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3001-0302250013

MOUND

Environmental
Restoration
Program

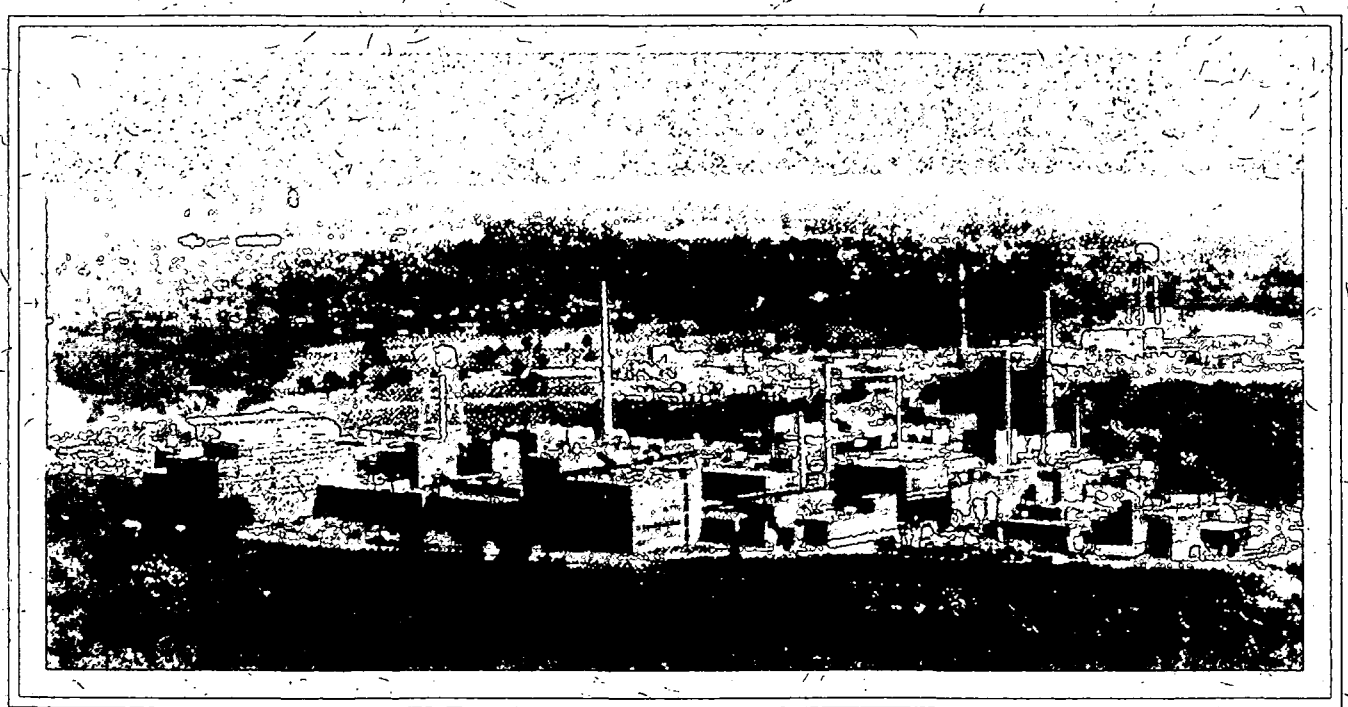
OhioEPA

MOUND PLANT

Potential Release Site Package

PRS #73

PUBLIC REVIEW DRAFT
MARCH 2002



PRS 73 Tracking Sheet

REVISION	DESCRIPTION	DATE
DRAFT		**May 1996**
REGULATORY RELEASE A	ADDED: - Reference 4 - OU5 data to contamination section - Soil Gas Confirmation Sampling Data Binned FA 2/19/97	**September 1996**
CHANGES MADE AT BINNING SESSION A1	Page 3.1, sixth bullet from top of page: Was: - Thorio\um-232 (Th-232) maximum concentration at less than the background level of 2.0 pCi/g Is: - Thorium-232 (Th-232) maximum concentration was less than the background level of 2.0 pCi/g Page 3.2, last sentence under **Contamination**: Was: - Expected to be similar to or than that of the PATREX locations with the highest measured ion counts. Is: - Expected to be similar to or less than that of the PETREX locations with the highest measured ion counts	**February 1997**
ADDENDUM 1	Addendum 1 summarizes results of FA sampling. Core Team recommendations page included in Addendum 1. Original package remains unchanged. Binned NFA 16 January 2002.	**January 2002**

PRS 73 Tracking Sheet

PUBLIC REVIEW DRAFT	Contains previous package material and Addendum 1.	**March 2002**
FINAL		

MOUND PLANT

Release Block C

Potential Release Site

PRS 73


N
O
P
H
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73
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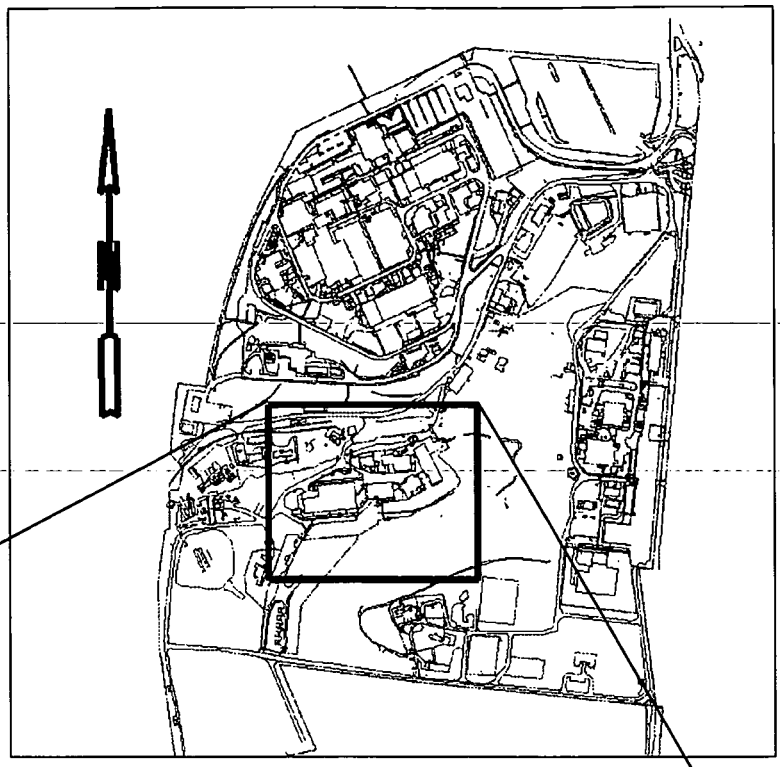
B
A

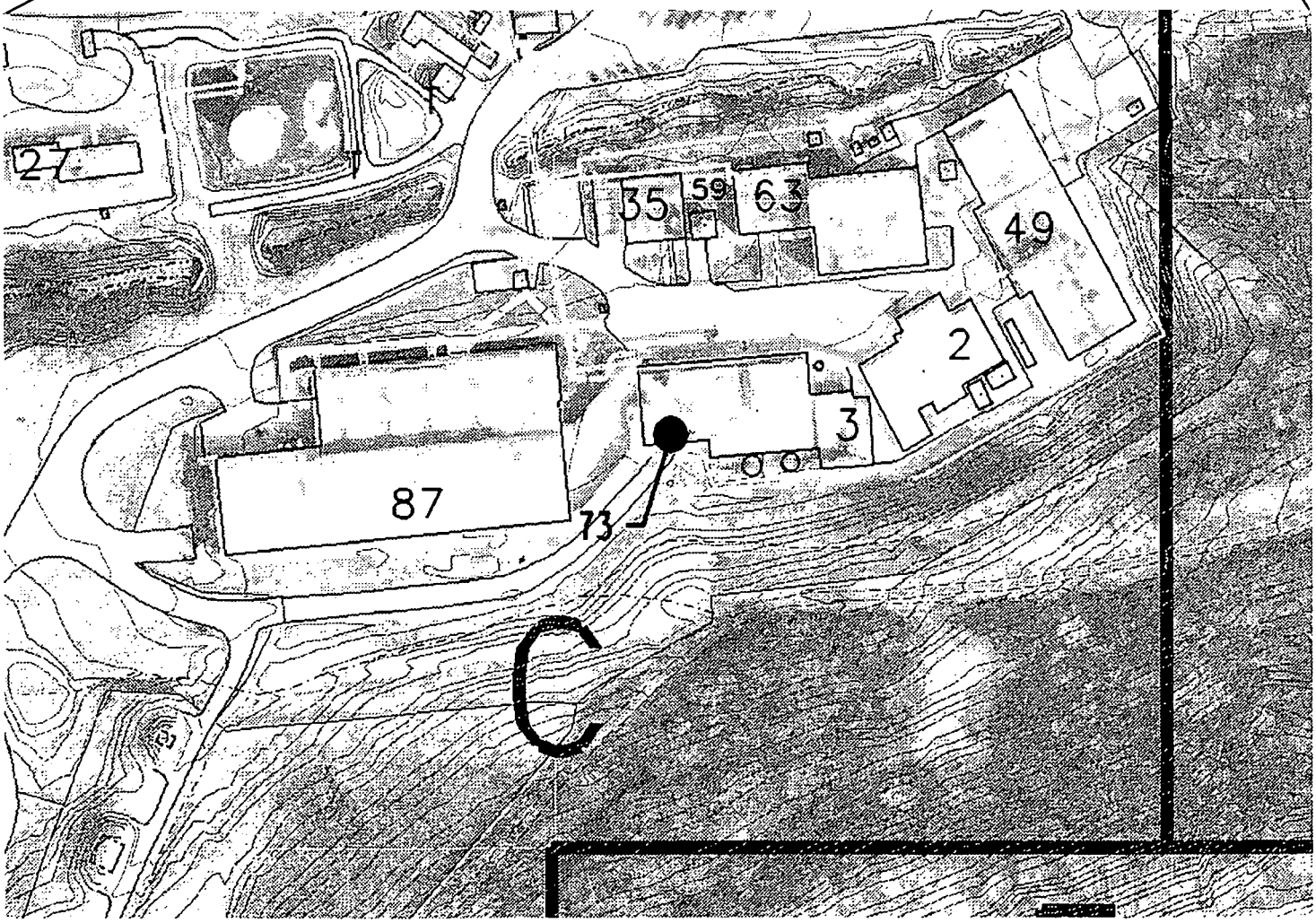
Mound Plant

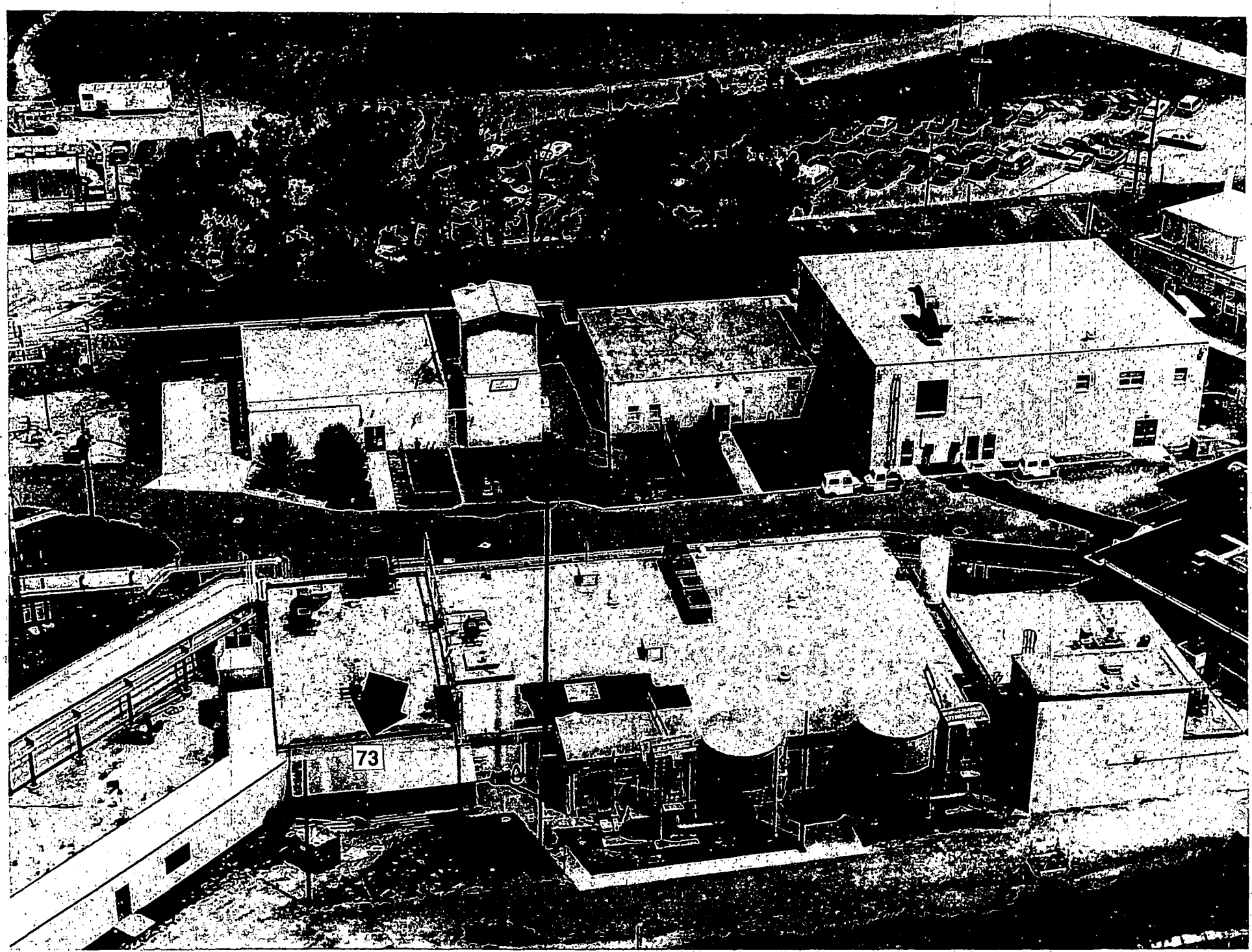
Release Block C

Potential Release Site

PRS 73






73

PRS 73

PRS HISTORY:

Potential Release Site (PRS) 73 is a historical equipment storage area located in the lower valley (Test Fire) area.[1] PRS 73, also known as "the lower storage area",[1,4] was an outside storage area used between 1953 and 1960 to store excess equipment that had been removed from radiological process buildings during decontamination and decommissioning (D&D) activities. Most of the storage area is now covered by the southwest corner of Building 3,that was built over this site in 1964.

The excess equipment was decontaminated prior to moving it to this storage area. Items stored in this area included the waste evaporator equipment that was removed from room SW-1B, the holding tanks from the Purex pilot plant, and the process equipment from the sludge treatment facility located in HH Building.

No data are known to exist on the level of decontamination that was done on the equipment stored in the lower area, but a personal interview suggested that the equipment was washed externally until no wipeable levels were observed.[3] The primary concern with PRS 73 is potential soil contamination involving actinium, radium-226 and its daughters, as well as fission products such as strontium-90 and cesium-137.[1,4]

CONTAMINATION:

No radiation was detected by field surveys of the surface soils in the storage area during the initial phases of the Radiological Site Survey (RSS).[2] The RSS also collected 3 soil surface samples in the vicinity of PRS 73. The samples were analyzed by Mound Soil Screening for plutonium-238 and thorium-232. The maximum concentration of plutonium-238 detected was 2.51 picocuries per gram (pCi/g), which is below the Mound ALARA (As Low As Reasonably Achievable) value of 25 pCi/g. All samples had thorium-232 concentrations below the guideline criteria of 5 pCi/g. Sample S0692, approximately 150 feet southwest and slightly uphill from the PRS 73, was the only sample analyzed for radiological contamination by gamma spectroscopy. Results indicated cesium-137 at concentrations of 1.3 pCi/g (10^{-6} Risk Based Soil Guideline Value 0.46 pCi/g) and radium-226 at 0.9 pCi/g (regulatory guideline criteria 5 pCi/g).

In 1994, the OU5 Operational Area I Investigation [4] analyzed the area around this site for volatile organic compounds (VOCs) and semi-volatiles (SVOCs) by PETREX passive soil gas. The OU5 Non-AOC Field Report also analyzed soil for radioactivity via Mound FIDLER surveys and the soil screening facility.[4] Sample results corresponding to PRS 73 are listed relative to coordinates (9/10N, 16/17W) and nos. 1063, 1052, 1054 and 1055 within the referenced material.[4] Results showed:

- Moderately high ion counts total aromatic hydrocarbons.
- Total semivolatile hydrocarbons were not detected.
- Moderately high ion counts petroleum hydrocarbons.
- Total halogenated hydrocarbons were not detected.

Radiological data from the four surface soil samples were identified by FIDLER screening and analyzed by Mound soil screening for plutonium-238 and thorium-232:[4]

- Plutonium-238 (Pu-238) maximum concentration was 11 pCi/g
- Thorium-232 (Th-232) maximum concentration was than the background level of 2.0 pCi/g

All radiochemistry results are below the Guideline Criteria of 25 pCi/g for Pu-238 (ALARA - As Low As Reasonably Achievable) and 5 pCi/g for Th-232.[6]

In 1996, the ***Soil Gas Confirmation Sampling***[7] investigation sampled the PETREX soil gas locations with the highest PETREX ion counts in the western quadrant of the Mound plant. Locations with the highest ion counts were PETREX locations 1015, 1066, and 1093 which correspond to *Soil Gas Confirmation* samples 7, 11 and 18.

PRS 73 was not sampled but had lower western quadrant ion counts than the locations that were sampled. Hence, the *Soil Gas Confirmation* results for the PETREX locations with the highest ion counts in Mound's western quadrant (sample #7, 11 and 18) provide correlating evidence about the risk of contamination at other western quadrant locations with similar or lower ion counts (i.e. PRS 73). The map on page 44 shows the PRS as well as the Soil Gas Confirmation sample locations in Mound's western sector.

The following table lists both the maximum qualitative PETREX ion counts in Mound's western quadrant and the corresponding quantitative *Soil Gas Confirmation* sampling results. The table also compares these results to the qualitative PETREX ion counts for PRS 73. The PETREX samples corresponding to PRS 73 are listed as nos. 1052, 1054, 1055 and 1063.

PETREX Soil Gas Contaminant Family	Maximum Ion Counts[4]	Confirm Sample #	Confirmation Sample Results that Exceed Guideline Criteria (GC)	Ion Counts at PRS 73	
Total Aromatic Hydrocarbons	21,843,639	(#18)	None	351,489 291,951 678,469 64,232	(# 1052) (# 1054) (# 1055) (# 1063)
Total Semivolatile Hydrocarbons	1,389,465	(#18)	None	Not detected Not detected Not detected Not detected	(# 1052) (# 1054) (# 1055) (# 1063)
Total C5-C11 Petroleum Hydrocarbons	30,786,838	(#7)	None	934,775 669,428 1,033,700 147,109	(# 1052) (# 1054) (# 1055) (# 1063)
Total Halogenated Hydrocarbons	892,683	(#11)	None	Not detected Not detected Not detected Not detected	(# 1052) (# 1054) (# 1055) (# 1063)

The correlations made above make no conclusions about individual contaminant concentrations at PRS 73 only that the overall health risk at PRS 73 is expected to be similar to or less that of the PETREX locations with the highest measured ion counts.

READING ROOM REFERENCES:

1) Operable Unit 9, Site Scoping Report: Volume 12 - Site Summary Report, December 1994. (pages 6-9)
2) Operable Unit 9, Site Scoping Report: Volume 3 - Radiological Site Survey, June 1993. (pages 10-19)
3) Operable Unit 9, Site Scoping Report: Volume 7 - Waste Management, July 1992. (pages 20-23)
4) Operable Unit 5, Operational Area Phase I Investigation Non-AOC Field Report, Volume II, June 1995. (pages 24-39)
5) Risk Based Guideline Values, Final, (Revision 0), December 1995.

