3001-0302250004

BWX Technologies, Inc.
a McDermott company

BWXT of Ohio, Inc.
1 Mound Road
P.O. Box 3030
Miamisburg, Ohio 45343-3030
(937) 865-4020

ER-152/02
June 18, 2002

Mr. Richard B. Provencher, Director
Miamisburg Environmental Management Project
U. S. Department of Energy
P. O. Box 66
Miamisburg, OH 45343-0066

ATTENTION: Robert S. Rothman

SUBJECT: Contract No. DE-AC24-97OH20044
VARIOUS DOCUMENTS

REFERENCE: Statement of Work Requirement C.7.1e - Regulator Reports

Dear Mr. Provencher:

Rob Rothman from your office has approved the release of the following documents to the regulators:

- PRS 21, 22, 25, 26, 27, 29 Package, Final
- PRS 28 Package, Final
- PRS 277/278 Package, Final
- PRS 421 Package, Final
- PRS 308 Package, Final

If you or members of your staff have any questions regarding the documents, or if additional support is needed, please contact Dave Rakel at extension 4203.

Sincerely,

Monte A. Williams
Project Manager, Environmental Restoration

MAW/KMA:jdg

Enclosures

cc: Tim Fischer, USEPA, (1) w/attachments
Brian Nickel, OEPA, (1) w/attachments
Ruth Vandegrift, ODH, (1) w/attachments
Paul Lucas, DOE/MEMP, (1) w/attachments
Sue Smiley, DOE/MEMP, (1) w/attachments
Randy Tormey, DOE/HQ, (1) w/attachments
Dann Bird, MMCIC, (3), w/attachments
Craig Hansen, BWXT of Ohio, (1) w/attachments
Dave Rakel, BWXT of Ohio, (1) w/attachments
Karen Arthur, BWXT of Ohio, (1) w/attachments
Monte Williams, BWXT of Ohio, (2) w/attachment
Public Reading Room, (5) w/attachments

3001-0302250004

MOUND

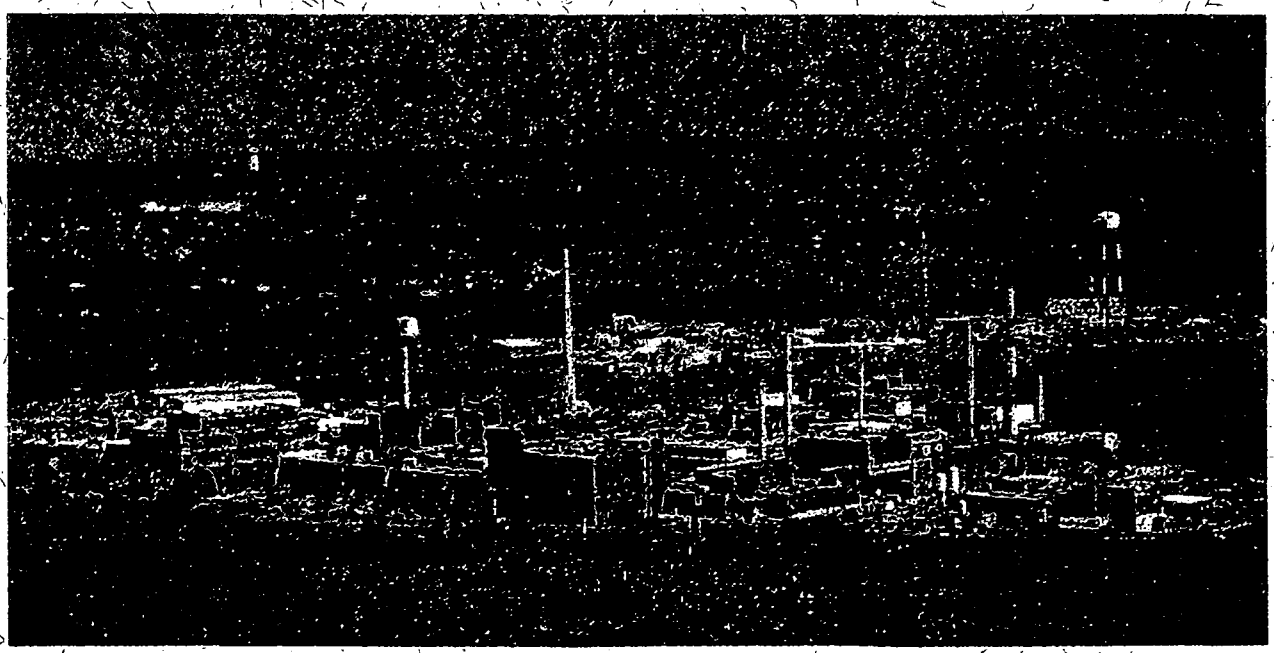
Environmental Restoration Program

MOUND PLANT

Potential Release Site Package

PRS 277/278

FINAL
JUNE 2002



MOUND

Environmental Restoration Program

MOUND PLANT POTENTIAL RELEASE SITE PRS PACKAGE

Notice of Public Review Period

The following Potential Release Site (PRS) fact sheet is available for public review in the CERCLA Public Reading Room, 305 E. Central Ave., Miamisburg, Ohio. Public comment on this document will be accepted April 17, 2002 through May 17, 2002.

PRS 277/278: Hillside Disposal and Catch Basin PRS Package

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

PRS 277/278 Package Tracking Sheet

REVISION	DESCRIPTION	DATE
REGULATORY RELEASE A	PRS binned FA on 2 November 1995.	**13 June 1995**
A1	NOTE: Combined FA with PRS 278 on 18 April 1996.	**18 April 1996**
PUBLIC REVIEW DRAFT	Binned Removal Action on 28 February 2002.	**April 2002**
FINAL	No comments were received during the Public Review Period of 17 April – 17 May 2002.	**June 2002**

