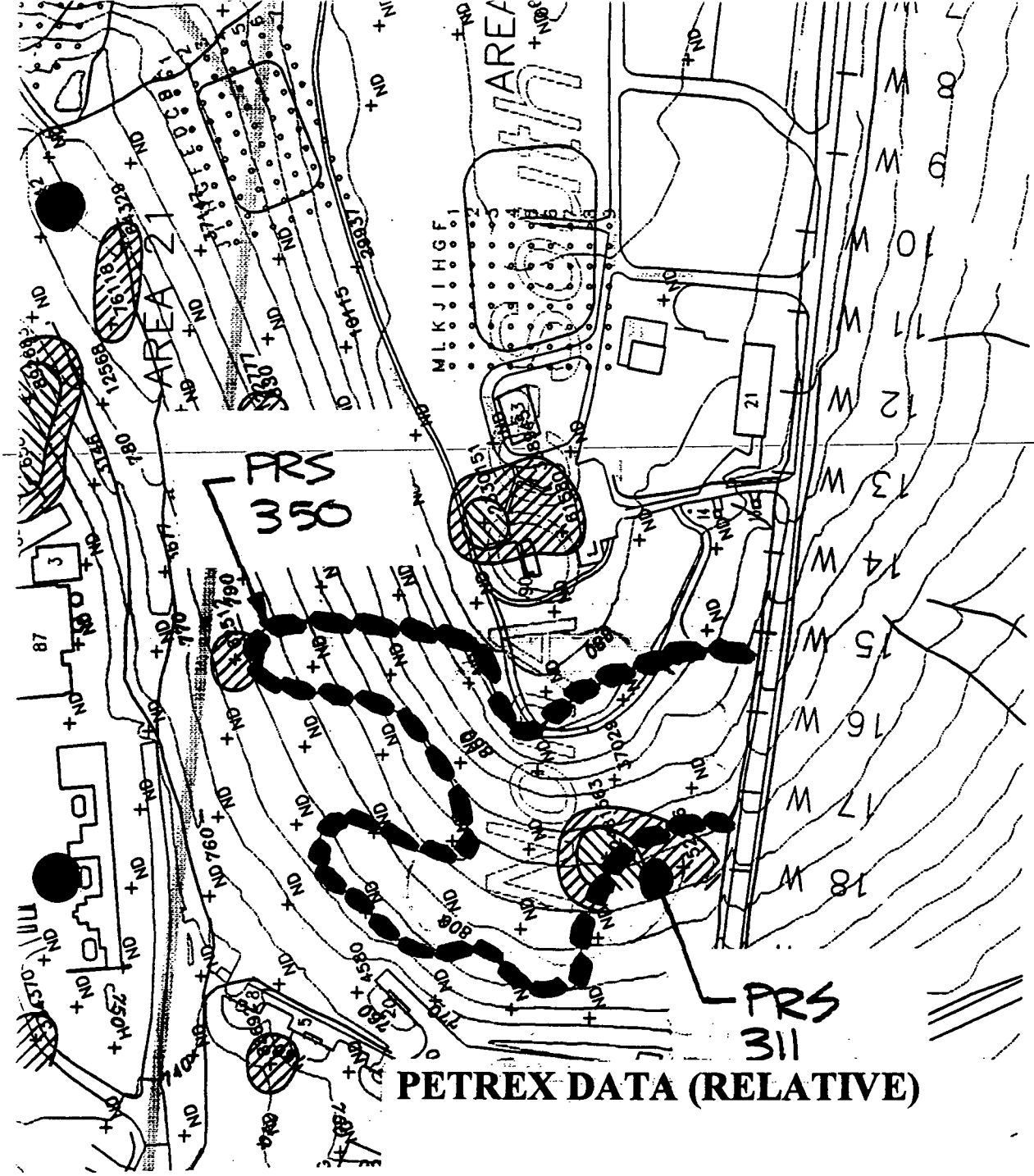
Relative Response

Total C5-C11 Petroleum Hydrocarbons

Plate 4

NonAOC/Operable Unit-5

Project #:



LEGEND				
Relative Response Values (in ion counts):				
NonAOC-South	NonAOC-West	NonAOC-East	NonAOC-North	Area 61
≥ 500,000	≥ 500,000	≥ 80,000	≥ 400,000	≥ 250,000
50,000-499,999	50,000-499,999	28,000-79,999	40,000-399,999	35,000-249,999

Relative Response

Total Halogenated Hydrocarbons

Plate 5