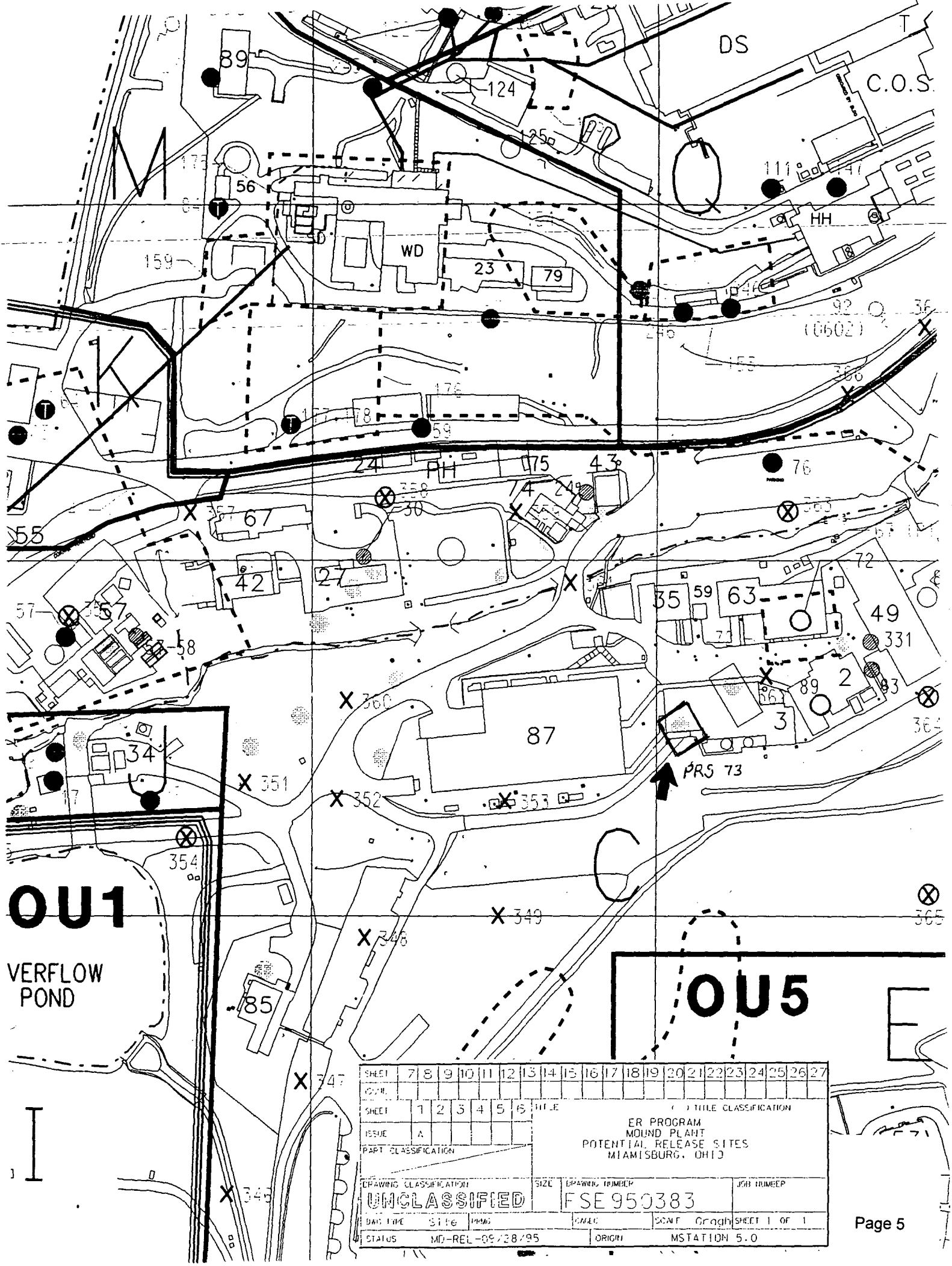
OTHER REFERENCES:

6) Code of Federal Regulations, 40 CFR 192.41 and 40 CFR 192.12.
7) Soil Gas Confirmation Sampling, (Revision 0), May 1996. (pages 40-56)

PREPARED BY:

Irwin D. Dumtschin, Member of EG&G Technical Staff

REFERENCE MATERIAL
PRS 73



SHEET	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27					
CONT.																										
SHEET	1	2	3	4	5	6	TITLE																			
ISSUE	A																									
PART CLASSIFICATION																										

ER PROGRAM
MOUND PLANT
POTENTIAL RELEASE SITES
MIAMISBURG, OHIO

TITLE CLASSIFICATION

DRAWING CLASSIFICATION	SIZE	DRAWING NUMBER	JOB NUMBER
UNCLASSIFIED		FSE950383	

DWG TYPE	PRMG	CAGD	SCALE	SHEET
Site			Graph	1 OF 1

STATUS	ORIGIN
MD-REL-09/28/95	MSTATION 5.0

Document Control No. _____

Environmental Restoration Program

OPERABLE UNIT 9 SITE SCOPING REPORT: VOLUME 12 – SITE SUMMARY REPORT

MOUND PLANT
MIAMISBURG, OHIO

December 1994

Final

U.S. Department of Energy
Ohio Field Office

EG&G Mound Applied Technologies

Table V.1. Potential Release Sites Recommended for Inclusion in the ER Program, Listed by Operable Unit

No.	Site Name	Evidence of Release[a]	Further Action Recommended[a]	FFA OU
58	Dredge Spoil Drying Beds	Yes	Yes	5
59	Contaminated Soil Box Storage Area	No	Yes	5
63	Building 19 Soils	Yes	Yes	5
64	Building 19 Historic Gasoline Tank (Tank 238)	No	Yes	5
65	Building 61 Area, Former Heavy Equipment Area	Yes	Yes	5
66	Area 7, Throium and Polonium Wastes (AKA old septic tank)	Yes	Yes	5
71	Building 88 Waste Solvent Tank (Tank 136)	No	No	5
72	Area 13, Polonium-Contaminated Wood from Dayton Unit IV	Yes	Yes	5
73	Evaporator Storage Area	No	No	5
74	Quonset Hut (former)	No	No	5
76	Warehouse 9	Yes	Yes	5
77	Warehouse 10	Yes	Yes	5
79	Warehouse 15	Yes	Yes	5
80	Warehouse 15A	Yes	Yes	5
81	Drilling Mud Drum Storage Areas (3 locations)	No	No	5
261	Trash Burner	No	No	5
269	Building 36 Historic Gasoline Tanks (Tanks 239 and 240)	No	No	5
274	Area 21 Old Bunker	Yes	Yes	5
275	Area 21 Detonator Shack	Yes	Yes	5
276	Area 22, Orphan Soil from Other Areas	Yes	Yes	5
277	Area J, Hillside Disposal Area (AKA Dredged Material Disposal Area 11a)	Yes	Yes	5
278	Area J, Hillside catch basin	No	Yes	5
279	Old Firing Range Drum Storage Area	Yes	Yes	5
280	Waste Oil Drum Field Area	Yes	Yes	5
281	Area E Waste Oil Spill	Yes	No	5
282	Spoils Disposal Area/Construction Spoils Area	Yes	Yes	5
304	Excavated Materials Disposal Area (AKA Rader's Hill)	No	Yes	5
306	SM/PP Hill Seep 0609	No	Yes	5

Table A.1. Comprehensive Tabulation of Potential Release Sites

Description of History and Nature of Waste Handling						Hazardous Conditions and Incidents			Environmental Data		
No.	Site Name	Location	Status	Potential Hazardous Substances	Ref	Releases	Media	Ref	Analytes[a]	Results	Ref
72	Area 13, Polonium-Contaminated Wood from Dayton Unit IV	H-7	Historical	Polonium-210	1, 4, 5	None Suspected	S	6	14	Tables B.1 and B.9	6
73	Evaporator Storage Area (AKA Lower storage area)	H-7	Historical	Actinium-227, Cesium-137, Radium-226	4				14, 15, 16	Table B.9 RSS[c] Locations S0692 and S0697 (Appendix E in Ref. 6)	6
74	Quonset Hut (former)	H-7	Historical	Polonium-210, cobalt-60, bismuth					14	Table B.9 RSS[c] Locations S0684, S0685, and S0689 (Appendix E in Ref. 6)	6
75	Railroad Siding	G-6 G-7	Inactive	Thorium and daughters	4	Suspected thorium	S	4	14	Table B.1	6
76	Warehouse 9	G-7	Historical	Thorium-232	4	Suspected thorium	S	4	No Data		
77	Warehouse 10	G-9	Historical	Polonium-210	4	None suspected			No Data		
78	Warehouse 13	G-9	Historical	Reactor waste including Strontium-90, Cesium-137, and Nickel-63	4	Cesium 137	S	4	No Data		
79	Warehouse 15	E-8	Historical	Radioactive waste Plutonium-238 wastes and sludge Thorium sludge constituents (c)	4	Suspected	S	4	See Area 7 (No. 66)	Table B.9	6
	Warehouse 15A	F-8	Historical	Plutonium-238, thorium	4						
	ing Mud Drum Storage Areas (3 locations)	H-5 I-4	Historical	Barium	4, 5, 18	None Suspected			No Data		
	ilding 57 Diesel Fuel rage Tank (Tank 118)	H-5	In service	Diesel fuel	3				No Data		
	ling 2 Propane Storage Tank (Tank 122)	H-7	Inactive	Propane	3				No Data		
	ilding 56 Diesel Fuel rage Tank (Tank 223)	F-5	Historical	Diesel fuel	3	Tank Removed			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 1992I "Closure Report, Building 34 - Aviation Fuel Storage Tank."
23. DOE 1992J "Closure Report, Building 51 - Waste Storage Tank."
24. DOE 1994 "Operable Unit 1, Remedial Investigation Report."
25. EG&G 1994 "Active Underground Storage Tank Plan."

ENVIRONMENTAL RESTORATION PROGRAM

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

MOUND PLANT
MIAMISBURG, OHIO

June 1993

DEPARTMENT OF ENERGY
ALBUQUERQUE FIELD OFFICE

ENVIRONMENTAL RESTORATION PROGRAM
EG&G MOUND APPLIED TECHNOLOGIES

FINAL

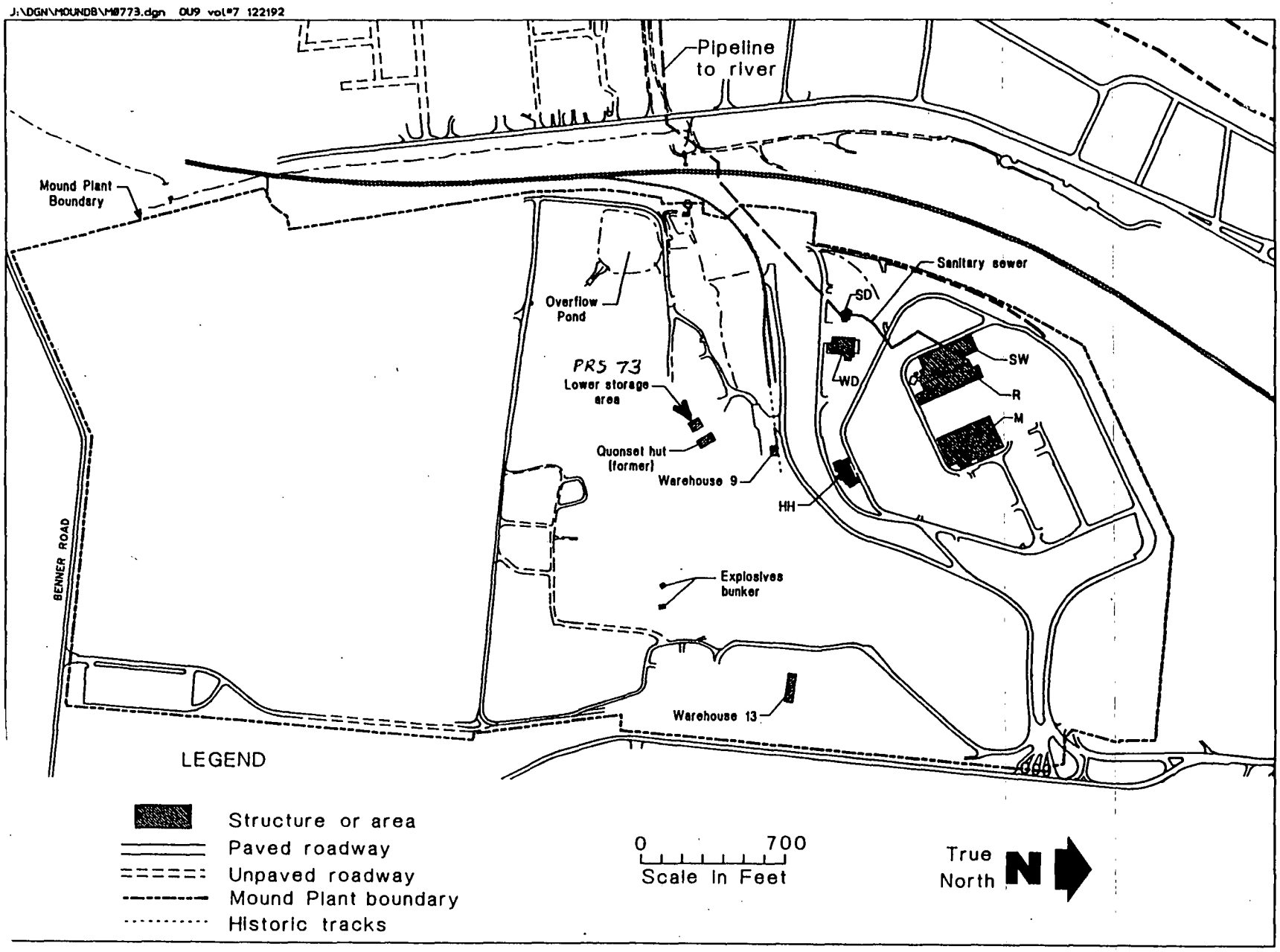


Figure 9.1. Reactor waste processing areas.

the sludge in SW Building was cleaned up to 70 mREM activity and was then capped over (DOE 1992g). The pilot plant demonstration lasted only a few months and the equipment was either dismantled and removed from the SW Building or reused in the radium/actinium program.

Few records remain of the treatment and storage areas used during this program. The feed solutions are known to have been brought in and stored at the former location of the quonset hut, now known as Building 19 in its new location. The quonset hut used to be located in the lower valley west of Building 3 (Figure 9.1). The dismantled equipment and waste sludges went into storage in either Warehouse 13 or the old explosives bunker. The drums of sludge are known to have leaked and contaminated the wooden floor in Warehouse 13 that was located in the area now occupied by the SM Building (DOE 1992g). The drums were moved again to Warehouse 9 along the old extension of the railroad spur for shipment offsite and the floors of Warehouse 9 were washed down. The old explosives bunker, also known as the radium shack, was used as a general storage area for high-risk wastes and was located on the westfacing slope of the SM/PP Hill. There are no other known or suspected areas where materials from the reactor waste decontamination program may have been stored or disposed of. Treatment facilities appear to be limited to the SW, R, WD and perhaps the HH Building areas.

Since the reactor waste decontamination program was so short lived, few records of its existence have survived at Mound Plant and few individuals knew of its existence. None of the process, treatment, or storage areas were listed in the known areas of radiological contamination before the Site Survey Project began. Some of the areas were included in the Site Survey Project investigation; some were not. As with other buildings, the processing areas used in the reactor waste program were not addressed by the Site Survey Project nor were the process and sanitary sewers on the Main Hill. Warehouse 13 is now occupied by the SM Building and is enclosed in Area 17. The old explosives bunker, or radium shack, is now known as Area 21 and was identified during the gamma surveys of the Site Survey Project (Stought et al. 1988). The former location of the quonset hut and the lower storage area (DOE 1992g) were not explicitly included in the Site Survey Project, but some data may be available, as discussed below. The project report (Stought et al. 1988) did not discuss the results in outlying areas. Areas 17 and 21 are described in the companion section on plutonium and radium/actinium, respectively.

Area 20 was described in the project report (Stought et al. 1988) as having cesium-137 contamination, but no process attributes could be made. The reactor waste decontamination program is certainly the most likely candidate for the presence of cesium-137 at Mound Plant, but no real tie to the process has been firmly established. The presence of cesium-137 in Area 21, established through records and summary reports that state the area was

If these areas were contaminated with cesium-137 during the reactor waste decontamination program, it is very likely that strontium-90 may also be present. None of the analytical procedures used during the Site Survey Project was capable of identifying strontium-90 contamination.

9.2. LOWER STORAGE AREA

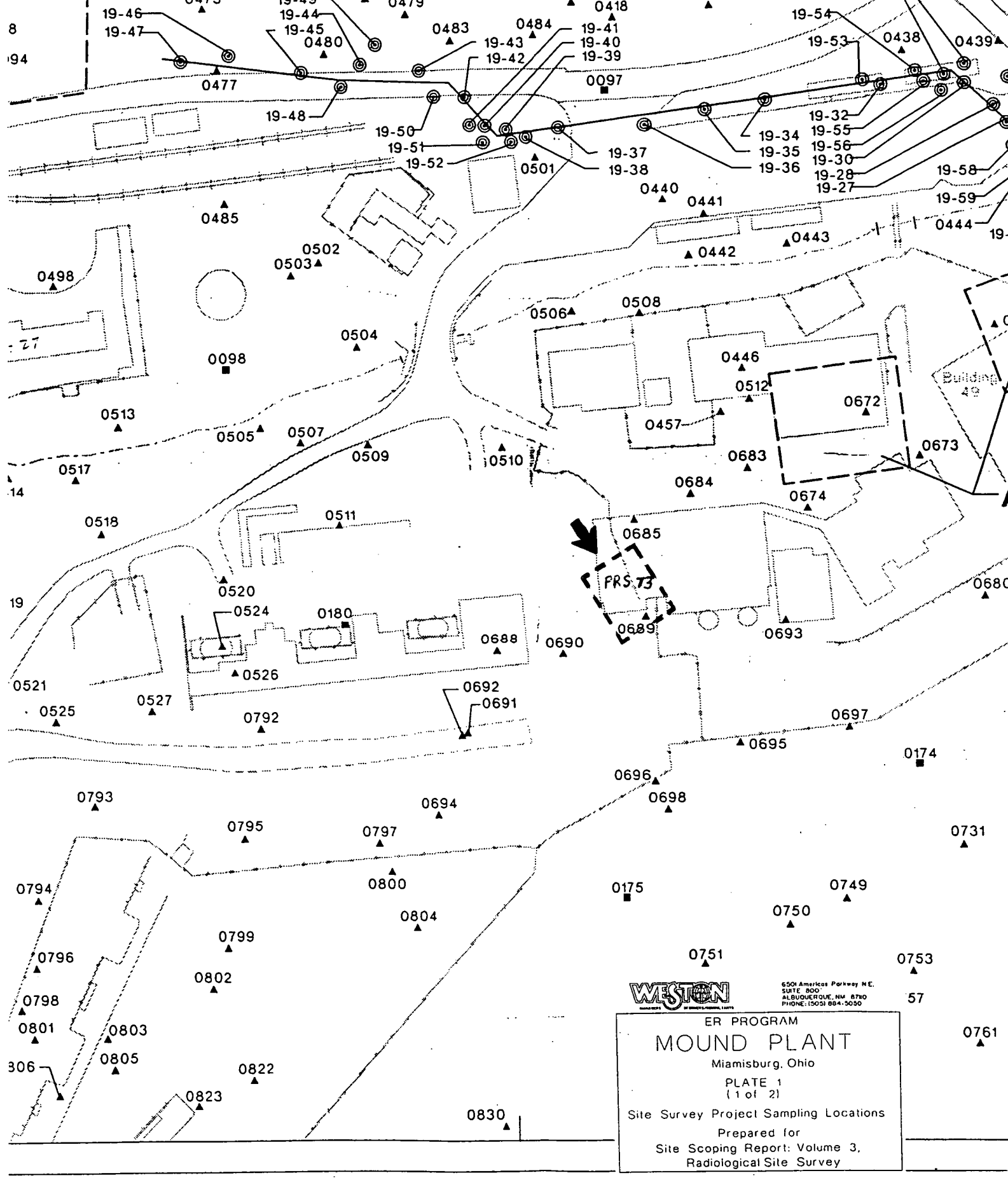
The process waste treatment equipment used in the reactor waste decontamination program was diverted to use in the radium-actinium program. Once that program was terminated in 1955, the equipment was dismantled and stored on the ground in the vicinity of Building 3. These process/units underwent decontamination prior to their removal from the SW Building. No information is available as to the level of decontamination achieved. The soil in this area has the potential to be contaminated with radium-226 and its daughters, as well as fission products such as strontium-90 and cesium-137.