MOUND

Environmental
Restoration
Program

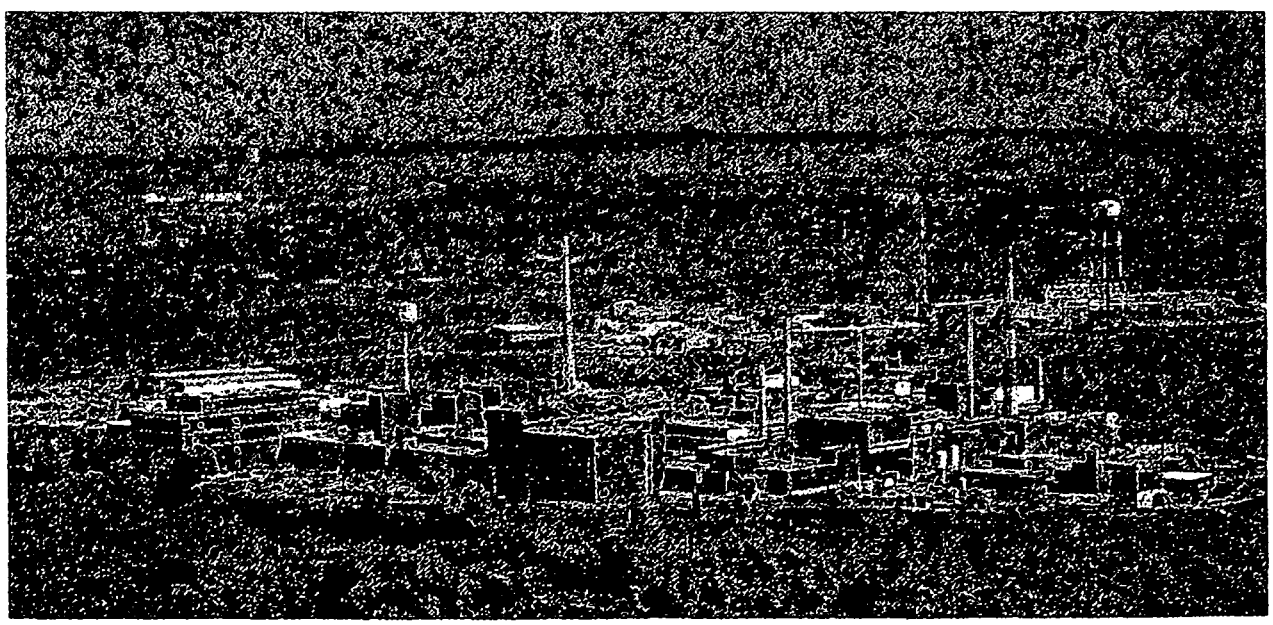
MOUND PLANT

Potential Release Site Package

PRS 277/278

Addendum 1

FINAL
JUNE 2002



PRS HISTORY:

Potential Release Site (PRS) 277/278, also known as the hillside disposal area and catch basin, is located on the west slope of the Mound Plant SM/PP Hill. Process history indicated the potential for the presence of construction/building debris, paints, thinners, chemical contaminants, asbestos, thorium, and plutonium-238 at PRS 277/278. The Core Team recommended Further Assessment (FA) for PRS 277 in 1995. In 1996 the Core Team combined the FA evaluation of PRS 277 and PRS 278.

FURTHER ASSESSMENT ACTIVITY:

During the later months of the year 2000 and during 2001, Further Assessment sampling was completed per the Sampling and Analysis Plan[1] **(SAP)** approved by the Core Team. During the sampling event, a hot spot of plutonium-238 (3,988 pCi/g) was identified and removed. Sample results of detected contaminants above screening levels and cleanup objectives (other than in the hot spot area) are presented in Table 1. Figure 1 identifies sample locations where at least one cleanup objective was exceeded. Verification sampling results (for samples collected at the hot spot) are presented in Table 2. Of the 242 samples analyzed, none of the results for the following were above screening levels: Co-60, Cs-137, and Am-241. None of the four samples analyzed for tritium exceeded the screening level. None of the volatile organic compound (VOC) results (Table 3) exceeded their 10^{-6} Risk-Based Guideline Value (RBGV). Maximum results for semivolatile organic compounds (SVOCs) are presented in Table 4. One boring contained SVOCs above RBGVs. Sample locations are presented on the attached figures. The Further Assessment **Data Report**[2] presents a full account of soil sampling activities and sample results (onsite and offsite laboratory analyses).

Table 1: Radiological Sampling Results (pCi/g)

Analyte	Max. Result	Location & Interval of max.	Bkgd	Screening Level (SL)	Number of results ≥ SL	Cleanup Objective (CO)	Location of results ≥ CO
Pb-210+D	2.03	T26, 5-10'	1.2	1.8[1]	1 of 242	7.4	0
Ra-226+D	2.69	T65, 0-5'	2.0	2.1[1]	8 of 242	2.9	0
Ac-227+D	5.25	T43, 5-10'	0.11	0.56[1]	11 of 242	4.6	T43, 5-10'
Th-228+D	25.5	T43, 0-5'	1.5	1.6[1]	6 of 29	2.6	T04, 10-15' T40, 5-10' T43, 5-10' T43, 0-5' T60, 10-15' T89, 15-20'
Th-230+D	13.7	T53, 10-15'	1.9	10[3]	1 of 242	[4]	T53, 10-15'
Th-232+D	23.8	T43, 0-5'	1.4	1.47[1]	7 of 242	2.1	T04, 10-15' T40, 5-10' T43, 5-10' T43, 0-5' T60, 10-15' T89, 15-20' T95, 5-10'
Pu-238	64.4	T52, 5-10'	0.13	55[2]	1 of 242	55	T52, 5-10'

[1] 10^{-6} Risk-Based Guideline Value, updated per HEAST values of April 2001, + background
[2] RBGV = 61 pCi/g, however 55 pCi/g was retained because of its familiarity to the public
[3] 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 at minimum detectable activity of less than 10 pCi/g.
[4] Even though not a COC at the time of characterization, this point will be removed during removal since it exceeds the COC cleanup goal of 2.8 pCi/g.

Table 2: Hot Spot Verification Results (pCi/g)

Radionuclide	Maximum Concentration Detected	Background	Screening Level	Cleanup Objective	Location & Depth
Th-232+D	0.71	1.4	1.47[1]	16.1	V2 @ 2 ft.
Pu-238	42.0*	0.13	55[1]	55	V12 @ 2 ft.
Pu-239/240	0.90	0.18	6.0[1]	60	V4 @ 2 ft.
Co-60	0.04	NC	0.07[1]	0.7	V3 @ 3 ft.
Cs-137+D	0.07	0.42	0.76[1]	8.0	V8 @ 1ft.
Pb-210+D	1.80	1.2	1.8[1]	19.2	V3 @ 3 ft.
Ra-226+D	1.98	2.0	2.1[1]	23	V2 @ 2 ft.
Am-241	0.09	ND	6.3[1]	63	V4 @ 2 ft.

Notes: NC – Not calculated ND – Not Detected Cleanup objective = 10^{-5} RBGV + background.
* Sample V12 result was 66 pCi/g but lab qualified for info purposes because detection limit did not follow significant figure SOP.
[1] 10^{-6} Risk-Based Guideline Value, updated per HEAST values of April 2001, + background
[2] RBGV = 61 pCi/g, however 55 pCi/g was retained because of its familiarity to the public

Table 3: Volatile Organic Results

Contaminant	Maximum Concentration Detected (ug/kg)	Guideline Criteria[1] (ug/kg)	Location & Interval
Acetone	280	21,000,000	T68, 15-17 ft.
2-Butanone	89	9,300,000	T68, 15-17 ft.
Trichloroethene	23	125,000	T60, 5-10 ft.