Few samples appear to have been collected in the approximate location of the historic lower storage area. No cores were obtained from the area. Surface samples S0689 and S0690 (Plate 1) indicate plutonium-238 concentrations of 0.21 and 0.73 pCi/g, respectively (Appendix E). Neither of these samples were analyzed for gamma radiation. Sample S0692 is slightly uphill from the other two sample points with cesium-137 and radium-226 contamination at 1.3 and 0.9 pCi/g, respectively. The exact location of the historic lower storage area is speculative, but may be indicated by the trace contamination noted in the Site Survey Project data.

9.3. FORMER QUONSET HUT AREA

The quonset hut, now known as Building 19, has a long history at Mound Plant. The structure was first moved to Mound Plant during the D&D of the historic Dayton units (DOE 1992g). It was first erected in the lower valley area and served as a central point for shipping, receiving and storing radioactive feed and waste materials. In the early 1960s, it was moved to its present location along the western border of the plant. In the early 1950s, the quonset hut served as a storage facility for the bismuth sludges from the polonium processing program. It also served as the central receiving and storage facility for the reactor wastes that came in from Hanford and Oak Ridge (DOE 1992c).

Few samples appear to have been collected in the former location of the quonset hut. No cores were obtained from the area. Surface samples S0674, 0683, 0684 and S0693 (Plate 1) indicate plutonium-238 concentrations of 0.54, 0.3, 0.04 and 0.96 pCi/g, respectively (Appendix E). The sample from location S0693 also indicated 0.4 pCi/mL tritium (Appendix E). None of these samples appear to have been analyzed by gamma spectrometry.



WESTON

6501 Americas Parkway N.E.
SUITE 800
ALBUQUERQUE, NM 87110
PHONE: (505) 884-5050

ER PROGRAM

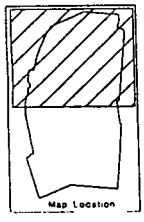
MOUND PLANT

Miamisburg, Ohio

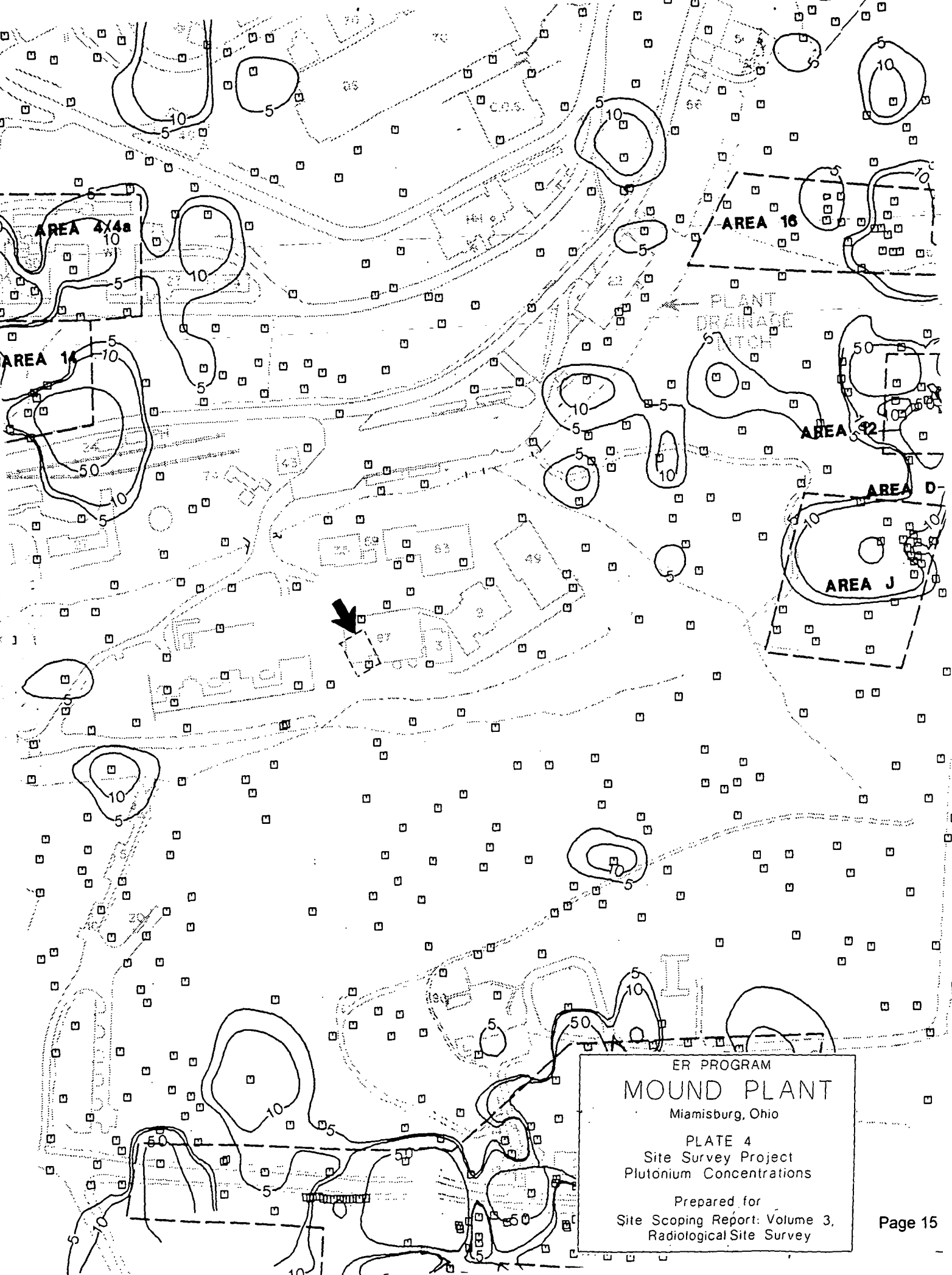
PLATE 1
(1 of 2)

Site Survey Project Sampling Locations

Prepared for
Site Scoping Report: Volume 3,
Radiological Site Survey



Legend
- Structure
- Paved road
- Dirt road
- Water
- Mound Plant Boundary
- Surface Location
- Core Location
- Potential Release Site
- Elevated Activity
- Sampling Location for Verification Survey of Former WTS Pipeline



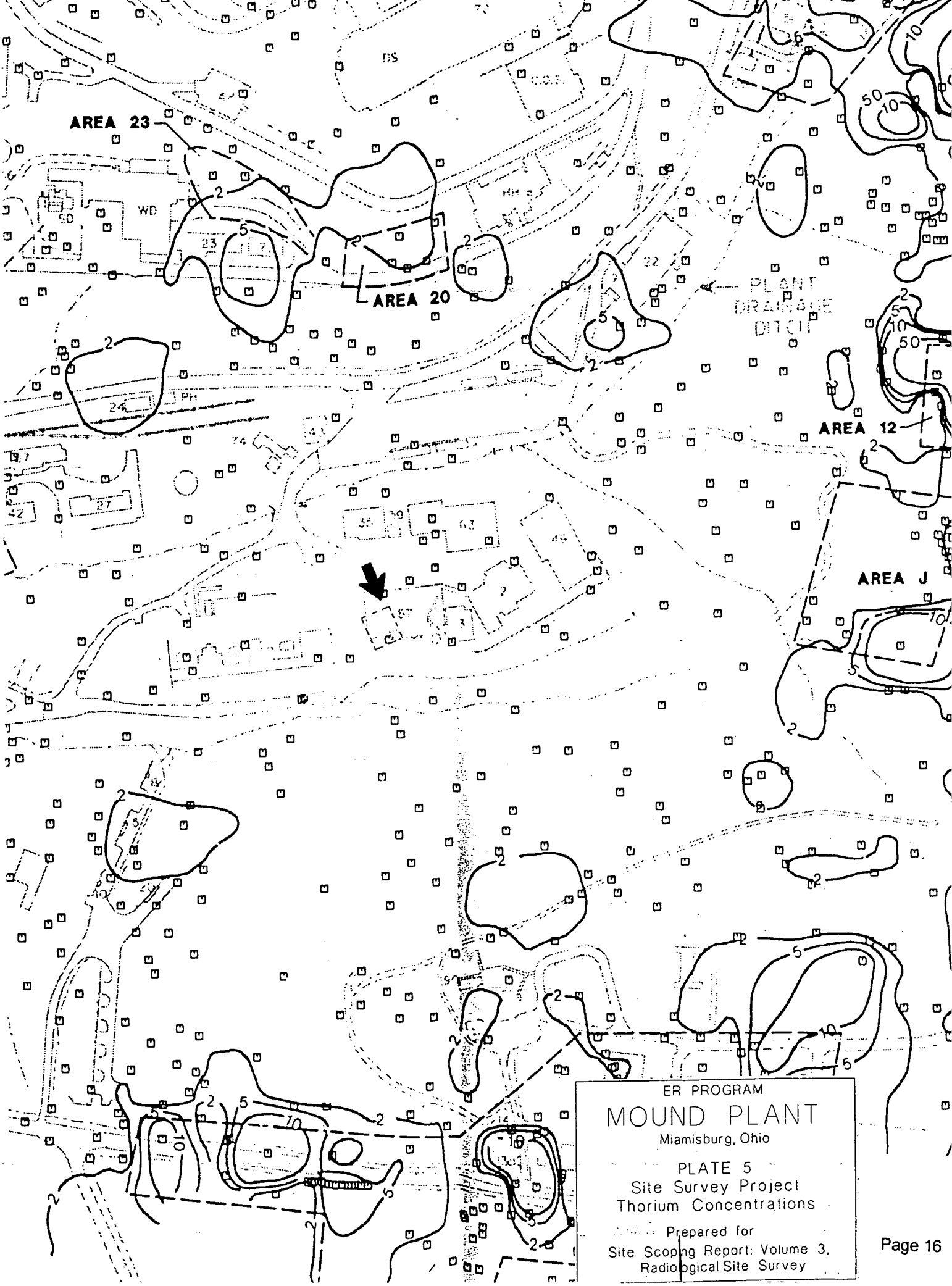
ER PROGRAM

MOUND PLANT

Miamisburg, Ohio

PLATE 4
Site Survey Project
Plutonium Concentrations

Prepared for
Site Scoping Report: Volume 3,
Radiological Site Survey



ER PROGRAM

MOUND PLANT

Miamisburg, Ohio

PLATE 5
Site Survey Project
Thorium Concentrations

Prepared for
Site Scoping Report: Volume 3,
Radiological Site Survey

RADIOCHEMICAL ANALYSIS

Map Location[a]	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)
S0682	2950	3075	7198	09-84	0	0.07	b		LDL	LDL	1.1	LDL
S0683	2725	3405	4036	10-83	0	0.30	b					
S0684	2725	3455	7115	09-84	0	0.04	b					
S0685	2725	3505	4035	10-83	0	0.60	b					
S0686	2750	2580	7116	09-84	0	0.06	b					
S0689	2775	2580	7118	09-84	0	0.25	b					
S0688	2775	3655	4034	10-83	0	0.40	b					
S0689	2800	3530	7119	09-84	0	0.21	b					
S0690	2800	3605	7117	09-84	0	0.73	b					
S0691	2825	3705	7122	09-84	0	1.03	b					
S0692	2825	3710	7123	09-84	0	2.51	b		LDL	1.3	0.9	LDL
S0693	2850	3430	4037	10-83	0	0.96[c]	b	0.40				
S0694	2875	3755	4033	10-83	0	0.40	b	0.38				
S0695	2925	3505	7120	09-84	0	0.11	b					
S0696	2925	3580	7121	09-84	0	0.78	b					
S0697	2950	3420	4038	10-83	0	0.10	b	0.15				
S0698	2950	3580	4119	10-83	0	0.28	b					
S0699	3250	4390	5980	07-84	0	0.22	b					
S0700	3250	4440	5909	07-84	0	0.48[c]	b					

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

Location	Mound Plant West	Mound Plant South	Ohio State Plane East (x)	Ohio State Plane North (y)
S0632	2565	3275	1497184.66	597267.24
S0633	2645	3025	1497008.60	597461.92
S0634	2845	3050	1496836.75	597356.60
S0635	2870	3075	1496824.30	597323.51
S0636	2820	3100	1496880.16	597321.38
S0637	2670	3125	1497027.11	597360.52
S0638	2720	3125	1496981.57	597339.88
S0639	2820	3125	1496890.48	597298.61
S0640	2895	3225	1496863.45	597176.56
S0641	2770	3250	1496987.62	597205.39
S0642	2795	3240	1496960.72	597204.18
S0643	2645	3275	1497111.80	597234.22
S0644	2970	3275	1496815.78	597100.06
S0645	2990	3290	1496803.75	597078.15
S0646	2995	3290	1496799.20	597076.08
S0647	2610	3340	1497170.51	597189.46
S0648	2340	3350	1497420.56	597291.80
S0649	2390	3350	1497375.02	597271.16
S0650	2565	2400	1496823.48	598064.22
S0651	2290	3450	1497507.38	597221.36
S0652	2265	3550	1497571.43	597140.60
S0653	2390	3550	1497457.57	597089.00
S0654	2290	3575	1497558.97	597107.51
S0655	2565	3575	1497308.50	596993.99
S0656	2695	3375	1497107.53	597122.50
S0657	2720	3400	1497095.08	597089.40
S0658	2870	3400	1496958.46	597027.49
S0659	2945	3450	1496910.78	596950.99
S0660	2870	2475	1496576.63	597870.01
S0661	2745	3500	1497113.59	596988.00
S0662	2870	3500	1496999.73	596936.40
S0663	2945	3500	1496931.42	596905.45
S0664	2670	3525	1497192.22	596996.19
S0665	2770	3525	1497101.14	596954.91
S0666	2670	3575	1497212.86	596950.65
S0667	2770	3575	1497121.78	596909.37
S0668	2870	3575	1497030.69	596868.09
S0670	3175	2705	1496393.77	597534.62
S0671	3075	2725	1496493.11	597557.68
S0672	3300	2725	1496288.17	597464.80
S0673	3275	2775	1496331.58	597429.58
S0674	3375	2775	1496240.50	597388.30
S0675	3100	2800	1496501.30	597479.05
S0676	3150	2825	1496466.08	597435.64
S0677	3075	2850	1496544.71	597443.82
S0678	3151	2850	1496475.48	597412.45
S0679	3175	2875	1496463.94	597379.78
S0680	3275	2900	1496383.18	597315.73
S0681	3250	2925	1496416.27	597303.28
S0682	3075	2950	1496585.98	597352.74
S0683	3405	2725	1496192.54	597421.46
S0684	3455	2725	1496146.99	597400.82
S0685	3505	2725	1496101.45	597380.18
S0686	2580	2750	1496954.29	597739.23
S0687	2580	2775	1496964.61	597716.46
S0688	3655	2775	1495985.4	

Location	Mound Plant West	Mound Plant South	Ohio State Plane East (x)	Ohio State Plane North (y)
S0689	3530	2800	1496109.64	597301.55
S0690	3605	2800	1496041.33	597270.59
S0691	3705	2825	1495960.56	597206.54
S0692	3710	2825	1495956.01	597204.48
S0693	3430	2850	1496221.36	597297.29
S0694	3755	2875	1495935.66	597140.36
S0695	3505	2925	1496184.01	597198.02
S0696	3580	2925	1496115.70	597167.06
S0697	3420	2950	1496271.75	597210.33
S0698	3580	2950	1496126.02	597144.29
S0699	4390	3250	1495512.08	596536.68
S0700	4440	3250	1495466.54	596516.05
S0701	4165	3275	1495727.33	596606.79
S0702	4415	3295	1495507.88	596485.38
S0703	3785	3325	1496094.09	596718.11
S0704	3835	3325	1496048.55	596697.47
S0705	3875	3325	1496012.11	596680.95
S0706	4035	3325	1495866.38	596614.91
S0707	4135	3325	1495775.30	596573.63
S0708	3785	3375	1496114.73	596672.56
S0709	4010	3425	1495930.43	596534.15
S0710	4135	3425	1495816.58	596482.55
S0711	3960	3450	1495986.29	596532.01
S0712	4085	3475	1495882.76	596457.65
S0713	3785	3500	1496166.33	596558.71
S0714	3985	3525	1495994.48	596453.38
S0715	3835	3525	1496131.10	596515.30
S0716	4040	3545	1495952.64	596412.46
S0717	4030	3550	1495963.81	596412.04
S0718	4035	3550	1495959.26	596409.97
S0719	4020	3555	1495974.98	596411.61
S0720	4015	3560	1495981.60	596409.12
S0721	4010	3565	1495988.22	596406.63
S0722	4000	3570	1495999.39	596406.20
S0723	3785	3575	1496197.28	596490.40
S0724	3860	3575	1496128.97	596459.44
S0725	3990	3575	1496010.56	596405.78
S0726	3980	3580	1496021.74	596405.35
S0727	3975	3583	1496027.53	596404.68
S0728	3970	3585	1496032.91	596404.92
S0729	3960	3590	1496044.08	596404.50
S0730	3950	3595	1496055.25	596404.07
S0731	3375	3075	1496364.33	597115.05
S0732	3075	3100	1496647.90	597216.12
S0733	3150	3100	1496579.59	597185.16
S0734	3325	3100	1496420.19	597112.92
S0735	3250	3125	1496498.83	597121.11
S0736	3250	3175	1496519.47	597075.57
S0737	3075	3200	1496689.18	597125.03
S0738	3275	3200	1496507.01	597042.48
S0739	3025	3250	1496755.36	597100.13
S0740	3100	3250	1496687.05	597069.17
S0741	3225	3250	1496573.19	597017.57
S0742	3050	3275	1496742.91	597067.04
S0743	3075	3275	1496720.14	597056.72
S0744	3225	3275	1496583.51	596994.80

ENVIRONMENTAL RESTORATION PROGRAM

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

MOUND PLANT
MIAMISBURG, OHIO

July 1992

DEPARTMENT OF ENERGY
ALBUQUERQUE FIELD OFFICE

ENVIRONMENTAL RESTORATION PROGRAM
TECHNICAL SUPPORT OFFICE
LOS ALAMOS NATIONAL LABORATORY

DRAFT FINAL
(REVISION 0)

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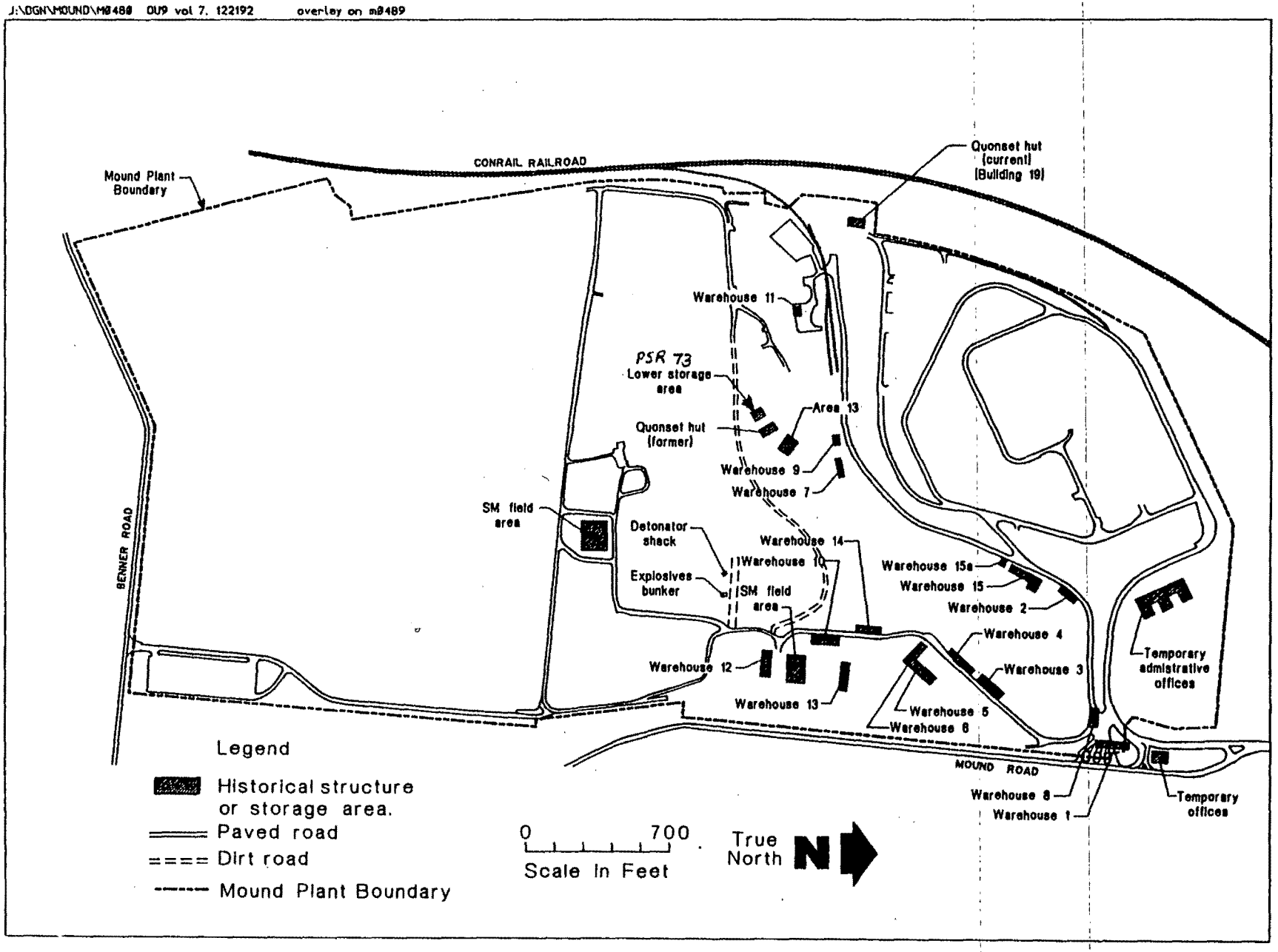


Figure 5.2. Historic buildings, structures, and storage areas.