Notes: Results less than laboratory reporting limits were not included.
(1) 10^{-6} Guideline values based on the more restrictive of Construction Worker and Site Employee values calculated using the methodology in Risk-Based Guideline Values, March 1997, Final.

Table 4: Semivolatile Organic Results

Contaminant	Maximum Concentration Detected (ug/kg)	Guideline Criteria[1] (ug/kg)	Location & Interval
Acenaphthene	1,900	NS	T23, 0-5 ft.
Anthracene	2,600	64,000,000	T23, 0-5 ft.
Benzo(a)anthracene	**5,700**	4,100	T23, 0-5 ft.
Benzo(a)pyrene	**5,100**	410	T23, 0-5 ft.
Benzo(b)flouranthene	**5,000**	4,100	T23, 0-5 ft.
Benzo(g,h,i)perylene	3,500	NS	T23, 0-5 ft.
Benzo(k)flouranthene	4,300	41,000	T23, 0-5 ft.
Chrysene	6,300	410,000	T23, 0-5 ft.
Flouranthene	15,000	8,500,000	T23, 0-5 ft.
Phenanthrene	12,000	NS	T23, 0-5 ft.
Pyrene	13,000	6,400,000	T23, 0-5 ft.

Notes: NS – No guideline criteria established
Results less than laboratory reporting limits were not included.
(1) 10^{-6} Guideline values based on the more restrictive of Construction Worker and Site Employee values calculated using the methodology in Risk-Based Guideline Values, March 1997, Final.

REFERENCES:

1) Sampling and Analysis Plan – PRS 277/278, Final, Revision 6, October 2000
2) PRS 277/278 Further Assessment Data Report, Final, September 2001

PREPARED BY:

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

MOUND PLANT
PRS 277/278
Hillside Disposal (277) & Catch Basin (278)

RECOMMENDATION:

Potential Release Site (PRS) 277/278 is a former disposal area (chemical and radiological) and catch basin located in the east central part of the Mound property and was binned Further Assessment (FA) by the Core Team in 1995. Further Assessment sampling was conducted in 2000 and 2001 per the Sampling and Analysis Plan (SAP) approved by the Core Team.

During the FA sampling, a Pu-238 hot spot was identified and removed. The excavated area was verified to be below screening levels.

Results of the FA sampling confirmed the absence of VOC contamination, tritium, Co-60, Cs-137, and Am-241 above acceptance levels. Of the eight target samples analyzed for VOCs, one contained results above RBGVs.

Of the 242 samples, eight borings contained rad (Pu-238, Th-232, Ac-227, and Th-230) results above 10^{-5} RBGV and background.

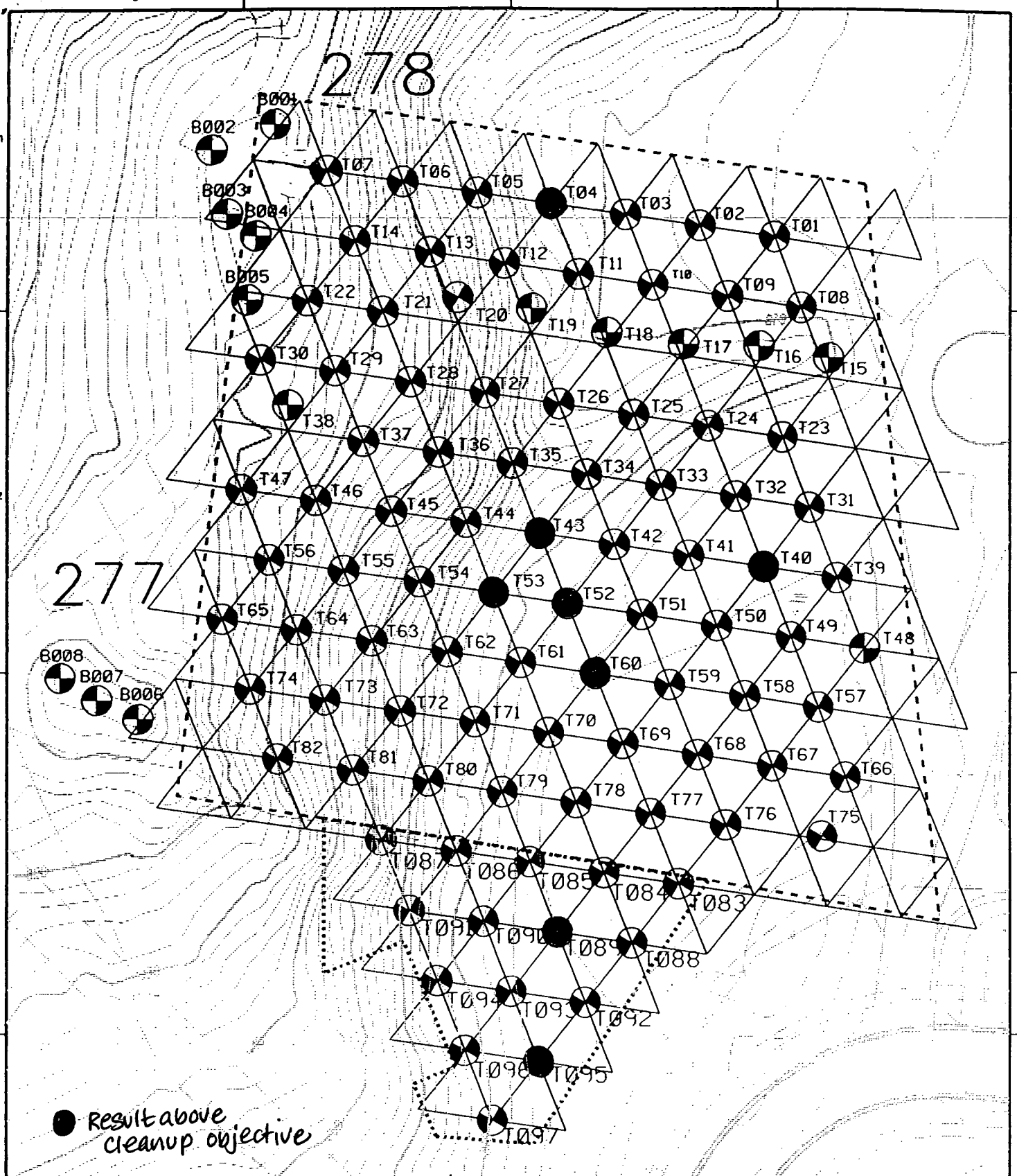
Therefore PRS 277/278 requires a <u>REMOVAL ACTION</u>.