Warehouses 15 and 15A were located along the upper reach of the plant drainage ditch, in the approximate position of the present Building 98. Warehouse 15, the larger of the two with 6,000 ft^2, lay northeast of Warehouse 15A (Figure 5.2). These two warehouses were shown in the historical maps of the upper valley compiled in the Photo History Report (DOE 1992c) but were not labeled. Both structures were wooden construction. Warehouse 15 had a concrete floor and Warehouse 15A had a wooden floor. Because of their ease of access and location, away from the Main Hill, these warehouses were used as general storage areas for radioactive wastes and for truck loading facilities. Warehouse 15 was used as a general storage area for plant operations (office supplies, furniture, etc.). In the mid-1950s, thorium redrumming operations were conducted in Warehouse 15, but were moved outdoors because of elevated radiation levels, possibly radon. Logbooks indicate that, from December 1954 (MCC 1951-1952) through the mid-1960s, Warehouse 15A served as one of the general sites for storage and loading of radioactive waste for offsite shipment (MRC 1961-1968). Radioactive trash, plutonium sludge from SM, polonium sludge from WD, and waste from other operations were picked up from the process areas and stored until loaded into vans for shipment offsite. The floor of the warehouses were typically scrubbed with solutions of dilute hydrochloric acid to remove contamination. In April 1965, the waste storage and loading operations were transferred to the newly constructed Building 23. Both Buildings 15 and 15A were sold for salvage in the mid-1960s. The floors may have remained in place until they were bulldozed into the ravine in the early 1970s. The site of warehouse 15 is currently occupied by Building 98. The site of warehouse 15A is currently occupied by the paved parking entrance adjacent to Building 98. The ravine fill east of the old warehouses is included in the ER Program as Area 7 (DOE 1992c).

5.1.11. Lower Storage Area (Historical)

The lower storage area was an open storage area located behind what is now Building 2 in the lower valley area; the lower storage area was originally behind the Quonset hut (Figure 5.2). The area was used from 1955 to 1960 to store the waste evaporator equipment that had been removed from room SW-1B as part of the D&D of the radium-actinium operations. The equipment consisted of several waste liquid holding tanks and the evaporator itself. The equipment was decontaminated, capped, and stored in the open field. No data are known to exist on the level of decontamination, but a personal interview suggested that the equipment was washed externally until no wipeable levels were observed (Garner 1991). Also stored in the area were the holding tanks from the Purex pilot plant. These tanks were dismantled in March 1953 and stored in the lower area (MCC 1952-1957). Their final disposition was not determined, but they may have been shipped offsite in 1960 with other equipment. In January 1959, equipment from the decommissioned HH sludge facility was stored in the lower area (MCC 1951-1961). This equipment was probably also shipped offsite in 1960, but no record of shipment was found. The ground surface of the storage area was surveyed by radiological field

instruments during the initial phases of the Site Survey Project (Stought et al. 1988), but nothing was detected (Garner 1991).

5.1.12. Quonset Hut Storage Building (Building 19)

The Quonset hut is a one-story, corrugated-metal building originally erected at Dayton Unit III during the Manhattan Project. During the D&D of the Dayton units, the Quonset hut was moved to Mound for equipment storage. It was first erected in the plant valley in the area now occupied by Building 3 (Figure 5.2). During the 1950s, the Quonset hut was used for the storage of radioactive wastes from polonium and may have served to store other radioactive wastes, such as the shipments of Purex wastes for the reactor waste research program (Bradley 1952e). From 1949 to 1954, the bismuth chloride residues from the polonium project were moved from their staging area in T Building to the Quonset hut for storage. By August 1953, over 600 30-gallon drums were stored on a high density concrete pad at the Quonset hut (Bradley 1953h). Shipments of these drums to ORNL for burial began in April 1954 (Bradley 1954a; 1954c) and were completed by September 1954 (Bradley 1954d). Low-risk and high-risk wastes from the radium-actinium program, which had been stored in Warehouse 13 and the explosives bunker, respectively, were moved to the Quonset hut for shipment offsite (Bradley 1953h). In 1957, some damaged thorium drums were also stored in the Quonset hut (Meyer 1957b). It is apparent that some time after this, radioactive wastes were stored or staged at other buildings such as Warehouse 15 for shipment offsite. When or how this happened is unknown. In 1963, the Quonset hut was moved to its present location and now serves as the salvage and surplus sales facility (Figure 5.2).

5.1.13. SM Drum Storage Areas (Area 11 and Others)

Associated with the SM Building plutonium operations were several drum storage areas. These areas were located on the SM/PP Hill adjacent to the SM Building (Figure 5.2). From 1961 to 1966, at least three areas west, south and southwest of the SM Building were used for open storage of drums and boxes of plutonium wastes. The plutonium wastes included materials destined for plutonium recovery and well as disposal. In 1966, the use of open the open storage areas was curtailed and the plutonium waste packages moved to Building 31.

From 1961 to 1963, significant quantities of solid recoverable plutonium waste was generated that did not go to the plutonium recovery because methods and facilities for recovery did not exist. Plutonium wastes were packaged into 30-gallon poly-lined steel drums and saved for future processing. These 30-gallon drums were stored along the west side of SM Building, in the vicinity south of Building 33. This storage area is known as Area 11 (DOE 1991c). In June 196

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

Table 1. Location of Potential Sites of Contamination Within OU5
Page 3 of 13

Location Number as Shown in Figure 1	Potential Release Site		Source	Potential Hazardous Substances	Comments
	Site Name	Reference Code			
26 (9/10N, 16/17W)	Evaporator Storage Area (AKA Lower Storage Area)	73	1	Actinium-227, Cesium-137, Radium-226	B
27 (9t10N, 15/16W)	Quonset Hut (former)	74	1	Polonium-210, Cobalt-60, Bismuth	B
28 (13/14N, 15116W)	Warehouse 9	76	1	Thorium-232	D
29 (12/1SN, 5/6W)	Warehouse 10	77	1	Polonium-210	D
30 (23/25N, 9/10W)	Warehouse 15	79	1	Plutonium-238 waste & sludge thorium sludge constituents	B
31 (22N, I0W)	Warehouse 15A	80	1	Plutonium-238, thorium	B
33 (3/4N, 13/14W)	Trash Burner Area	261	1	Pyrotechnic Material, Thermite, Freon, Acetone	H
34 (17/19N, 4/6W)	Area 9, Thorium Storage and Redrumming Area (AKA Former Thorium Storage)	267	1	Plutonium-238, Thorium, Thorium sludge constitutes	B
35 (16/17N, 2/3W)	Building 36 Historic Gasoline Tanks (Tanks 239 and 240)	269	1	gasoline	A,C
36 (15/16N, 6/8W)	Area 10 Concrete Debris	272	1	Polonium-210, cobalt-60, plutonium-238	B
37 (13/15N, 7/8W)	Area 12, Thorium-Contaminated Soil from Area 1	273	1	Thorium, Plutonium-238	A
38 (9/12N, 6/8W)	Area J, Hillside Disposal Area (AKA Dredged Material Disposal Area 11 a)	277	1	Paints, thinners, chemical contaminants, asbestos, Thorium, Plutonium-238	B

* - Refers to code designated for the site in Appendix A, Roy F. Weston, Environmental Restoration Program, Operable Unit 9, Site Scoping Report: Volume 12 - Site Summary Report, Mound Plant, October 1993

1 - Table V.2, Roy F. Weston, Environmental Restoration Program, Operable Unit 9, Site Scoping Report: Volume 12 - Site Summary Report, Mound Plant, October 1993

2 - Table 1.3., OU5, RI/FS Work Plan, August 1993

3 - Figure 1, Dames & Moore, Revise Draft, Active Underground Storage Tank Plan, May 16, 1994

4 - Figure 1, Roy F. Weston, Environmental Restoration Program, Operable Unit 9, Site Scoping Report: Volume 12 - Site Summary Report, Mound Plant, October 1993

5 - OU9 Site Scoping Report, Volume 7 - Site Summary Report (Weston, 1993)

A - Additional Soil Gas Survey Recommended Based on Site Inspection

B - No additional sampling, site located at/near established survey point or under on-going activities

C - Proposed sampling on one side or around building as appropriate

D - Potential radioactive contaminated area examined under the OU5 Phase I Reconnaissance Survey. A core sample for radiological testing recommended due to insufficient proposed sampling points in the area. The sample will be taken based on site inspection.

E - No sampling required, site never used for hazardous material storage activities

F - Additional sample recommended to be tested for TAL Metals

G - Outside OU5 Range

H - Does not fall in the OU5 Phase 1 Site Reconnaissance Survey Project. Need additional guidance from EG&G.

- Source - references the source used to identify the sites. Initially, all sites listed in Table V.2, Operable Unit 9, Site Scoping Report: Volume 12 (Reference 1) were identified. Then, any additional sites identified in either Table II.3, OU5, RI/FS Work Plan (Reference 2) or Figure 1, Revised Draft, Active Underground Storage Tank Plan (Reference 3) Figure 1, Operable Unit 9, Site Scoping Report: Volume 12 - Site Summary Report (Reference 4) or OU9 Site Scoping Report, Volume 7 - Site Summary Report (Reference 5).

- Potential Hazardous Substance - identifies the potential contaminants that may be present at a site. The potential hazardous substance identified for each site are based on the data provided in Appendix A, Operable Unit 9, Site Scoping Report: Volume 12 (Weston, 1993).

- Comments - provides recommendation on whether additional sampling radiological and/or chemical is required based on the location of a site in relation to the existing soil gas sampling grid established for OU5 RI/FS Site Reconnaissance Survey and the nature of the potential contamination at a site. The sites have been classified into the following categories.

A Recommend additional soil gas survey and Mound Screening Facility sample(s). Potential location of sample(s) is shown in Figure 1. However, the final determination of whether sampling is required and the exact location of the sample should be based on a site inspection.

B No additional sampling is required since the site is located at or near an established soil gas survey sample or is covered under other on-going site activities (e.g., D&D activities in Area 1 which eliminates Sites #41, 42, and #125 from further sampling under this investigation).

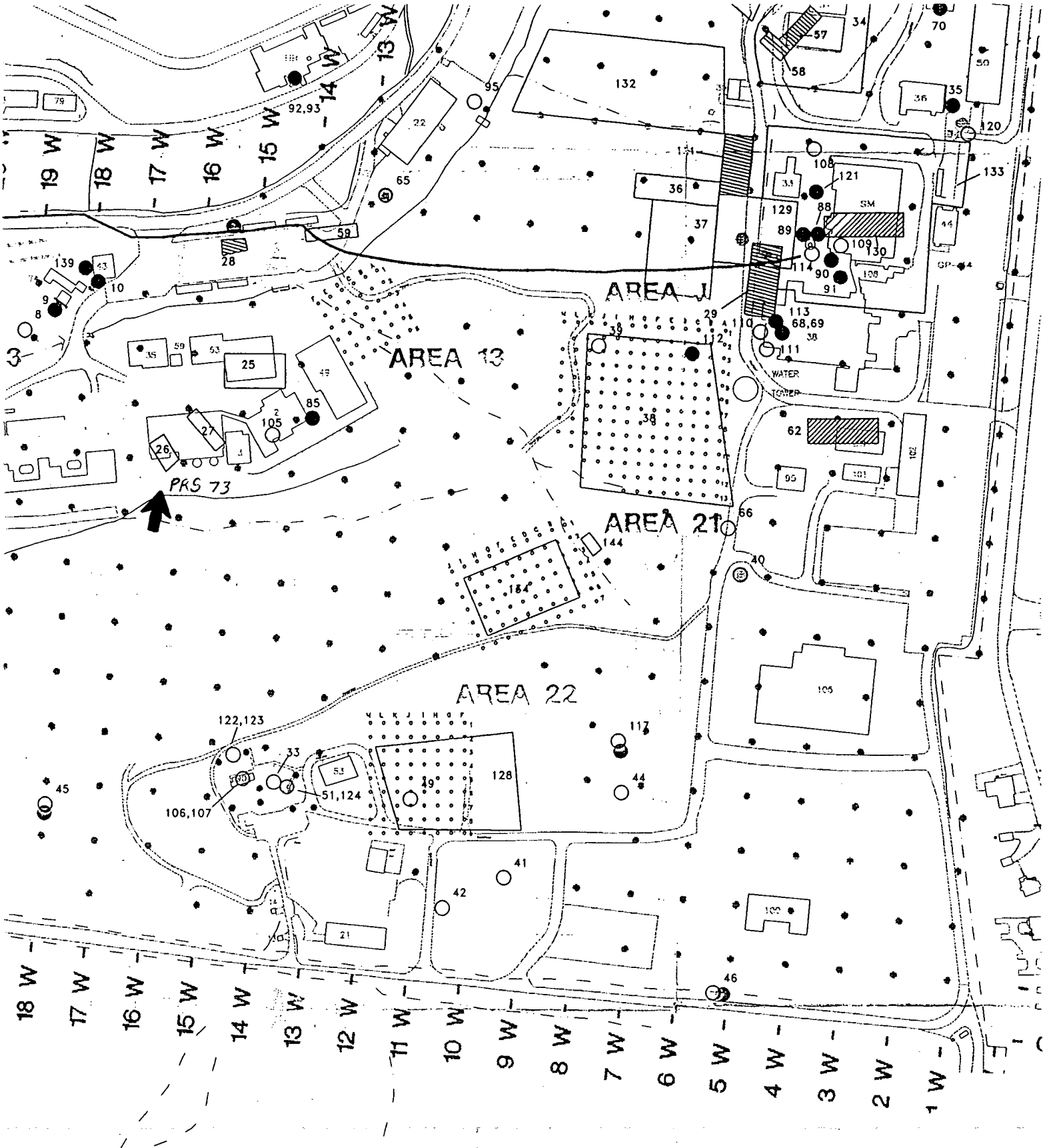
C Recommend sampling on one side or around the building for sites that are located either inside a building or clustered around the building (e.g, tanks). The potential side(s) of buildings that may require sampling have been identified in Figure 1. However, the final determination of the sides of the building, if any, that should be sampled will be made based on site inspection.

D Recommend surface soil sample(s) for Mound Screening Facility analysis be taken at identified locations(s) based on the potential for radiological contamination at these locations. The proposed locations for the sample(s) are shown in Figure 1. However, the final determination of whether an additional sample is required will be based on a site inspection.

E No additional sampling is recommended for the site, since it has not been historically used in hazardous material activities.

F Recommend additional shallow soil sample(s) be taken at the identified locaitons(s) and tested for Total Analyte List (TAL) Metals based on the potential hazardous substance that may be present at the site.

G Recommend no further sampling at the site. Although site has been listed as a part of OU5 in the researced documents, it falls outside the established OU5 boundary.