CONCURRENCE:

DOE/MEMP: _____ 3/7/02
Robert S. Rothman, Remedial Project Manager (date)

USEPA: _____ 3/8/02
Timothy J. Fischer, Remedial Project Manager (date)

OEPA: _____ 3/7/02
Brian K. Nickel, Project Manager (date)



ISS	DATE	REVISION	BY	CHKR	ENG	LPNCC	APVD	B
A	08/21/01	ISSUE FOR REPORT	KRW					

MOUND

Environmental Restoration Geographic Information System

SHEET	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
ISSUE																					

SHEET	1	2	3	4	5	6
ISSUE	A					

PART CLASSIFICATION

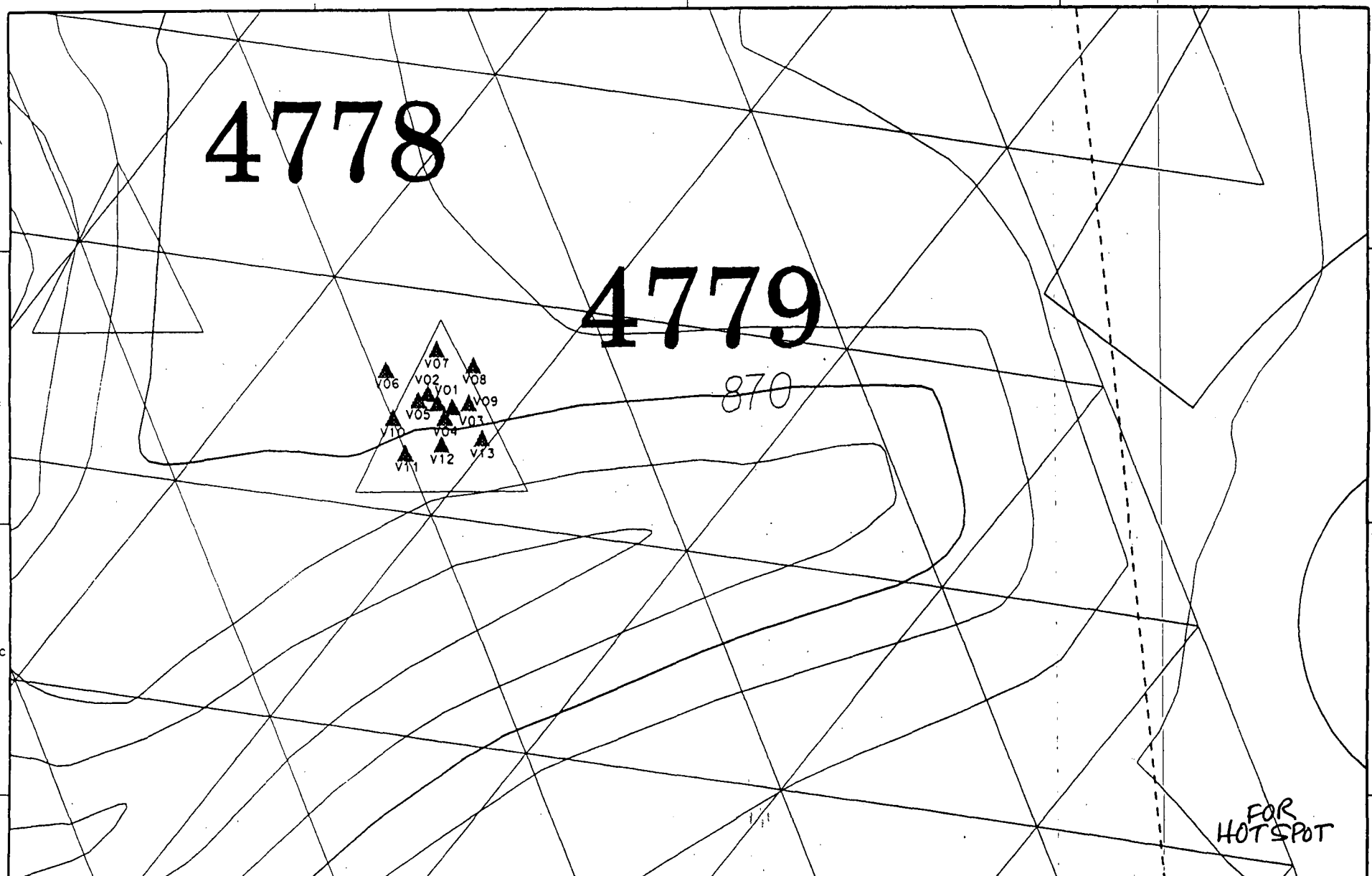
DRAWING CLASSIFICATION: UNCLASSIFIED

FIGURE 1
SAMPLING LOCATIONS

SIZE | DRAWING NUMBER: figure4.dgn | JOB NUMBER: *

DWG TYPE: STE | PRNG: ER-GIS | CADD | SCALE: GRAPHIC | SHEET 1 OF 1

STATUS: MD-REL-08/21/01 | ORIGIN: MSTATION / J



ISS	DATE	REVISION	BY	CHKR	ENG	LPREC	APVD	#
A	08/21/01	ISSUE FOR REPORT	KRW	*			*	

MOUND

Environmental Restoration Geographic Information System

SHEET	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
ISSUE																					

SHEET	1	2	3	4	5	6
ISSUE	A					

PART CLASSIFICATION

FIGURE 2
FINAL VERIFICATION SAMPLING LOCATIONS

DRAWING CLASSIFICATION: UNCLASSIFIED | SIZE | DRAWING NUMBER: figure5.dgn | JOB NUMBER: *

DWG TYPE: STE | PROJ: ER-GIS | CADEC | SCALE: GRAPHIC | SHEET 1 OF 1

STATUS: MD-REL-08/21/01 | ORIGIN: MSTATION / J

MOUND

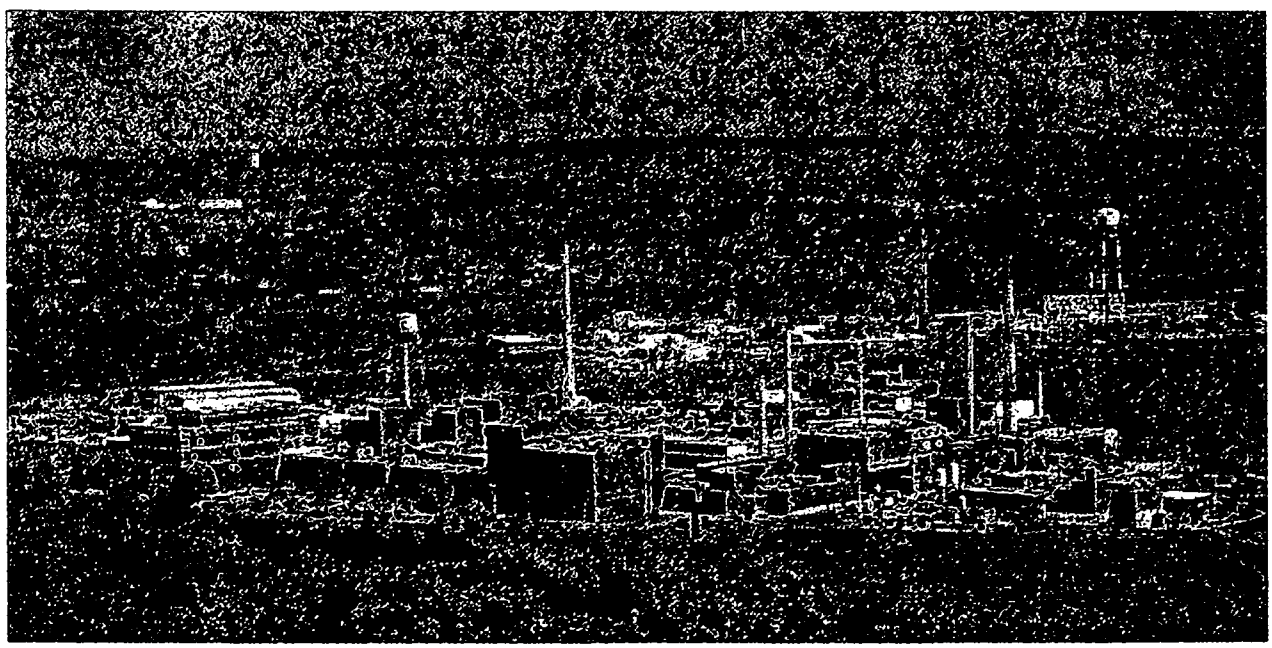
Environmental
Restoration
Program

MOUND PLANT

Potential Release Site Package

PRS 277

FINAL
JUNE 2002

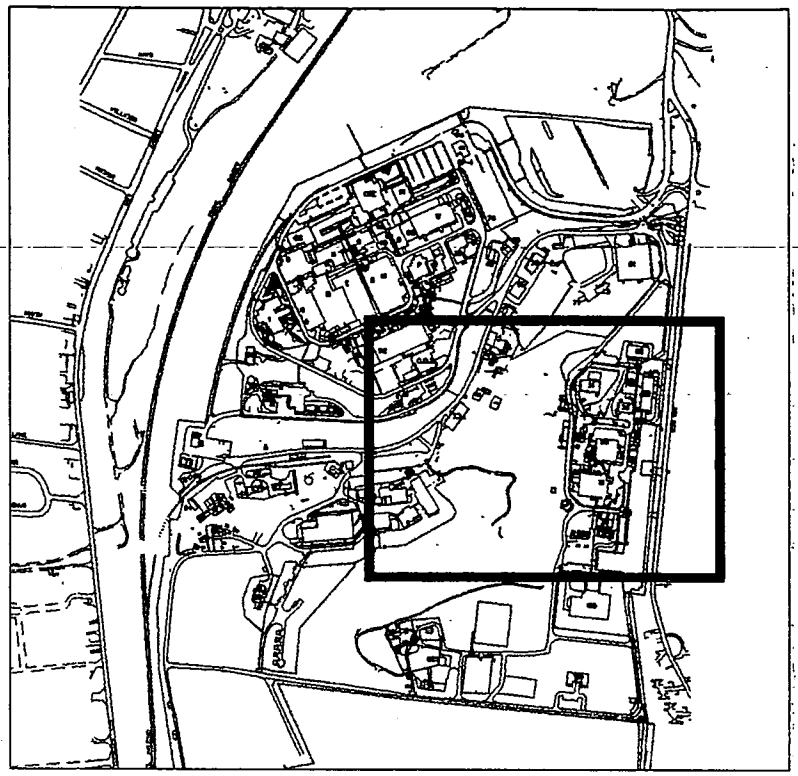


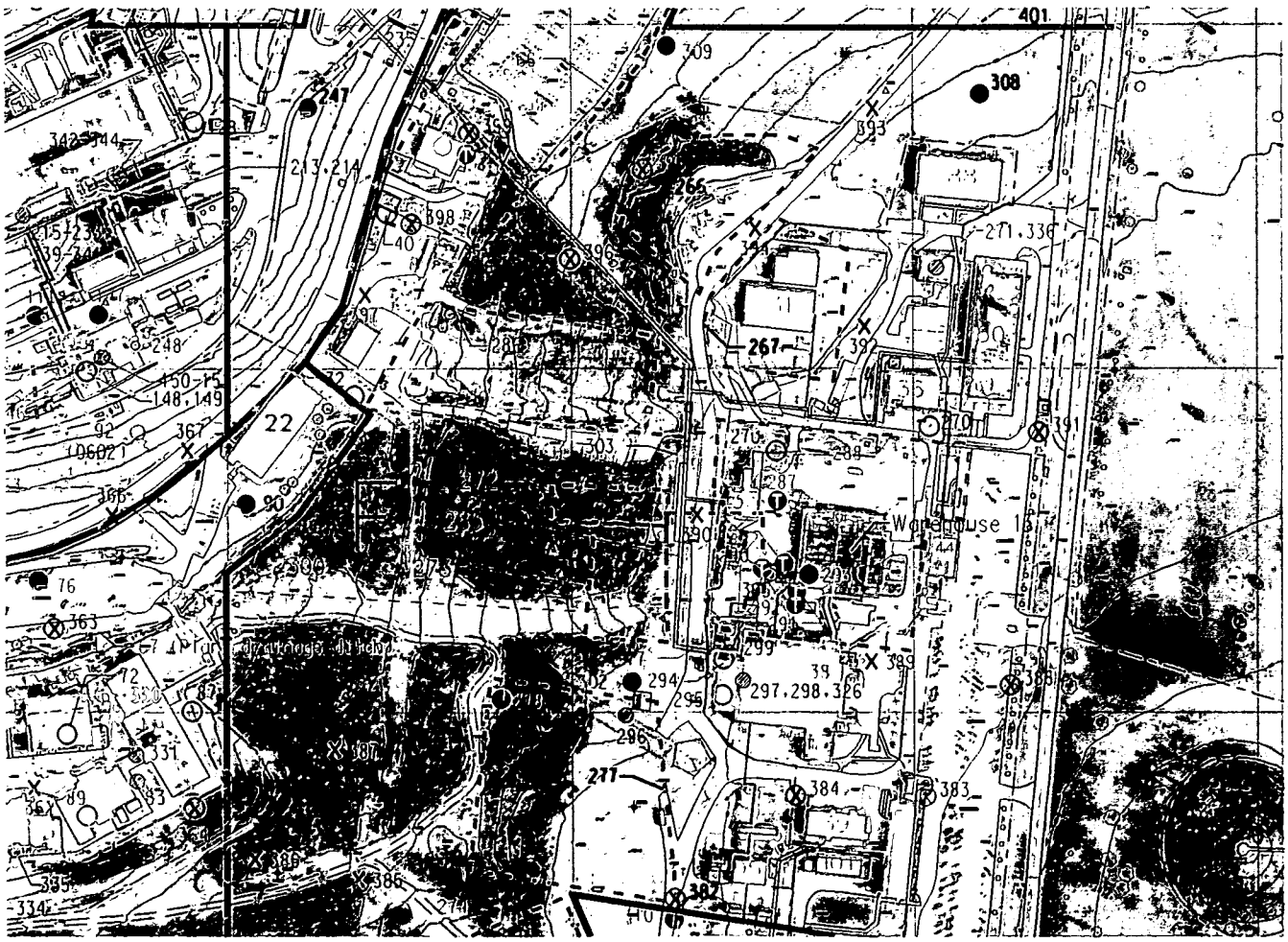
MOUND PLANT

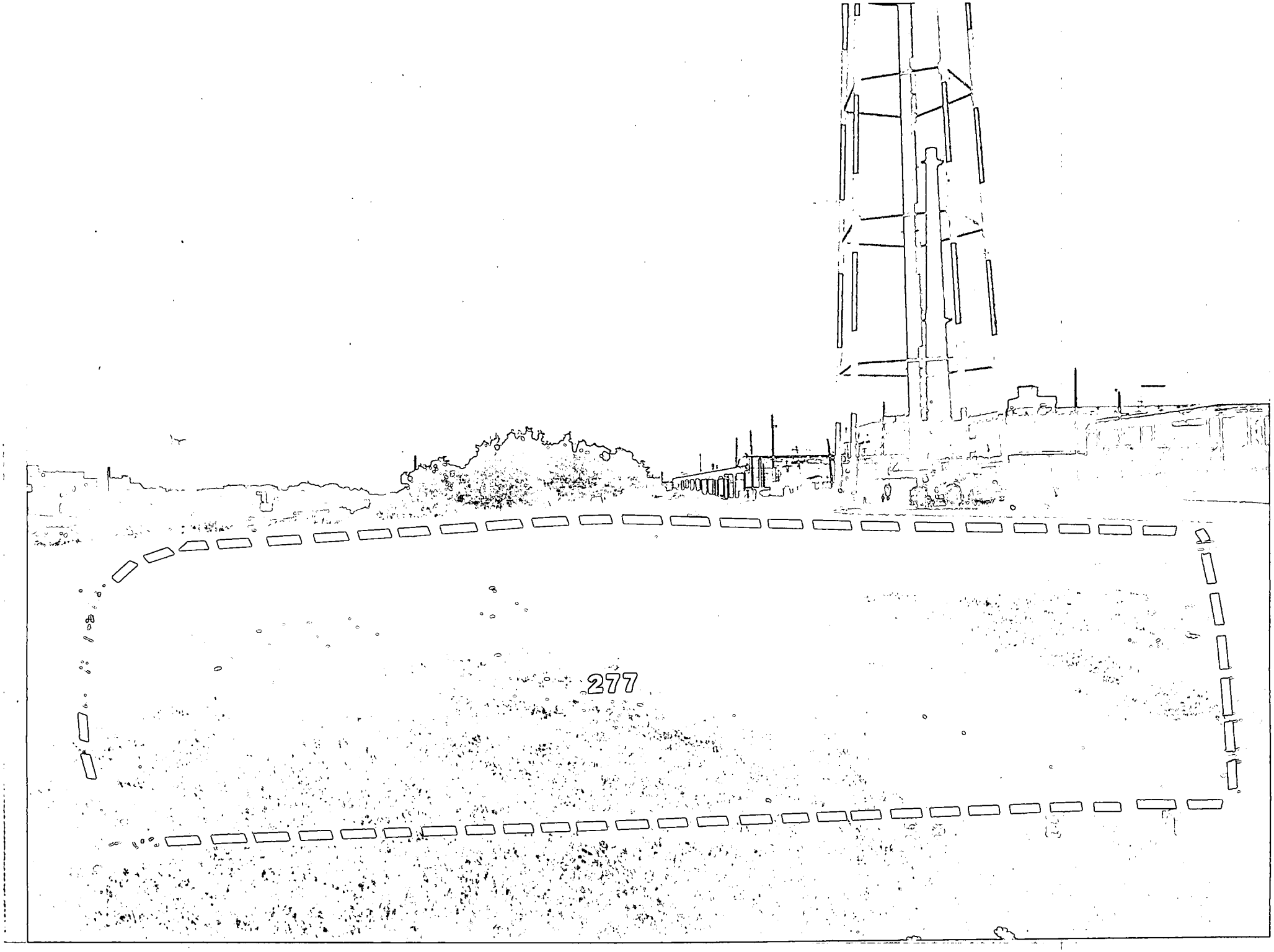
AREA F

PRS 277

August 14, 1995






277

MOUND PLANT
PRS 277 (Old Area J Hillside)
AUGUST 3, 1995

PRS HISTORY:

Although records and interviews indicate that no hazardous substances were discarded at the hillside, Area J is a historically uncontrolled area and could have received contaminated materials. Several 55-gallon drums were removed from the hillside for the geophysical survey in 1992. In 1988, 150 half-size, low specific activity boxes of soil (approximately 150 yd^3) which had been stored in Area J were removed. Because of their usage and disposal at Areas 12 and D, plutonium and thorium are potential contaminants. Other suspected contaminants are paint and paint thinners.

PROCESS DESCRIPTION:

PRS 277, also known as the hillside disposal area, is located on the west slope of the Special Metallurgical/Plutonium Processing (SM/PP) Hill southwest of Building 38. Area J encompasses approximately four acres with a disposal volume that may exceed 100,000 cubic yards. The upper, eastern portion of Area J is relatively flat. The remainder of Area J extends over the hillside which is steep and covered with small trees and thick vegetation. Surface runoff and a potential groundwater seep at the toe of the slope in Area J drain into a slightly depressed area. Mound Plant drawing #FSE 16472 indicates that the depth to bedrock in the upper, relatively flat portion of Area J is three feet. On the hillside, this depth to bedrock varies due to the presence of fill material.