MOUND PLANT OPERABLE UNIT 5

PHASE 1 RI/FS OPERATIONAL AREA SAMPLING AND LOCATION OF POTENTIAL SITES OF CONTAMINATION

APPENDIX D

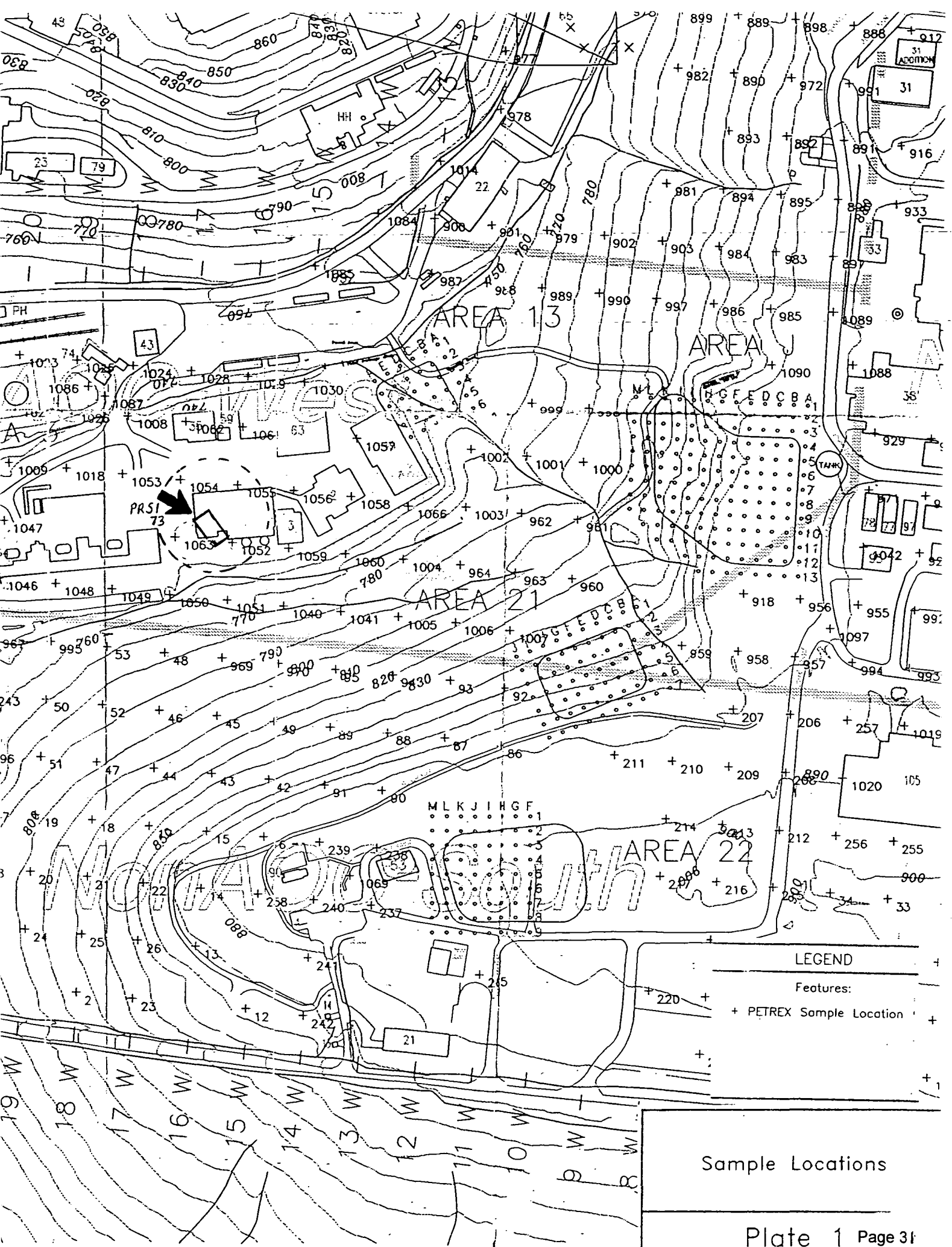
RADIOLOGICAL DATA (FIDLER SURVEY MOUND SOIL SCREENING FACILITY DATA) FOR NON-AOC POINTS

	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:
09N10	213.2	90	13.13	10.0	NC	25	b	0.9	a
09N11	213.2	70	13.13	4.5	NC	8	a	0.9	a
09N12	213.2	140	13.13	9.0	NC	18	a	1.2	a
09N13	213.2	140	13.13	9.0	NC	7	a	1.5	a
09N14	130	110	6.5	6.0	NC	14	a	0.8	a
09N15	130	105	6.5	6.0	NC	7	a	0.8	a
09N16	130	60	6.5	4.5	NC	11	a	0.6	a
09N17	130	80	6.5	4.5	NC	2	a	1.1	a
09N18	130	80	6.5	4.5	NC	NC		NC	
09N19	130	70	6.5	4.0	NC	NC		NC	
09N20	130	75	6.5	4.5	NC	NR		NR	
09N21	157.3	95	8.45	4.0	NC	NR		NR	
09N22	117.0	80	8.71	6.0	NC	NC		NC	
09N25	157.3	50	8.45	4.0	NC	WIPE	c	WIPE	c
09N26	157.3	80	8.45	4.0	NC	NR		NR	
09N27	143	100	6.63	7.5	NC	13	a	0.6	a
10N01	253.5	180	12.48	9.5	NC	4	a	1	a
10N02	122.2	100	5.59	4.0	NC	WIPE	c	WIPE	c
10N03	130	90	6.5	5.0	NC	WIPE	c	WIPE	c
10N04	130	80	6.5	3.0	NC	1	a	0	a
10N05	122.2	85	5.59	5.0	NC	11	a	0.9	a
10N10	213.2	70	13.13	8.5	NC	12	a	0.8	a
10N11	213.2	110	13.13	6.5	NC	2	a	0.6	a
10N12	213.2	90	13.13	9.5	NC	21	a	1.1	a
10N13	130	115	6.5	5.5	NC	4	a	0.9	a
10N14	130	50	6.5	4.5	NC	0	a	0	a
10N15	130	85	6.5	5.0	NC	0	a	0.6	a
10N16	130	60	6.5	4.0	NC	WIPE	c	WIPE	c
10N17	130	80	6.5	6.0	NC	0	a	0	a

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

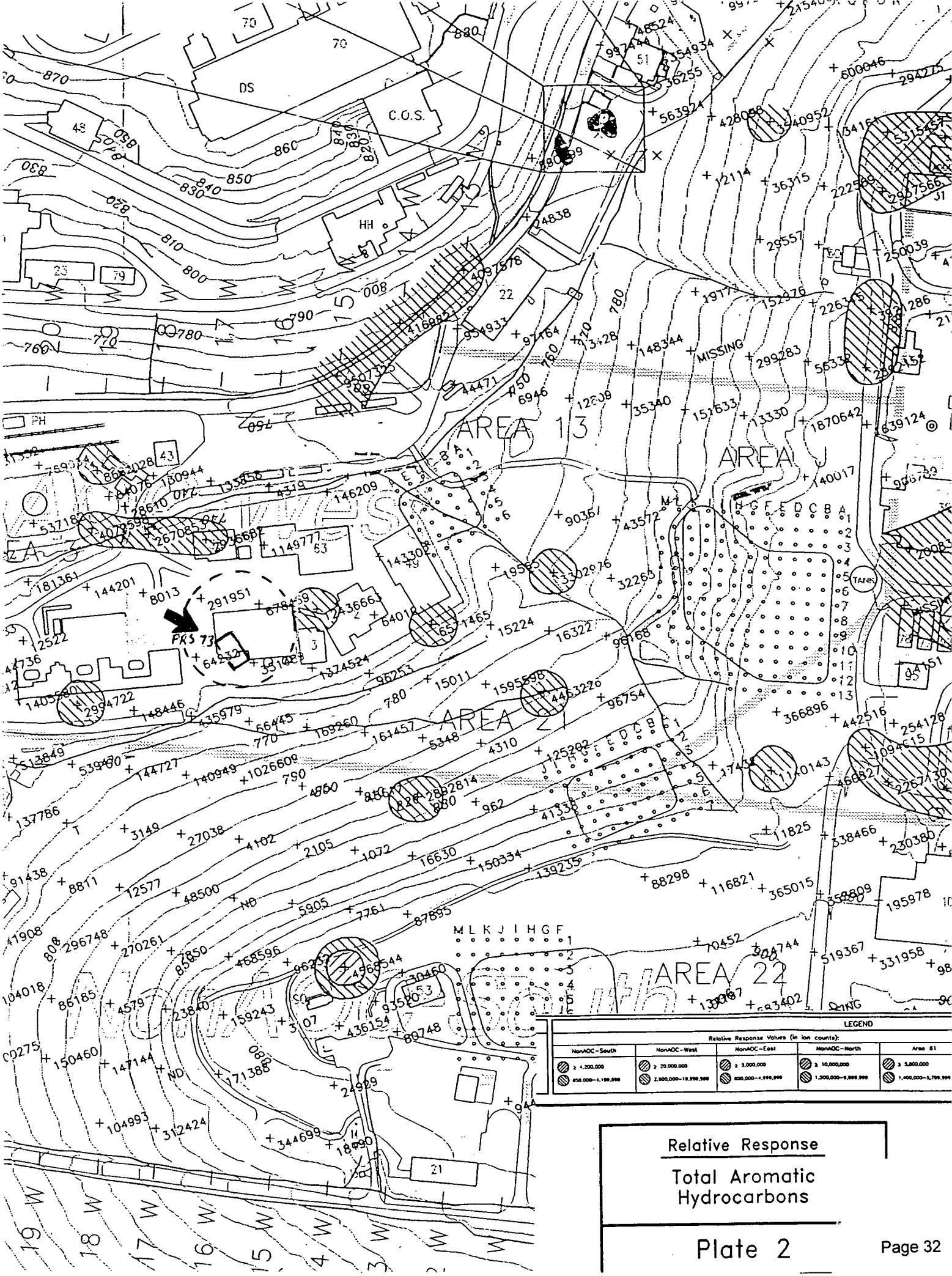
	FIDLER SURVEY DATA					MOUND SOIL SCREENING FACILITY DATA			
SMPID	Contamination Criteria CH1	FIDLER Readings CH1	Contamination Criteria CH2	FIDLER Readings CH2	FIDLER Readings Out Channel	Plutonium - 238		Thorium - 232	
	Units: CPM	Units: CPM	Units: KCPM	Units: KCPM	Units: KCPM	Units: pCi/g		Units: pCi/g	
	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	Note:	RESULTS	Note:

NR - Not recorded
NC - No sample/reading taken
NA - Reading not taken; contamination criteria not exceeded.
a - Mound Soil Screening Facility detection level not exceeded.
b - Concentration at or above the Mound Soil Screening Facility detection level.
c - Results of the wipe sample were less than 20 disintegrations per minute.
CPM - Counts per minute
KCPM - Counts per minute x 1000
pCi/g - Picocuires per gram



Sample Locations

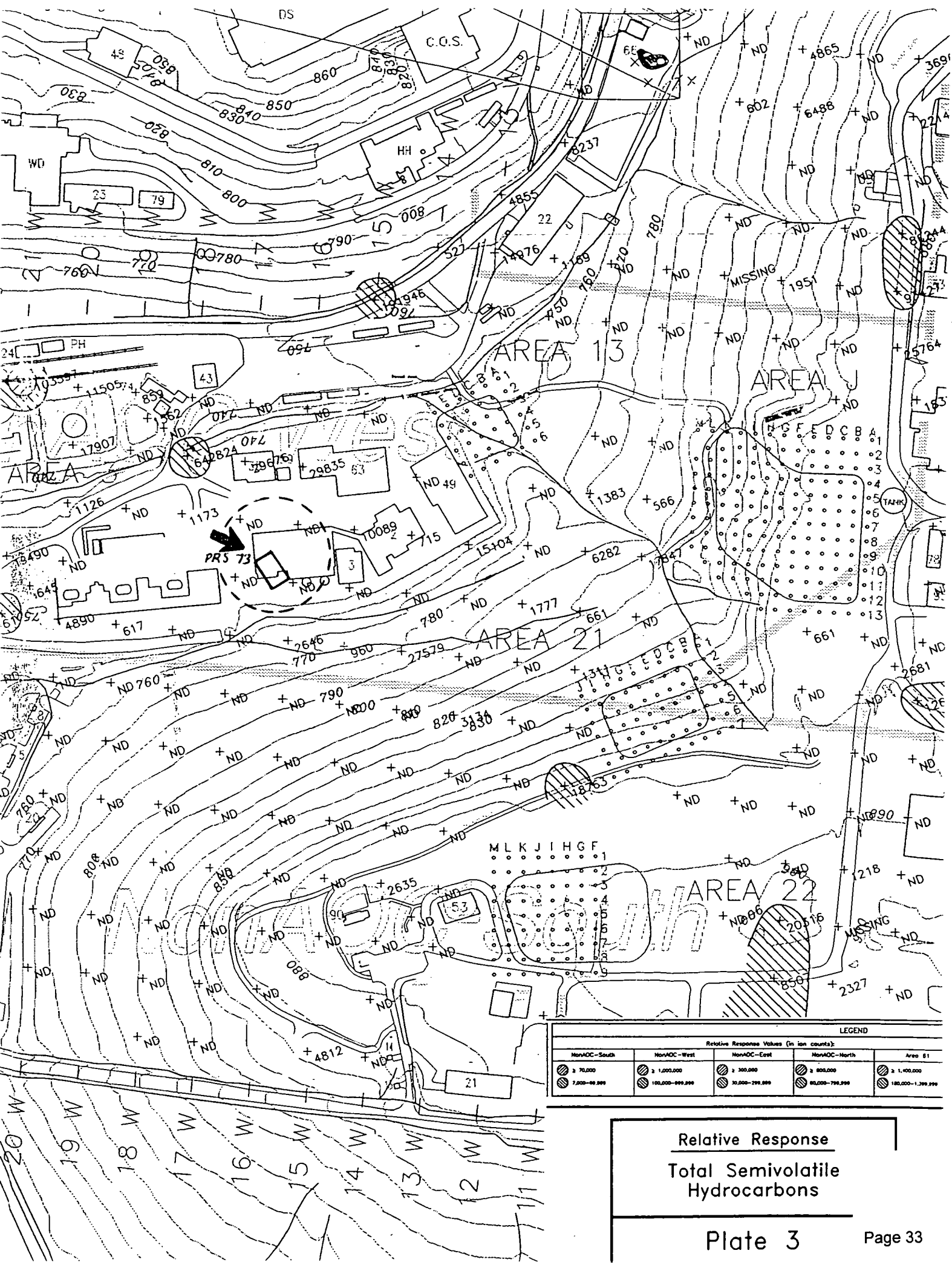
Plate 1 Page 31



Relative Response

Total Aromatic Hydrocarbons

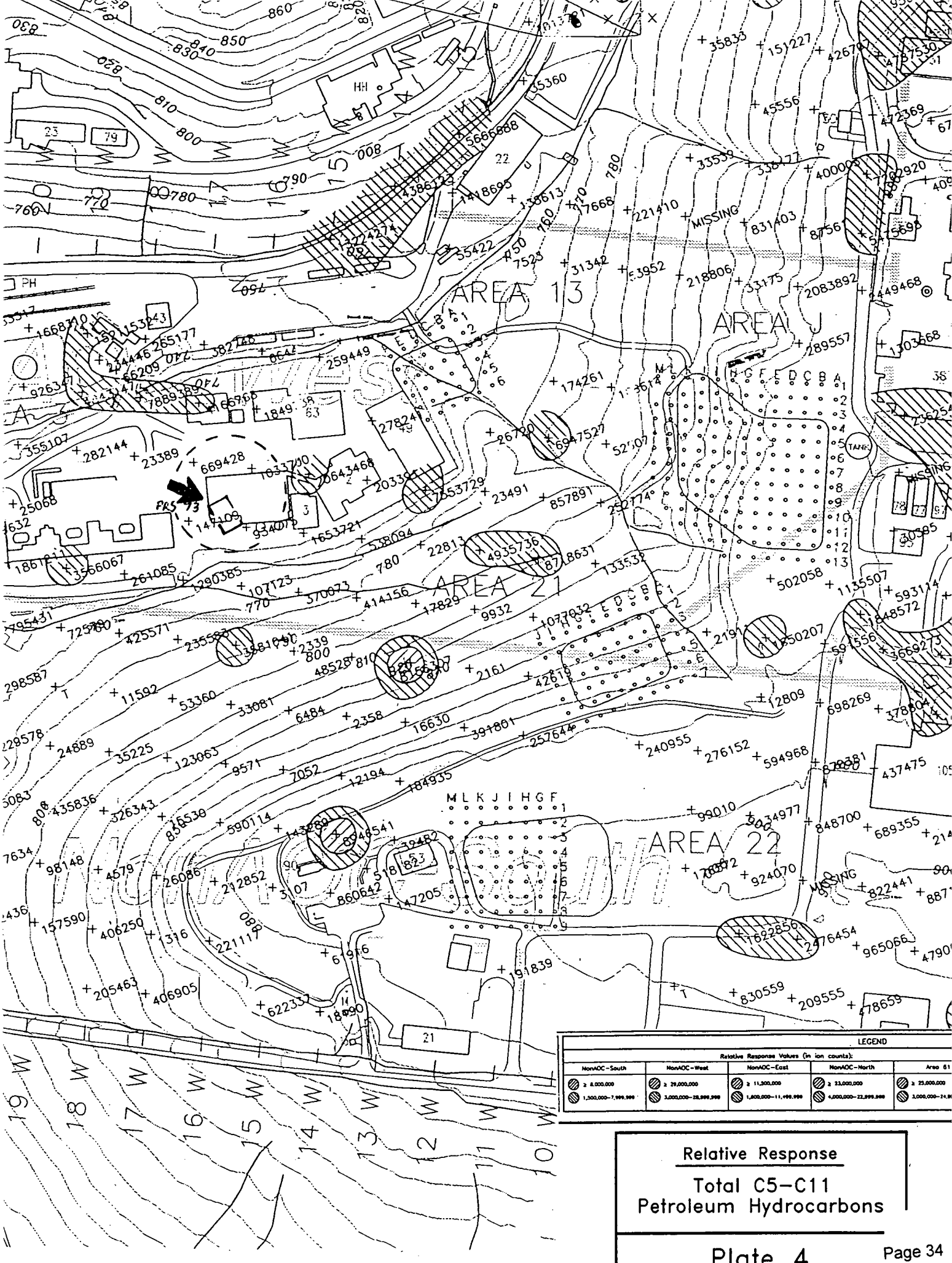
Plate 2



Relative Response

Total Semivolatile Hydrocarbons

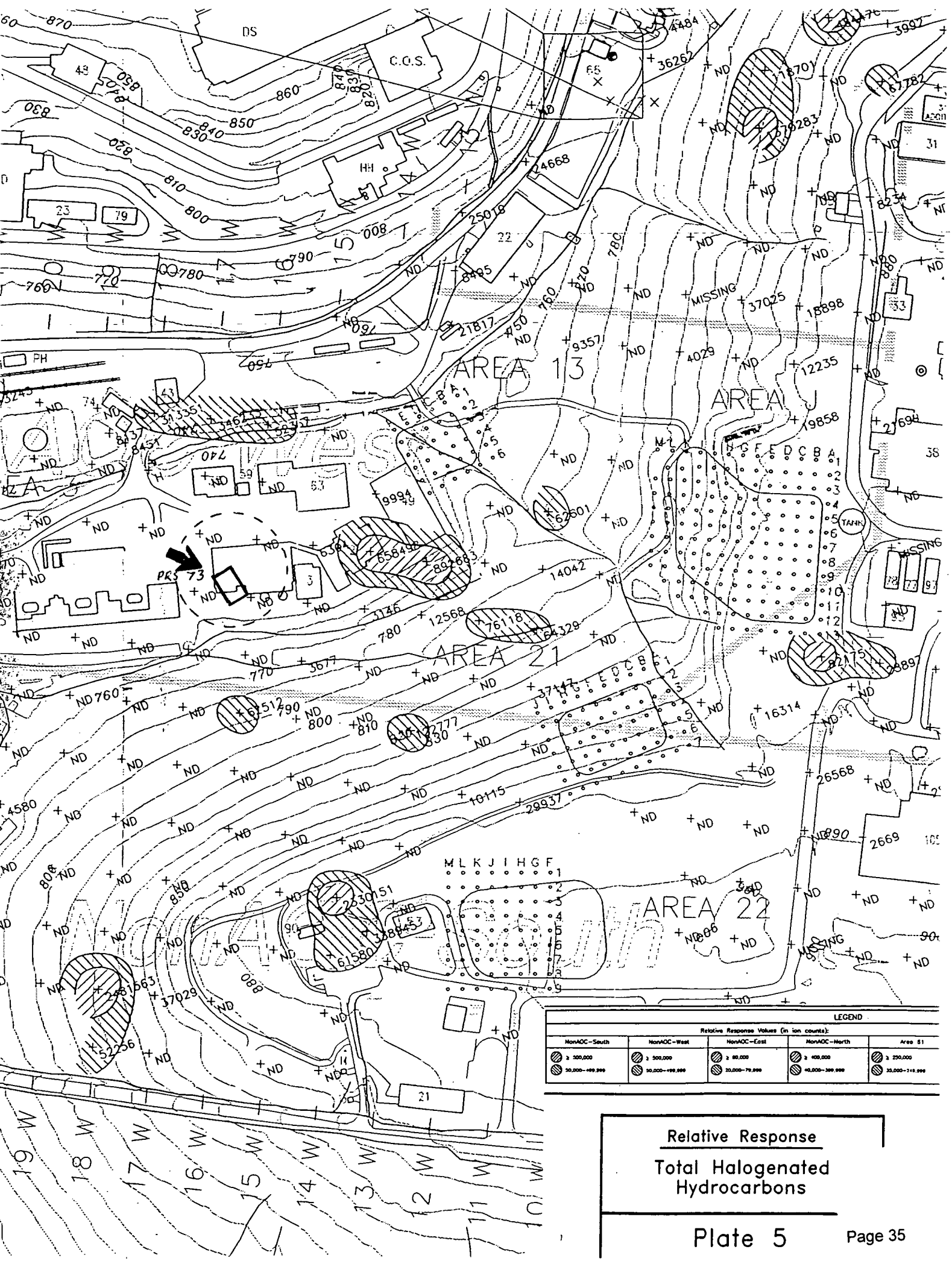
Plate 3



Relative Response

Total C5–C11 Petroleum Hydrocarbons

Plate 4



Relative Response

Total Halogenated Hydrocarbons

Plate 5

Table 2: NonAOC-West Petrex Soil Gas Survey Results

NERI Project: 2114-12E
Site: Operable Unit -5, USDOE Mound Facility
Analysis: Thermal Desorption - Mass Spectrometry
Date of Analysis: 11/9/94
Units: Ion Counts

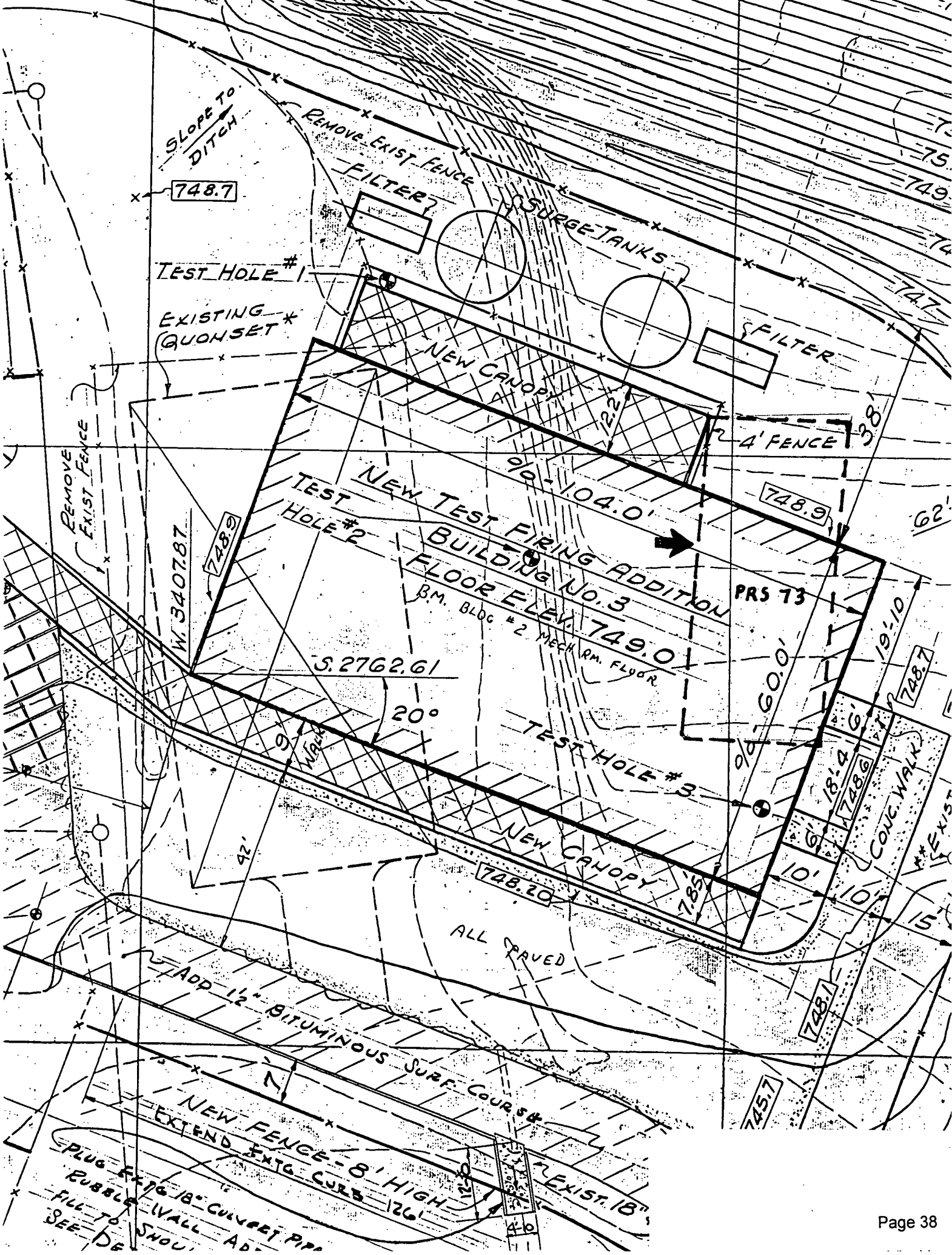
Table 2 (cont'd)

Sample #	Total Aromatic Hydrocarbons (a)	Total Semivolatile Hydrocarbons (b)	Total C5 to C11 Petroleum Hydrocarbons (c)	Total Halogenated Hydrocarbons (d)
1035	2,087,712	208,961	4,036,897	H
1039	546,090	9,996	741,506	ND
3039 (e)	516,065	21,227	733,093	ND
1040	169,260	960	370,073	3,677
1041	161,457	27,579	414,156	ND
1043	13,388,803	35,887	22,611,601	37,483
1044	107,749	ND	197,715	ND
1045	285,417	ND	566,535	4,393
1046	1,405,580	4,690	1,861,211	ND
1047	12,522	ND	25,068	ND
1048	2,994,722	617	3,586,067	ND
1049	148,446	ND	261,085	ND
1050	435,979	ND	1,290,385	ND
1051	66,445	2,646	107,123	ND
3051 (e)	64,919	752	112,256	ND
1052	351,489	ND	934,775	ND
1053	8,013	1,173	23,380	ND
1054	291,951	ND	669,428	ND
1055	678,469	ND	1,033,700	ND
1056	12,436,663	10,089	20,643,468	6,304
3056 (e)	12,445,999	13,823	21,137,796	8,479
1057	143,302	ND	278,241	9,994
1058	64,010	715	203,391	658,498
1059	1,374,524	ND	1,653,721	ND
1060	96,253	ND	538,094	3,146
1061	1,148,777	29,835	1,849,738	ND
1062	2,936,682	29,676	4,166,768	ND
1063	64,232	ND	147,109	ND
1064	444,736	645	916,632	ND
1065	862,915	9,049	1,900,950	7,322

Table 2 (cont'd)

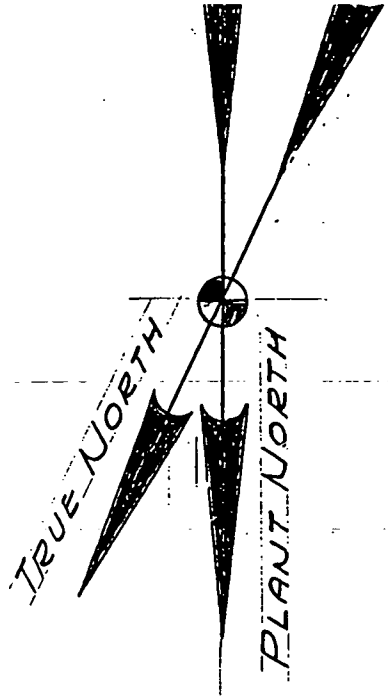
Sample #	Total Aromatic Hydrocarbons (a)	Total Semivolatile Hydrocarbons (b)	Total C5 to C11 Petroleum Hydrocarbons (c)	Total Halogenated Hydrocarbons (d)
1066	6,571,465	15,104	7,553,729	892,683
1070	58,029	ND	183,636	3,689
1071	4,057,383	579,124	9,891,577	H
1084	4,169,821	527	4,386,123	ND
1085	9,507,325	191,946	13,224,274	ND
1086	64,076	1,562	234,446	8,137
1087	28,610	ND	66,209	8,451
3087 (e)	38,480	ND	83,398	7,390
1088	906,789	18,388	1,303,668	21,699
1089	1,639,124	25,764	2,449,468	ND
1090	140,017	ND	289,557	19,858
1091	2,507	ND	2,507	ND
1092	88,618	1,896	252,302	17,004
1093	21,843,637	1,389,465	29,658,830	ND
1096	395,678	1,440	1,161,588	168,226
6001 *	ND	ND	544	ND
6002 *	2,315	ND	2,315	ND
6003 *	ND	ND	ND	ND

Key: (a) Intensity of response to ions of atomic masses 78, 92, 106, 120, 134, 148, 162, 176, 190, and 204.
(b) Intensity of response to ions of atomic masses 128, 142, 153, 156, 178, 184, 198, 202, and 212.
(c) Intensity of response to ions of atomic masses 70, 72, 78, 84, 86, 92, 98, 100, 106, 110, 112, 114, 120, 124, 126, 128, 134, 138, 140, 142, 148, 152, 154, and 156.
(d) Intensity of response to ions of atomic masses 101, 130, 146, 151, and 164.
(e) Duplicate of preceding sample.
H High levels of petroleum hydrocarbons have interfered with the identification of halogenated hydrocarbons in this sample; see text.
T High levels of terpenes have interfered with the identification of petroleum hydrocarbons in this sample; see text.
ND The targeted compounds were not detected in this sample.
* Travel Blank


SLOPE TO DITCH
748.7
REMOVE EXIST FENCE
FILTER
SURGE TANKS
TEST HOLE #1
EXISTING QUONSET
NEW CANOPY
FILTER
4' FENCE
748.9
NEW TEST FIRING ADDITION
BUILDING NO. 3
FLOOR ELEV. 749.0
B.M. BLDG #2 MECH RM. FLOOR
TEST HOLE #2
TEST HOLE #3
PRS 73
748.9
W. 340787
S. 2762.61
20°
9' WALK
42'
NEW CANOPY
748.20
748.7
748.6
748.1
745.7
CONC. WALK
ALL PAVED
ADD 1½" BITUMINOUS SURF. COURSE
NEW FENCE - 8' HIGH
EXTEND EXTG CURB
EXIST. 18"
PLUG EXTG 18" CULVERT PIPE
RUBBLE WALL AD
FILL TO SHOU
SEE DE

749

745



GRAPHIC SCALE

20 10 5 0 20 40 60

SCALE: 1" = 20'

A 8-84 NUMBERED

NO.	DATE	REVISIONS	BY	CK.	PROJ. ENGR.	A. E. C. APP.
	3/26/64	AS BUILT DRAWING	CR			
1	3/25/64	ADDAD - DETAILS 1, 2, 3; CURB DETAILS; RESURFACE EXIST. ROAD; PAVING SOUTH OF BLDG. #3; TWO NEW CONC. FLUMES, EXTEND CURB 12'; CHANGED BLDG. COORDINATES.	CR			

U. S. ATOMIC ENERGY COMMISSION

DAYTON AREA OFFICE

MOUND LABORATORY

MIAMISBURG OHIO

TEST FIRING ADDITION

BUILDING No. 3

SITE PLAN

CONTRACT NO. (A-E)	AT (29-2) - 1426
BUDGET NO.	
DRAWN	SJG
CHECKED	AMC
A.-E. APPROVED	
DESIGNER	AMC
JOB ENGR.	
PROJ. MGR.	AMC
SCALE	1" = 20'
DATE	

SUBMITTED Sanborn, Steketee, Otis and Evans 5/17/63
ENGINEER - ARCHITECT

RECOMMENDED David L. Scott 5/24/63
MONSANTO

APPROVED W. B. Creamer
A. E. C.

SAMBORN, STEKETEE, OTIS and EVANS
ENGINEERS and ARCHITECTS
L-O-F BUILDING TOLEDO, OHIO

DRAWING NO. G-1

REV.

300300

MOUND

Environmental
Restoration
Program

Further Assessment

Soil Gas Confirmation Sampling

Mound Plant
Miamisburg, Ohio

May 1996

Revision 0

Department of Energy

EG&G Mound Applied Technologies

Table I.1 Soil Analyte List

Volatile Organic Compounds

Acetone	Dibromochloromethane	4-Methyl-2-Pentanone
Benzene	1,1-Dichloroethane	Styrene
Bromodichloromethane	1,2-Dichloroethane	1,1,2,2-Tetrachloroethane
Bromoform	1,1-Dichloroethene	Tetrachloroethene
Bromomethane	1,2-Dichloroethene (total)	1,1,1-Trichloroethane
2-Butanone	1,2-Dichloropropane	1,1,2-Trichloroethane-
Carbon Disulfide	cis-1,3-Dichloropropene	Trichloroethene
Carbon Tetrachloride	trans-1,3-Dichloropropene	Toluene
Chlorobenzene	Ethylbenzene	Vinyl Acetate
Chloroethane	2-Hexanone	Vinyl Chloride
Chloroform	Methylene Chloride	Xylenes (total)
Chloromethane		

Semivolatile Organic Compounds

Acenaphthene	Chrysene	Hexachlorobenzene
Acenaphthylene	Dibenz(a,h)anthracene	Hexachlorobutadiene
Anthracene	Dibenzofuran	Hexachlorocyclopentadiene
Benzo(a)anthracene	1,2-Dichlorobenzene	Hexachloroethane
Benzo(a)pyrene	1,3-Dichlorobenzene	Indeno(1,2,3-cd)pyrene
Benzo(b)fluoranthene	1,4-Dichlorobenzene	Isophorone
Benzo(g,h,i)perylene	3,3-Dichlorobenzidine	2-Methylnaphthalene
Benzo(k)fluoranthene	2,4-Dichlorophenol	2-Methylphenol
bis(2-Chloroethoxy)methane	Diethylphthalate	4-Methylphenol
bis(2-Chloroethyl)ether	2,4-Dimethylphenol	Naphthalene
bis(2-Ethylhexyl)phthalate	Dimethyphthalate	2-Nitroaniline
4-Bromophenyl-phenylether	Di-n-butylphthalate	3-Nitroaniline
Butylbenzylphthalate	Di-n-octylphthalate	4-Nitroaniline
Carbazole	4,6-Dinitro-2-methylphenol	Nitrobenzene
4-Chloroaniline	2,4-Dinitrophenol	2-Nitrophenol
4-Chloro-3-methylphenol	2,4-Dinitrotoluene	4-Nitrophenol
2-Chloronaphthalene	2,6-Dinitrotoluene	N-Nitroso-di-n-propylamine
2-Chlorophenol	Fluoranthene	N-Nitroso-diphenylamine
4-Chlorophenyl-phenylether	Fluorene	2,2-oxybis(1-Chloropropane)
Pentachlorophenol	Pyrene	2,4,5-Trichlorobenzene
Phenanthrene	1,2,4-Trichlorobenzene	2,4,6-Trichlorobenzene
Phenol		

Table I.1 Soil Analyte List (Continued)

Pesticides/PCB's		
Aroclor-1016	Delta-BHC	Endosulfan II
Aroclor-1221	Gamma-BHC	Endosulfan sulfate
Aroclor-1232	alpha-Chlordane	Endrin
Aroclor-1242	gamma-Chlordane	Endrin aldehyde
Aroclor-1248	4,4'-DDD	Endrin ketone
Aroclor-1254	4,4'-DDE	Heptachlor
Aroclor-1260	4,4'-DDT	Heptachlor epoxide
Aldrin	Dieldrin	Methoxychlor
Alpha-BHC	Endosulfan I	Toxaphene
Beta-BHC		
Inorganics		
Aluminum	Copper	Potassium
Antimony	Cyanide	Selenium
Arsenic	Iron	Silver
Barium	Lead	Sodium
Beryllium	Lithium	Thallium
Bismuth	Magnesium	Tin
Cadmium	Manganese	Vanadium
Calcium	Mercury	Zinc
Chromium	Molybdenum	Nitrate/Nitrite
Cobalt	Nickel	Explosives (USATHAMA,PETN)
Radionuclides		
Americium-241	Plutonium-238	Thorium-230
Bismuth-207	Plutonium-239/240	Thorium-232
Bismuth-210	Potassium-40	Uranium-234
Cesium-137	Radium-226	Uranium-235
Cobalt-60	Thorium-228	Uranium-238

Table I.2. Variance From 3-Foot Sampling Depth Specification

Location	Description of Variance
SGC-NAC-000001	Core sampler hit refusal at 2 feet.
SGC-NAC-000002	Relocated due to utilities.
SGC-NAC-000003	Core sampler hit refusal at 2 feet.
SGC-NAC-000004	Core sampler hit refusal at 18 inches.
SGC-NAC-000005	Drilled to 1 foot, hand-augered rest due to utilities.
SGC-NAC-000006	Drilled to 1 foot, hand-augered rest due to utilities.
SGC-NAC-000007	Core sampler hit refusal at 18 inches.
SGC-NAC-000008	Drilled to 2 feet due to utilities.
SGC-NAC-000010	Drilled to 1 foot; hand-augered rest due to utilities; flag against building, so sample taken 6 feet from flag.
SGC-NAC-000012	Drilled to 2 feet due to utilities.
SGC-SAN-000018	Core sampler hit refusal at 2 feet; relocated from inside clarifier.
SGC-NAC-000029	Core sampler hit refusal at 18 inches.
SGC-A61-000043	Sampled 1 foot from flag.
SGC-A61-000047	Drilled to 2 feet due to utilities.
SGC-A61-000048	Drilled to 2 feet due to utilities.
SGC-A61-000049	Relocated due to utilities.
SGC-A61-000051	Core sampler hit refusal at 18 inches.
SGC-A61-000052	Relocated due to utilities; core sampler hit refusal at 18 inches.
SGC-A61-000053	Core sampler hit refusal at 2 feet.
SGC-A13-000056	Core sampler hit refusal at 18 inches
SGC-A13-000058	Drilled to 1 foot, hand-augered rest due to utilities.
SGC-A13-000060	Core sampler hit refusal at 1 foot.
SGC-AOJ-000064	Core sampler hit refusal at 2 - 3 inches.
SGC-AOJ-000066	Core sampler hit refusal at 4 inches.
SGC-AOJ-000067	Core sampler hit refusal at 6 inches.
SGC-AOJ-000069	Core sampler hit refusal at 2 feet.
SGC-A03-000080	Core sampler hit refusal at 20 inches
SGC-A03-000081	Drilled to 2 feet due to utilities.
SGC-A03-000082	Drilled to 1 foot, hand-augered rest due to utilities.
SGC-A03-000083	Sampled 25 feet from original location due to storm sewer; core sampler hit refusal at 18 inches.
SGC-A03-000087	Core sampler hit refusal at 2 feet.
SGC-A21-000088	Core sampler hit refusal at 18 inches.
SGC-A21-000090	Core sampler hit refusal at 20 inches.
SGC-SDB-000097	Relocated due to utilities.
SGC-SDB-000098	Relocated from inside a building.
SGC-SDB-000101	Relocation of SGC-SDB-000099; first location surveyed incorrectly.
SGC-SDB-000102	Relocation of SGC-SDB-000100; first location surveyed incorrectly.

Table A.1

Detected Volatile Organic Compounds (µg/kg)

ANALYTE	Background Value	Industrial Scenario Guideline Criteria	SGC-NAC-000007	SGC-NAC-000010	SGC-NAC-000011	SGC-NAC-000012	SGC-NAC-000013
PETREX SAMPLE AREA			WEST	EAST	WEST	EAST	EAST
Acetone	NA	21000000					
1,2-Dichloroethene (total)	NA	43000000					
2-Butanone	NA	93000000				8 J	10 J
Benzene	NA	8.90E+03					
Carbon Disulfide	NA	280000					4 J
Chloroform	NA	3100					
Chloromethane	NA	NA		4 J			
Ethylbenzene	NA	480					
Methylene Chloride	NA	3.95E+05		8			
Tetrachloroethene	NA	21000000					
Toluene	NA	250000			2 J		
Trichloroethene	NA	41000	7				7
Xylene (total)	NA	430000000					

No entry - not detected

J - Numerical value is an estimated quantity

C - Identification confirmed by GC/MS

mg/kg - micrograms per kilogram

Red = above Guideline Criteria (GC)

Green = above GC and below Background

Magenta = above Background and Below GC

Blue = above Background (no GC)

Table A.1

Detected Volatile Organic Compounds (µg/kg)

ANALYTE	Background Value	Industrial Scenario Guideline Criteria	SGC-NAC-000014	SGC-NAC-000015	SGC-NAC-000016	SGC-NAC-000017	SGC-NAC-000018
PETREX SAMPLE AREA			SOUTH	SOUTH	SOUTH	SOUTH	WEST
Acetone	NA	21000000					
1,2-Dichloroethene (total)	NA	43000000		96			
2-Butanone	NA	93000000					
Benzene	NA	8.90E+03		2 J			
Carbon Disulfide	NA	280000					
Chloroform	NA	3100					
Chloromethane	NA	NA					
Ethylbenzene	NA	480		1 J			
Methylene Chloride	NA	3.95E+05			8		10
Tetrachloroethene	NA	21000000					
Toluene	NA	250000		28		2 J	
Trichloroethene	NA	41000		3 J			
Xylene (total)	NA	430000000	1 J	4 J			

No entry - not detected

J - Numerical value is an estimated quantity

C - Identification confirmed by GC/MS

mg/kg - micrograms per kilogram

Red = above Guideline Criteria (GC)

Green = above GC and below Background

Magenta = above Background and Below GC

Blue = above Background (no GC)

Table A.2.