Area J was used from the early 1950s to the early 1980s for the disposal of construction and building demolition and remodeling debris including excavated soils, pipe, plumbing fixtures, wood, wallboard, roofing materials, and pieces of concrete which were either dumped or bulldozed over the side of the hill in an uncompacted fashion. Chemical contaminants such as laboratory reagents, asbestos, and other hazardous materials may have also been deposited there.

The upper, relatively flat portion of Area J was historically used to stage soils contaminated with thorium and plutonium. Soils and other debris were placed there as part of excavation projects, including a water line repair below the adjacent water tower and possible plutonium-contaminated soils from the construction of the overflow pond in the mid-1970s. Area J may have also been referred to s the dredged materials disposal area (Area 11a) in the map of Hot Waste Burial Sites, reproduced in the OU9, Site Scoping Report: Vol. 7.

The OU-3 "Limited Field Investigation Report" and the "Reconnaissance Sampling Report", both identified the Old Firing Range Drum Storage Site as being at, or near, this location.

CONTAMINATION:

Low-level concentrations of halogenated and nonhalogenated hydrocarbons were found during a Petrex soil gas analysis and confirmed in a 1992 Soil Vapor Extraction process. Investigations for pesticides and inorganics have found nothing significant at this PRS.

PRS 310/382, located in the south-west corner of PRS 277, was one of only two locations in PRS 277 to be suspect of elevated levels of radiological contamination. However, the 1995 Other Soils Characterization of PRS 310/382 found no significant radiological contamination (the other location suspect of elevated radiological contamination was 30 pCi/g Thorium at C0160).

REFERENCES:

OU-9 Scoping Report, Vol. 3, Radiological Site Survey Report, June 1993
OU-5 Operational Area Phase I Investigation, Area J Field Report, March 93
OU-3 Limited Field Investigation Report, March 1993
Reconnaissance Sampling Report, February 1993
OU-9 Scoping Report, Vol. 7, Waste Management, February 1993

PREPARED BY:

Neff/Geneczko/Liebson

MOUND PLANT
PRS 277
AUGUST 3, 1995

RECOMMENDATION: _____

_____

_____

_____

CONCURRENCE:

DOE: _____

USEPA: _____

OEPA: _____

REFERENCE MATERIAL

FOR

PRS277

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

10. GENERAL USE AREAS

Several areas of the Mound Plant were included in the investigations of the Site Survey Project or are known to contain low levels of radioactivity, but are not associated with a specific program or project. These areas include the Orphan Soils Area 22, the Hillside Disposal Area J, and the spoils disposal area. These areas and any results reported in the Site Survey Project report are described in the subsections that follow.

10.1. AREA 22

Area 22 is located on the south part of the SM/PP Hill adjacent to Building 53 (Plate 1). This area consists of many piles of soil excavated from other areas at Mound Plant, including Area 20 (subsection 3.9). It is also called the "orphan soils" area because it was created when construction projects did not have funding for disposal of unexpected contaminated soil, which was then staged at Area 22 while waiting for funding. Area 22 was not part of the original compilation of radioactively contaminated areas when the Site Survey Project began, but was identified by the initial gamma surveys (Stought et al. 1988).

The Area 22 sampling results are given in Table X.1 and the sampling locations are shown on Plate 1. Only surface locations were sampled. Cobalt-60 was detected in two of the samples, at levels of 143 and 54 pCi/g. The same samples showed radium-226 present in concentrations of 0.4 and 0.7 pCi/g, respectively. The sample from location S0787 also contained 7.0 pCi/g of cesium-137. The remaining two samples contained relatively low levels of plutonium-238, with a maximum level of 1.67 pCi/g, but these samples were not analyzed by gamma spectroscopy. No results were indicated for bismuth-207 or bismuth-210m, which may be expected to occur with cobalt-60 from speculation of process (see subsection 3.3.6 for discussion). Since cesium-137 was identified, it is possible that strontium-90 may also be present, but was not included in the analyses conducted by the Site Survey Project.

10.2. AREA J

Area J, known as the hillside disposal area, is located on the west slope of the SM/PP Hill, south of Areas D and 12 (Plate 1). This area was used from the early 1970s to the early 1980s for the disposal

of construction residues, such as excavated soils, pieces of concrete, piping, metal banding, plumbing fixtures, and roofing materials, which were either dumped or bulldozed over the side of the hill (DOE 1992c). Area J also includes three areas of ponded water at the base of the slope (DOE 1992g).

Twelve core locations and nine surface locations were sampled, either within or near Area J, as part of the Site Survey Project (Plate 1, and Table X.2). The maximum plutonium-238 concentration measured in these samples was 71.30 pCi/g in the sample taken at a depth of 18 inches at core location 0156 on Plate 1 (C0156 on Table X.2). The maximum thorium activity measured was 30.42 pCi/g in a sample taken at a depth of 162 inches at core location 0160 on Plate 1 (C0160 on Table X.2). Of the nine surface locations sampled, four (0634, 0635, 0636, and 0639 on Plate 1) appear to have been located on the slope of the SM/PP Hill. The other five surface locations and the 12 core locations were probably located in the more level area at the top of the hill.

The maximum depth of the core locations in Area J was 234 inches (C0152 and C0156 on Table X.2), and most were sampled at 54 to 72 inches. Mound Plant drawing #FSE 16472 (DOE 1992f) indicates that the depth to bedrock in this area is approximately 36 inches, but this depth probably varies greatly due to the presence of fill material. It is likely that the Area J core locations were sampled to bedrock, but drilling logs are not available to confirm this.

The upper, relatively flat portion of Area J was historically used to stage soils contaminated with thorium and plutonium. Soils and possible other debris were placed in the area as part of excavation projects, including a water line repair below the adjacent water tower, and possible plutonium-contaminated soils from the construction of the overflow pond in the mid-1970s (DOE 1992g). The area may have also been referred to as the dredged materials disposal area (Area 11a) in the map of Hot Waste Burial Sites, reproduced in the Site Scoping Report: Volume 7 - Waste Management (DOE 1992c). In 1988, 150 half-size low specific activity boxes (approximately 150 cubic yards) of soil were removed from the area. Subsequent screening by the Mound Plant soil screening facility indicated levels of thorium and plutonium-238 below 2 and 147 pCi/g, respectively (Rader 1988). The data sheets are included in Appendix E.