Detected Semivolatile Organic Compounds (µg/kg)

ANALYTE	Background Value	Industrial Scenario Guideline Criteria	SGC-NAC-000001	SGC-NAC-000002	SGC-NAC-000003	SGC-NAC-000004	SGC-NAC-000005	SGC-NAC-000006	SGC-NAC-000008
PETREX Sample Area			NORTH	NORTH	NORTH	NORTH	EAST	EAST	WEST
Acenaphthene	NA	NA		190 J	63 J				
Acenaphthylene	NA	NA		730				42 J	
Anthracene	NA	64,000,000		1300	66 J		25 J	55 J	
Benzo(a)anthracene	NA	4,100		1500	180 J		160 J	350 J	57 J
Benzo(a)pyrene	NA	410		1300	180 J		200 J	450	65 J
Benzo(b)fluoranthene	NA	4,100		1000	180 J		190 J	460	67 J
Benzo(g,h,i)perylene	NA	NA		550	110 J		100 J	260 J	26 J
Benzo(k)fluoranthene	NA	41,000		1000	160 J		190 J	440	58 J
Bis(2-ethylhexyl)phthalate	NA	215,000							
Butylbenzylphthalate	NA	43,000,000							
Carbazole	NA	NA		600	62 J			34 J	
Chrysene	NA	410,000		1500	220 J		240 J	490	68 J
Di-n-butyl phthalate	NA	21,000,000	120 J			280 J			
Di-n-octyl phthalate	NA	4,300,000							
Dibenz(a,h)anthracene	NA	410		180 J	40 J		37 J	87 J	
Dibenzofuran	NA	NA		1100	23 J				
Diethyl phthalate	NA	NA							
Fluoranthene	NA	8,500,000		3400 D	480		400 J	800	110 J
Fluorene	NA	NA		1500	42 J				
Indeno(1,2,3-cd)pyrene	NA	4,100		690	120 J		130 J	320 J	36 J
2-Methylnaphthalene	NA	NA		970					
Naphthalene	NA	NA		4000 D	24 J				
Phenanthrene	NA	NA		4700 D	380		150 J	280 J	53 J
Phenol	NA	130,000,000							
Pyrene	NA	6,400,000	24 J	2700 D	440		340 J	730	120 J

No entry - not detected
J - Value is an est. quantity
D - Sample was diluted
NA - Value not available
H - Analyzed outside holding time
µg/kg - micrograms per kilogram
Red = above Guideline Criteria (GC)
Green = above GC and below Background
Magenta = above Background and Below GC
Blue = above Background (no GC)

All semivolatile organic compounds detected for samples #1 through #8 are listed on this page. No semivolatile organic compounds were detected for sample location 7.

Table A.2.

Detected Semivolatile Organic Compounds (µg/kg)

ANALYTE	Background Value	Industrial Scenario Guideline Criteria	SGC-NAC-000009	SGC-NAC-000010	SGC-NAC-000011	SGC-NAC-000012	SGC-NAC-000015	SGC-NAC-000016	SGC-NAC-000017
PETREX Sample Area			EAST	EAST	WEST	EAST	SOUTH	SOUTH	SOUTH
Acenaphthene	NA	NA							
Acenaphthylene	NA	NA							
Anthracene	NA	64,000,000							
Benzo(a)anthracene	NA	4,100				18 J		47 J	
Benzo(a)pyrene	NA	410				21 J		42 J	
Benzo(b)fluoranthene	NA	4,100				22 J		39 J	
Benzo(g,h,i)perylene	NA	NA						33 J	
Benzo(k)fluoranthene	NA	41,000				17 J		46 J	
Bis(2-ethylhexyl)phthalate	NA	215,000	71 J		36 J	35 J		100 J	
Butylbenzylphthalate	NA	43,000,000							
Carbazole	NA	NA							
Chrysene	NA	410,000		20 J		22 J		51 J	
Di-n-butyl phthalate	NA	21,000,000							
Di-n-octyl phthalate	NA	4,300,000							
Dibenz(a,h)anthracene	NA	410							
Dibenzofuran	NA	NA							
Diethyl phthalate	NA	NA							
Fluoranthene	NA	8,500,000		31 J		38 J		100 J	28 J
Fluorene	NA	NA							
Indeno(1,2,3-cd)pyrene	NA	4,100						27 J	
2-Methylnaphthalene	NA	NA							
Naphthalene	NA	NA					61 J		
Phenanthrene	NA	NA						63 J	
Phenol	NA	130,000,000							
Pyrene	NA	6,400,000		31 J	20 J	37 J		87 J	26 J

No entry - not detected
J - Value is an est. quantity
D - Sample was diluted
NA - Value not available
H - Analyzed outside holding time
µg/kg - micrograms per kilogram
Red = above Guideline Criteria (GC)
Green = above GC and below Background
Magenta = above Background and Below GC
Blue = above Background (no GC)

Table A.2.

Detected Semivolatile Organic Compounds (µg/kg)

ANALYTE	Background Value	Industrial Scenario Guideline Criteria	SGC-NAC-000018	SGC-NAC-000020	SGC-NAC-000021	SGC-NAC-000024	SGC-NAC-000027	SGC-NAC-000028	SGC-NAC-000029
PETREX Sample Area			WEST	WEST	WEST	SOUTH	SOUTH	SOUTH	SOUTH
Acenaphthene	NA	NA		21 J					
Acenaphthylene	NA	NA			44 J				
Anthracene	NA	64,000,000			130 J				
Benzo(a)anthracene	NA	4,100	48 J	130 J	110 J				
Benzo(a)pyrene	NA	410	68 J	150 J	130 J				
Benzo(b)fluoranthene	NA	4,100	59 J	67 J	88 J				
Benzo(g,h,i)perylene	NA	NA	49 J	100 J	100 J				
Benzo(k)fluoranthene	NA	41,000	62 J	37 J					
Bis(2-ethylhexyl)phthalate	NA	215,000	1000			26 J	24 J	26 J	25 J
Butylbenzylphthalate	NA	43,000,000							
Carbazole	NA	NA			21 J				
Chrysene	NA	410,000	54 J	220 J	170 J				
Di-n-butyl phthalate	NA	21,000,000							
Di-n-octyl phthalate	NA	4,300,000				89 J			
Dibenz(a,h)anthracene	NA	410	40 J	24 J	28 J				
Dibenzofuran	NA	NA							
Diethyl phthalate	NA	NA							
Fluoranthene	NA	8,500,000	84 J	180 J	320 J				
Fluorene	NA	NA			26 J				
Indeno(1,2,3-cd)pyrene	NA	4,100	53 J	46 J	73 J				
2-Methylnaphthalene	NA	NA							
Naphthalene	NA	NA							
Phenanthrene	NA	NA	27 J		220 J				
Phenol	NA	130,000,000							
Pyrene	NA	6,400,000	91 J	1400	310 J				

No entry - not detected
J - Value is an est. quantity
D - Sample was diluted
NA - Value not available
H - Analyzed outside holding time
µg/kg - micrograms per kilogram
Red = above Guideline Criteria (GC)
Green = above GC and below Background
Magenta = above Background and Below GC
Blue = above Background (no GC)

Table A.3.

Detected Pesticides/PCB's (µg/kg)

ANALYTE	Background	Industrial Scenario Guideline Criteria	SGC-NAC-000008	SGC-NAC-000010	SGC-NAC-000031	SGC-A66-000041
PETREX Sample Area			WEST	EAST	NORTH	NORTH
Aroclor-1248	ND	380	48			110
Aroclor-1254	ND	4,300	43			
Alpha-Chlordane	ND	NA				
Gamma-Chlordane	ND	NA				
4,4'-DDT	9000	13,000				
Dieldrin	ND	185		4.4	5 *	
Endosulfan I	ND	NA				3.4 *
Endosulfan II	NA	NA				
Endrin	ND	NA			11 *	
Heptachlor	ND	NA				

No entry - not detected
* - Unconfirmed due to interference
NA - Value not available
ND - No detections in background samples
mg/kg - micrograms per kilogram
Red = above Guideline Criteria (GC)
Green = above GC and below Background
Magenta = above Background and Below GC
Blue = above Background (no GC)

All pesticides / PCB detections for samples #1 - #41 are listed on this page. No Pesticides or PCBs were detected for sample locations 7, 11 or 18.

Table A.4.
Detected Inorganics

ANALYTE	Background Value	Industrial Scenario Guideline Criteria	SGC-NAC-000001	SGC-NAC-000002	SGC-NAC-000003	SGC-NAC-000004	SGC-NAC-000005	SGC-NAC-000006	SGC-NAC-000007	SGC-NAC-000008	SGC-NAC-000009
PETREX Sample Area			NORTH	NORTH	NORTH	NORTH	EAST	EAST	WEST	WEST	EAST
TAL INORGANICS (mg/kg)											
Aluminum	19000	NA	11000	4190	1910	11400	7970	7780	10200	2820	18700
Antimony	NA	85		0.23 B		0.24 B	0.41 B			0.27 B	0.91 B
Arsenic	8.6	64	1.5 B	2.1 B	2.9 B	1.4 B	7	7.2	1.9 B	3.2	11.1
Barium	180	15,000	48.6	20.7 B	23.7 B	47.1 B	73.6	86.4	26.2 B	23.2 B	163
Beryllium	1.3	1	0.56		0.12 B	0.65	0.38	0.28	0.28		0.9 B
Bismuth	NA	NA									0.85 B
Cadmium	2.1	210		0.25 B	0.19 B		0.36 B	0.5 B	0.33 B	0.22 B	6
Calcium	310000	NA	162000	159000	95500	152000	13600	86200	83900	113000	5940
Chromium	20	110,000	13.2	6.7	3.8	15.2	13	11.6	14.3	5.7	20.3
Cobalt	19	NA	9.8 B	4.5 B	2.3 B	10.1 B	7.6 B	7.6 B	11 B	3.3 B	13
Copper	26	NA	16.2	11.9	9.9	17.1	14.5	15.2	16.2	13.9	19.2
Cyanide	ND	4,300									
Iron	35000	NA	21300	10600	5680	21800	17200	17700	23000	7660	29400
Lead	48	NA	6.7	5.2	11.2	8.6	30.9	25.1	7.2	5.9	22.2
Lithium	26	NA	21 B	12.5 B	6.2 B	23 B	7.7 B	10.3 B	3.2 B	8.2 B	14.7 B
Magnesium	40000	NA	6160	57800	27900	5670	5210	35600	21600	47900	4500
Manganese	1400	27,000	695	384	270	612	383	589	493	256	728
Mercury	ND	64			0.13						
Molybdenum	27	NA	0.43 B	1.2 B	0.77 B		1.7 B	1.5 B	0.63 B	1.4 B	1.8 B
Nickel	32	4,300	18.4	9.9	6.4 B	20.6	11.1	16.1	22.6	8.1 B	24.5
Potassium	1900	NA	1780	742 B	346 B	2080	574 B	744 B	1590	463 B	1420
Selenium	NA	NA									
Silver	1.7	1,100			0.24 B						
Sodium	240	NA	228 B	888 B	150 B	137 B	411 B	348 B	246 B	341 B	1010 B
Thallium	0.46	NA									
Tin	20	NA	1.1 B			1.4 B	1 B			4.5 B	1.5 B
Vanadium	25	1,500	14.9	8.3	4.7	16.3	23.1	18.9	14.2	7.4	42.7
Zinc	140	64,000	53.3	29.5		67	59	69.2	53.8	36.6	71.8
OTHER INORGANICS											
% Solids (%)	NA	NA	83.9	93.8	88.5	83.3	78.4	75	83.9	95	78.9
Nitrate/Nitrite (mg-N/kg)	NA	NA	2	1.8	1.2	2.1	7.2	4.8	1.6	26.5	2.2

No entry - not detected
mg/kg - milligrams/kilogram
NA - Value not available
NC - Background not comp
ND - No detections in background samples
mg-N/kg - milligrams per kilogram, reported as nitrogen
J - Numerical value is an estimated quantity
B - Analyte detected in blanks associated with this sample
Red = above Guideline Criteria (GC)
Green = above GC and below Background
Magenta = above Background and Below GC
Blue = above Background (no GC)

Table A.4.

Detected Inorganics

ANALYTE	Background Value	Industrial Scenario Guideline Criteria	SGC-NAC-000010	SGC-NAC-000011	SGC-NAC-000012	SGC-NAC-000013	SGC-NAC-000014	SGC-NAC-000015	SGC-NAC-000016	SGC-NAC-000017
PETREX Sample Area			EAST	WEST	EAST	EAST	SOUTH	SOUTH	SOUTH	SOUTH
TAL INORGANICS (mg/kg)										
Aluminum	19000	NA	7300	10300	13100	8460	17700	7370	14100	20000
Antimony	NA	85	0.21 B	1.2 B						
Arsenic	8.6	64	7.2	2.2 B	1.9 BJ	1.2 BJ	2.7	3.6 J	3.4	2.4 B
Barium	180	15,000	64.7	13.5 B	78.4	53.4	110	51.3 B	68.7	119
Beryllium	1.3	1	0.34	0.36 B	0.44	0.2 B	0.68	0.24 B	0.46	0.96
Bismuth	NA	NA		0.99 B					0.82 B	1.2 B
Cadmium	2.1	210	0.62 B	5.2	6	4.6	7.7	3.7	5.7	8.6
Calcium	310000	NA	41500	90800	127000 J	222000 J	94200	342000	133690	23800
Chromium	20	110,000	12	11.9	17.3	10.8	22.3	9.1	17.7	24.5
Cobalt	19	NA	7.9 B	13.7	12.7 J	7.5 BJ	13.9	5.8 B	11.6 B	18.5
Copper	26	NA	17.4	16.6	21.3 J	13.5 J	22.4	12.2	19.3	26.9
Cyanide	ND	4,300					1.8		1	
Iron	35000	NA	17300	25600	27900	21100	36300	16600	26600	40000
Lead	48	NA	16.5	5.7	9.3 J	29.4 J	12.9	14.3	14.1	27.5
Lithium	26	NA	9.2 B	27.3	25.3	17.8 B	30.7	15 B	25.1	34.1
Magnesium	40000	NA	16700	12300	19900 J	7250 J	8190	4760	14600	6250
Manganese	1400	27,000	604	908	658	543	939	689	641	1360
Mercury	ND	64								0.07 B
Molybdenum	27	NA	2.3 B	0.58 B	1.3 B	0.81 B	1.3 B	0.51 B	1.3 B	0.76 B
Nickel	32	4,300	16.5	21.6	26.4	17.6	31.4	13.8	23.9	34.4
Potassium	1900	NA	794 B	2210 B	1630	1100 B	2250 B	1010 B	2090 B	3680
Selenium	NA	NA		0.31 B						
Silver	1.7	1,100								
Sodium	240	NA	82 B	288 B	2490 J	328 BJ	142 B	248 B	398 B	209 B
Thallium	0.46	NA								
Tin	20	NA			1.6 B	1.1 B	0.98 B		1.7 B	3.3 B
Vanadium	25	1,500	19.2	15.8	22.4	12.9	29.4	10.7	23.8	30.2
Zinc	140	64,000	299	59.9	68.5	44.9	92.5	67.7	70.5	103
OTHER INORGANICS										
% Solids (%)	NA	NA	83.9	90.1	84.7	81.7	80.9	74	85.3	72.8
Nitrate/Nitrite (mg-N/kg)	NA	NA	5.9	5.3	1.8	2.1	4.9	3	2.4	6.4

No entry - not detected
mg/kg - milligrams/kilogram
NA - Value not available
NC - Background not comp
ND - No detections in background samples
mg-N/kg - milligrams per kilogram, reported as nitrogen
J - Numerical value is an estimated quantity
B - Analyte detected in blanks associated with this sample
Red = above Guideline Criteria (GC)
Green = above GC and below Background
Magenta = above Background and Below GC
Blue = above Background (no GC)

Table A.4.
Detected Inorganics

ANALYTE	Background Value	Industrial Scenario Guideline Criteria	SGC-NAC-000018	SGC-NAC-000019	SGC-NAC-000020	SGC-NAC-000021	SGC-NAC-000022	SGC-NAC-000023	SGC-NAC-000024	SGC-NAC-000025
PETREX Sample Area			WEST	WEST	WEST	WEST	WEST	SOUTH	SOUTH	SOUTH
TAL INORGANICS (mg/kg)										
Aluminum	19000	NA	5130	7820	13400	7720	8030	12200	5410	6830
Antimony	NA	85					0.66 B			
Arsenic	8.6	64	4.1	6.8	3	4.3	13.3	2 BJ	0.83 BJ	1.9 BJ
Barium	180	15,000	21.4 B	56.1	17.9 B	24.2 B	65.8 J	90.3	28.4 B	49.2
Beryllium	1.3	1	0.28	0.22 B	0.77	0.19 B	0.49	0.91	0.29	0.4
Bismuth	NA	NA								
Cadmium	2.1	210		3.4						
Calcium	310000	NA	157000	76400	64400	58300	42200	35400 J	210000 J	162000 J
Chromium	20	110,000	9.3	8.9	18.6	13.9	14.4 J	16.2	7.9	18.1
Cobalt	19	NA	5.5 B	8.4 B	12.9	10.3 B	11.5 B	13.1	5.9 B	8.7 B
Copper	26	NA	11.6	14.2	17.3	26.5	26.3 J	18.9	8.2	30.5
Cyanide	ND	4,300				0.65 B				
Iron	35000	NA	13600	16000	25500	20600	22300 J	29300	14600	24200
Lead	48	NA	8.2	14.2	5.3	14	14.9 J	16.4 J	5.2 J	6.9 J
Lithium	26	NA	18.1 B	9.7 B	39.5	25.8	15.3 B	18.8 B	12.8 B	16.3 B
Magnesium	40000	NA	47700	29800	16300	15800	22000 J	4640	15700	14900
Manganese	1400	27,000	381	539	505	577	522 J	1030 J	393 J	429 J
Mercury	ND	64						0.07 BJ		
Molybdenum	27	NA	0.82 B	2.2 B		0.53 B	5.7	0.87 B	0.63 B	2.3 B
Nickel	32	4,300	13.5	13.3	27.3	21.3	27.4	42.3	12.3	22.2
Potassium	1900	NA	1040 B	1090 B	3590	1300	641 B	1760	874 B	443 B
Selenium	NA	NA								
Silver	1.7	1,100	0.41 B			0.33 B				
Sodium	240	NA	398 B	155 B	383 B	357 B	101 BJ	174 BJ	172 BJ	157 BJ
Thallium	0.46	NA								
Tin	20	NA		1.3 B	1.6 B	1.7 B	1 B	0.97 B		0.89 B
Vanadium	25	1,500	10.3	17.5	17.7	12.6 B	22.4 J	18	7.3	10.5
Zinc	140	64,000	41.2	56.1	84.9	68.9	72.5 J	66.6	28.9	64.6
OTHER INORGANICS										
% Solids (%)	NA	NA	84.2	85.3	87.6	77.4	78.3	77.5	89.5	89.3
Nitrate/Nitrite (mg-N/kg)	NA	NA	13.7	6.5	2.1	6.1	2.2	11.6	2.2	2

No entry - not detected
mg/kg - milligrams/kilogram
NA - Value not available
NC - Background not comp
ND - No detections in background samples
mg-N/kg - milligrams per kilogram, reported as nitrogen
J - Numerical value is an estimated quantity
B - Analyte detected in blanks associated with this sample
Red = above Guideline Criteria (GC)
Green = above GC and below Background
Magenta = above Background and Below GC
Blue = above Background (no GC)

Table A.5.

Detected Radionuclides (pCi/g)

ANALYTE	Background	Industrial Scenario Guideline Criteria	SGC-NAC-000006	SGC-NAC-000007	SGC-NAC-000008	SGC-NAC-000009	SGC-NAC-000010
PETREX Sample Area			EAST	WEST	WEST	EAST	EAST
Americium-241	ND	4.95					
Bismuth-207	ND	0.18					
Bismuth-210	ND	NA					
Cesium-137	0.42	0.46	**0.861**				
Cobalt-60	NC	0.10					
Plutonium-238	0.13	5.5	**4.32**	**0.537**	0.0826	0.0233	0.107
Plutonium-239/240	0.18	5.5					
Potassium-40	37	NA	14.3	10.8	7.72	12.9	15
Radium-226+D	2	0.14	**0.87**	**0.537**	**0.571**	**0.764**	**0.917**
Thorium-228+D	1.5	0.85	**1.06**	0.431	0.678	0.779	**0.914**
Thorium-230	1.9	44	1.18	0.582	0.541	1.09	1.27
Thorium-232	1.4	50	1.18	0.328	0.554	0.838	0.708
Uranium-234	1.1	38	0.761	0.551	0.361	0.712	0.897
Uranium-235+D	0.11	3.4					0.0459
Uranium-238+D	1.2	11.0	0.815	0.574	0.414	0.774	1.06

No entry - not detected
ND -No detections in background samples
NA - Data not available
NC - Background value not computed
pCi/g - picocuries per gram
Red = above Guideline Criteria (GC)
Green = above GC and below Background
Magenta = above Background and Below GC
Blue = above Background (no GC)

Table A.5.

Detected Radionuclides (pCi/g)

ANALYTE	Background	Industrial Scenario Guideline Criteria	SGC-NAC-000011	SGC-NAC-000012	SGC-NAC-000013	SGC-NAC-000014	SGC-NAC-000015
PETREX Sample Area			WEST	EAST	EAST	SOUTH	SOUTH
Americium-241	ND	4.95					
Bismuth-207	ND	0.18					
Bismuth-210	ND	NA					
Cesium-137	0.42	0.46				**0.826**	
Cobalt-60	NC	0.10					
Plutonium-238	0.13	5.5	0.0718	0.101	0.0107	**0.671**	0.0118
Plutonium-239/240	0.18	5.5		0.00154		0.0206	
Potassium-40	37	NA	17.8	15.5	4.65	22.5	19.2
Radium-226+D	2	0.14	**0.778**	**0.592**	**0.263**	**1.1**	**1.4**
Thorium-228+D	1.5	0.85	**0.913**	0.697	0.247	**1.18**	**1.37**
Thorium-230	1.9	44	0.902	0.803	0.359	1.09	1.48
Thorium-232	1.4	50	0.83	0.769	0.21	1.08	1.43
Uranium-234	1.1	38	0.882	0.693	0.378	0.866	1.01
Uranium-235+D	0.11	3.4		0.0231	0.0183	0.0548	0.0927
Uranium-238+D	1.2	11.0	0.871	0.681	0.424	1.01	0.955

No entry - not detected
ND -No detections in background samples
NA - Data not available
NC - Background value not computed
pCi/g - picocuries per gram
Red = above Guideline Criteria (GC)
Green = above GC and below Background
Magenta = above Background and Below GC
Blue = above Background (no GC)

Table A.5.

Detected Radionuclides (pCi/g)

ANALYTE	Background	Industrial Scenario Guideline Criteria	SGC-NAC-000016	SGC-NAC-000017	SGC-NAC-000018	SGC-NAC-000019	SGC-NAC-000020
PETREX Sample Area			SOUTH	SOUTH	WEST	WEST	WEST
Americium-241	ND	4.95					
Bismuth-207	ND	0.18					
Bismuth-210	ND	NA					
Cesium-137	0.42	0.46		**0.582**			
Cobalt-60	NC	0.10					
Plutonium-238	0.13	5.5	**0.253**	**0.2**	**0.684**	0.121	**0.721**
Plutonium-239/240	0.18	5.5	0.00413	0.0166	0.00487		
Potassium-40	37	NA	15.2	29.1	10.1	7.9	24.7
Radium-226+D	2	0.14	**0.934**	**0.96**	**0.677**	**0.528**	**0.841**
Thorium-228+D	1.5	0.85	**1.04**	**1.1**	0.465	0.378	**0.892**
Thorium-230	1.9	44	1.36	1.01	0.582	0.749	1.08
Thorium-232	1.4	50	0.894	1.26	0.508	0.375	0.843
Uranium-234	1.1	38	0.765	0.698	0.523	0.44	0.751
Uranium-235+D	0.11	3.4	0.0394	0.0403			0.0362
Uranium-238+D	1.2	11.0	0.993	0.852	0.496	0.691	0.825

No entry - not detected
ND -No detections in background samples
NA - Data not available
NC - Background value not computed
pCi/g - picocuries per gram
Red = above Guideline Criteria (GC)
Green = above GC and below Background
Magenta = above Background and Below GC
Blue = above Background (no GC)

MOUND

Environmental
Restoration
Program

OhioEPA

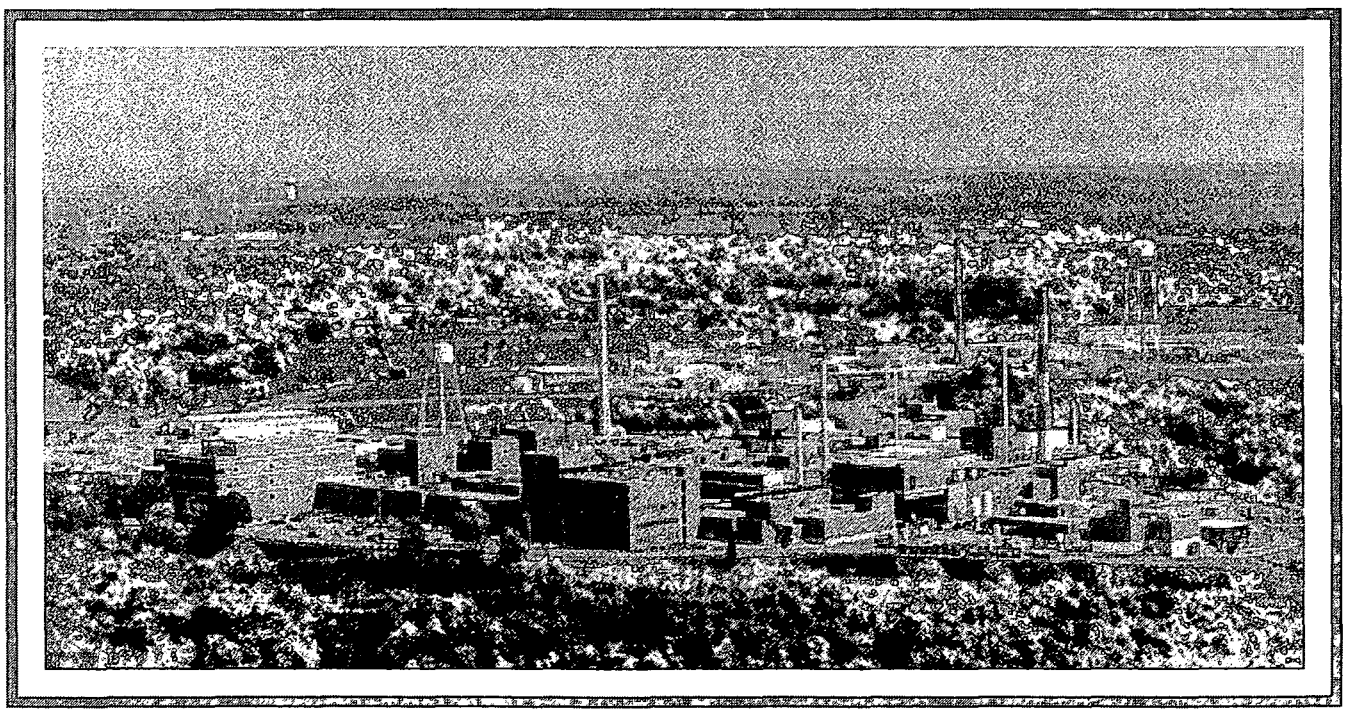
MOUND PLANT

Potential Release Site Package

PRS #73

Addendum 1

PUBLIC REVIEW DRAFT, MARCH 2002



PRS HISTORY:

Potential Release Site (PRS 73) an historical equipment storage area located in the lower valley (Test Fire) area was binned Further Assessment (FA) by the Core Team in February of 1997. Further Assessment sampling was completed in July of 2001 per the Sampling and Analysis Plan (SAP)[1] approved by the Core Team.

FURTHER ASSESSMENT ACTIVITY:

Process history indicated the potential contaminants of concern for PRS 73 are actinium-227, cesium-137, and radium-226. Samples were collected per the SAP and analyzed by gamma spectroscopy. Sample results are presented in Table 1. Sample locations are presented on the attached figure. Bismuth results reflect worst-case values for PRS 72, 73, and 87. The Further Assessment **Data Report**[2] presents a full account of soil sampling activities and sample results (onsite and offsite laboratory analyses).

Table 1: Gamma Spec Results (pCi/g)

Analyte:	Co-60	Cs-137+D	Pb-210+D	Ra-226+D	Ac-227+D	Th-230+D	Th-230 MDA	Th-232+D	Pu-238
Background:	NC	0.42	1.2	2	0.11	1.9		1.4	0.13
Screening Level:	0.07(1)	0.76(1)	1.8(1)	2.1(1)	0.56(1)	10(2)		1.47(1)	55(3)
Sample Location									
TFV-0-TF63-04	0	0	1.03	1.4	0	5.41	9.6	0.66	0
TFV-0-TF65-04	0	0	0	1.27	0	0	5.93	0.35	0.79
TFV-1-TF65-04	0.03	0.02	1.21	0.82	0.21	0	9.8	0.19	5.98
TFV-0-TF67-04	0.01	0.01	1.08	0.83	0	3.74	9	0.88	24.2
TFV-0-TF71-04	0.03	0.02	0.3	1.04	0	2.18	5.6	0.45	7.45
TFV-0-TF68-04	0	0.03	0.91	1.27	0.13	4.42	9.98	0.51	0
TFV-0-TF69-04	0.01	0.01	0.47	1.17	0	4.64	8.33	0.18	0
TFV-0-TF70-04	0	0.02	1.34	1.11	0	0	7.8	0.43	0.72
TFV-0-TF66-04	0.04	0	0.61	1.25	0.19	0.4	9.97	0.38	0
TFV-0-TF64-04	0.02	0	0.41	1.51	0	0	6.37	0.45	4.85

Notes: NC – Not calculated

[1] 10^{-6} Risk-Based Guideline Value, updated per HEAST values of April 2001, + background

[2] In areas where Th-230 is not a contaminant of concern, Mound will use the normal sample analysis process through gamma spec and will assure ta minimum detectable activity of less than 10 pCi/g.

[3] RBGV = 61 pCi/g, however 55 pCi/g was retained because of its familiarity to the public

Radionuclide	Maximum Concentration Detected (pCi/g)	Background (pCi/g)	Guideline Criteria (pCi/g)	Location & Interval
Bi-210m	0.30U	ND	1.0	TF83, 16 ft.
Bi-207	0.18U	ND	0.175	TF74, 8 ft.

U: not detected at the associated MDA

REFERENCES:

1) PRS 72/73/87 Test Fire Valley Sampling & Analysis Plan, Final, January 2002
2) PRS 72/73/87 Test Fire Valley Further Assessment Data Report, Final Rev. 1, January 2002

PREPARED BY:

Dennis Gault, BWXTO Project Engineer
Karen M. Arthur, BWXT of Ohio, Inc., ER QA

MOUND PLANT

PRS 73

Evaporator Storage Area

RECOMMENDATION:

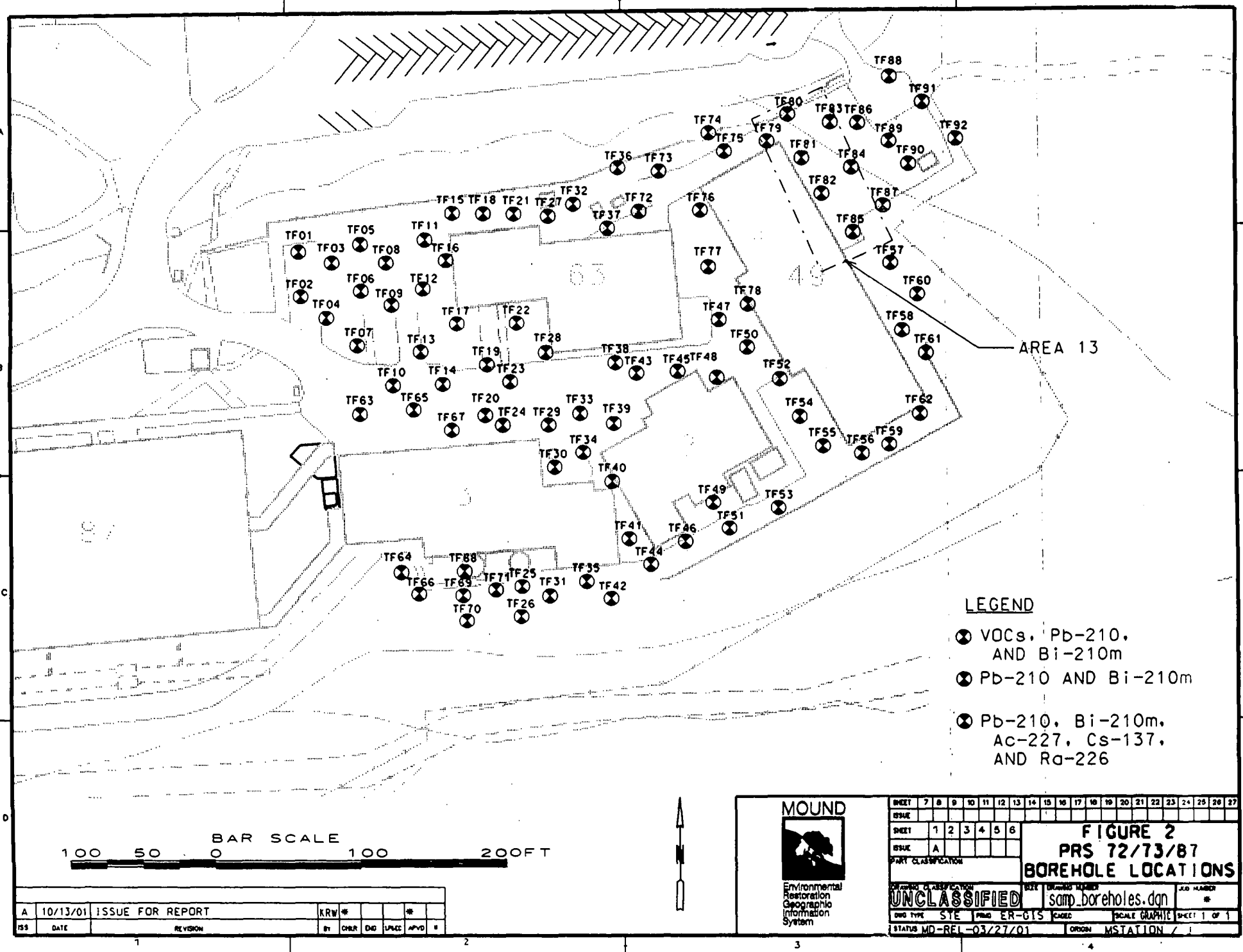
Potential Release Site (PRS) 73 is an historical equipment storage area located in the lower valley (Test Fire) and was binned Further Assessment (FA) by the Core Team in February of 1997. Further Assessment sampling was completed in July of 2001 per the Sampling and Analysis Plan (SAP) approved by the Core Team. The additional sampling events conducted in July did not identify levels of concern.

Therefore, PRS 73 requires NO FURTHER ASSESSMENT.

DOE/MEMP: _____
Robert S. Rothman, Remedial Project Manager

USEPA: _____
Timothy J. Fischer, Remedial Project Manager

OEPA: _____
Brian K. Nickel, Project Manager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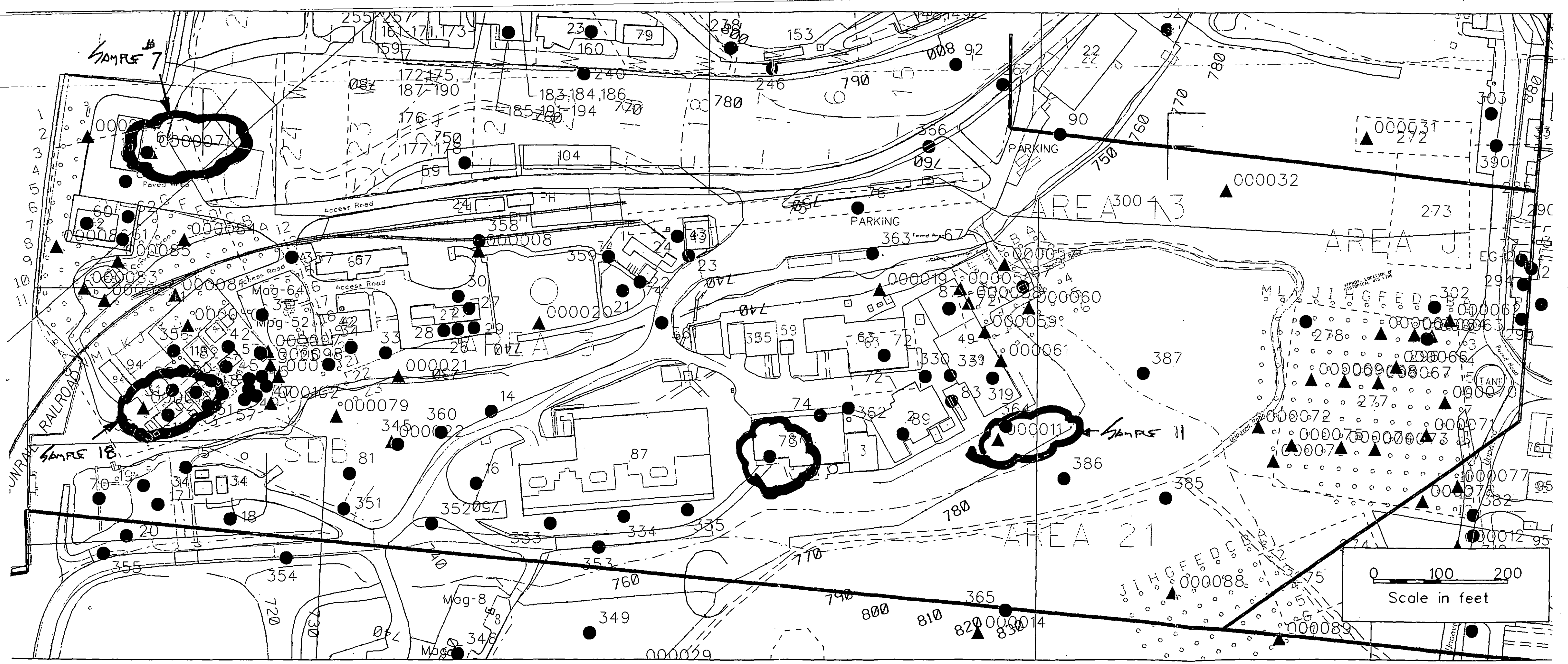
TF71
TF25
TF31
TF42
TF70
TF26
AREA 13
LEGEND
VOCs, Pb-210, AND Bi-210m
Pb-210 AND Bi-210m
Pb-210, Bi-210m, Ac-227, Cs-137, AND Ra-226
BAR SCALE
100 50 0 100 200FT
N
MOUND
Environmental Restoration Geographic Information System
FIGURE 2
PRS 72/73/87
BOREHOLE LOCATIONS
UNCLASSIFIED
samp_boreholes.dgn
A 10/13/01 ISSUE FOR REPORT KRW
ISS DATE REVISION BY CHKR ENG UPLCC APVD
STATUS MD-REL-03/27/01
ORIGIN MSTATION


Sample # 7
Sample 18
Sample 11
AREA 13
AREA J
AREA 21
AREA 3
PARKING
PARKING
Access Road
RAILROAD
0 100 200
Scale in feet