10.3. SPOILS DISPOSAL AREA

The spoils disposal area (also known as the construction spoils area) is located south of the overflow pond and Area 18 (Plate 1). This is an engineered disposal area that has been in use since 1985. Soils containing less than 25 pCi/g of plutonium-238 and less than 5 pCi/g of thorium from construction areas at Mound Plant are dumped onto the ground surface, graded, and compacted. This area was not identified in the original Site Survey Project Report, probably because it is only used for the disposal of soils with radioactivity below the guidelines.

Table X.2. Mound Site Survey Project - Area J

Plate 1 Location[a]	Coordinates South	Coordinates West	MRC ID No.	Mo-Yr	Depth (inch)	Plutonium-238 (pCi/g)	Thorium[b] (pCi/g)	Tritium (pCi/mL)	Cobalt-60 (pCi/g)	Cesium-137 (pCi/g)	Radium-226 (pCi/g)	Americium-241 (pCi/g)
C0148	3040	2590	10471	08-85	18	0.72	b					
			10472	08-85	36	0.87	b					
			10473	08-85	54	1.29	b					
			10474	08-85	72	4.94	b					
C0149	3040	2610	10475	08-85	18	0.38	b					
			10476	08-85	36	0.45	b					
			10477	08-85	54	5.40	b					
			10478	08-85	72	4.80	b					
C0150	3055	2590	10479	08-85	18	3.94	b					
			10480	08-85	36	1.55	b		3.0	LDL	0.2	LDL
			10481	08-85	54	3.94	b					
C0151	3055	2610	10482	08-85	18	3.58	b					
			10483	08-85	36	10.30	b					
			10484	08-85	54	7.88	b					
C0152	3065	2565	1561	04-83	18	2.60	2.80					
			1562	04-83	36	0.46	b					
			1563	04-83	90	1.89	b					
			1564	04-83	108	1.12	b					
			1565	04-83	126	1.29	b					
			1566	04-83	144	0.06	b					
			1567	04-83	162	0.08	b					
			1568	04-83	180	0.07	b					
			1569	04-83	198	0.27	b					
			1570	04-83	216	0.60	b					
			1571	04-83	234	5.22	b					

[a]Map locations are given using a "C" to designate core locations and an "S" to designate surface locations.

[b]A "b" indicates that the total thorium concentration was less than the background level of 2.0 pCi/g, using FIDLER screening. Therefore, radiochemical analysis was not performed.

[c]Boring logs indicate that these locations were not sampled to bedrock.

FIDLER - field instrument for the detection of low-energy radiation

LDL - The measured concentration was below the lower detection limit, estimated to be 0.5 pCi/g for cobalt-60, cesium-137, and americium-241; and 1 pCi/g for radium-226.

MRC ID - Monsanto Research Corporation Identification

NR - No result given

pCi/g - picocuries per gram

pCi/mL - picocuries per milliliter

RADIOCHEMICAL ANALYSIS

RADIOCHEMICAL ANALYSIS

Table X.2. (page 2 of 3)

Plate 1 Location[a]	Coordinates South	Coordinates West	MRC ID No.	Mo-Yr	Depth (inch)	Plutonium-238 (pCi/g)	Thorium[b] (pCi/g)	Tritium (pCi/mL)	Cobalt-60 (pCi/g)	Cesium-137 (pCi/g)	Radium-226 (pCi/g)	Americium-241 (pCi/g)
C0153	3070	2610	10505	08-85	18	0.86	b					
			10506	08-85	36	1.14	b					
			10507	08-85	54	1.16	b					
			10508	08-85	72	0.89	b					
C0154	3080	2610	10509	08-85	18	0.56	b					
			10510	08-85	36	0.14	b					
			10511	08-85	54	0.89	b					
C0155	3090	2600	10512	08-85	18	0.27	b					
			10513	08-85	36	2.24	b					
			10514	08-85	54	11.40	b					
C0156	3075	2600	1572	04-83	18	71.30	2.03					
			1573	04-83	36	NR	4.30					
			1574	04-83	54	6.59	b					
			1575	04-83	72	6.45	b					
			1576	04-83	90	4.81	2.02					
			1577	04-83	108	40.90	2.33					
			1578	04-83	126	1.08	b					
			1579	04-83	144	5.22	b					
			1580	04-83	162	3.42	b					
			1581	04-83	180	8.67	b					
			1582	04-83	198	0.72	b					
			1583	04-83	216	4.10	b					
			1584	04-83	234	9.93	3.02					
	3075	2600	10515	08-85	18	0.83	b					
(Two sets of results were given for the 18-inch depth at these coordinates; however, the dates are different [04-83 and 08-85].)												
C0158[c]	3000	2620	8285	10-84	36	1.95	b					
			8286	10-84	72	25.00	b					
C0159[c]	3100	2620	8283	10-84	108	18.90	b					
			8284	10-84	198	6.91	b					
S0633	3025	2645	2923	10-83	0	47.45	b	6.84				

Table X.2. (page 3 of 3)

Plate 1 Location[a]	Coordinates South	Coordinates West	MRC ID No.	Mo-Yr	Depth (inch)	Plutonium-238 (pCi/g)	Thorium[b] (pCi/g)	Tritium (pCi/mL)	Cobalt-60 (pCi/g)	Cesium-137 (pCi/g)	Radium-226 (pCi/g)	Americium-241 (pCi/g)
S0622	3025	2590	4126	10-83	0	17.40	b					
C0160	3180	2745	2441	08-83	18	0.80	b					
			2442	08-83	36	2.60	b		LDL	LDL	0.94	LDL
			2443	08-83	108	0.53	b					
			2444	08-83	126	0.62	b					
			2446	08-83	162	0.66	30.42		LDL	LDL	1	LDL
			2447	08-83	180	3.09	14.58		LDL	LDL	0.9	LDL
			2448	08-83	198	2.60	10.32		LDL	LDL	0.7	LDL
			2449	08-83	216	2.42	b					
			2450	08-83	234	1.70	5.07					
S0621	2950	2645	4113	10-83	0	3.35	b					
S0634	3050	2845	8667	12-84	0	0.31	b					
S0635	3075	2870	8669	12-84	0	0.34	b					
S0636	3100	2820	8666	12-84	0	1.84	b					
S0637	3125	2670	6791	08-84	0	1.45	b					
S0638	3125	2720	6792	08-84	0	0.28	b					
S0639	3125	2820	2924	10-83	0	3.00	b	3.09				

RADIOCHEMICAL ANALYSIS

Environmental Restoration Program

OPERABLE UNIT 5
OPERATIONAL AREA PHASE I INVESTIGATION
AREA J FIELD REPORT

MOUND PLANT
MIAMISBURG, OHIO

VOLUME II - APPENDICES A-E

March 1995

Final (Revision 0)

U.S. Department of Energy
Ohio Field Office

EG&G Mound Applied Technologies

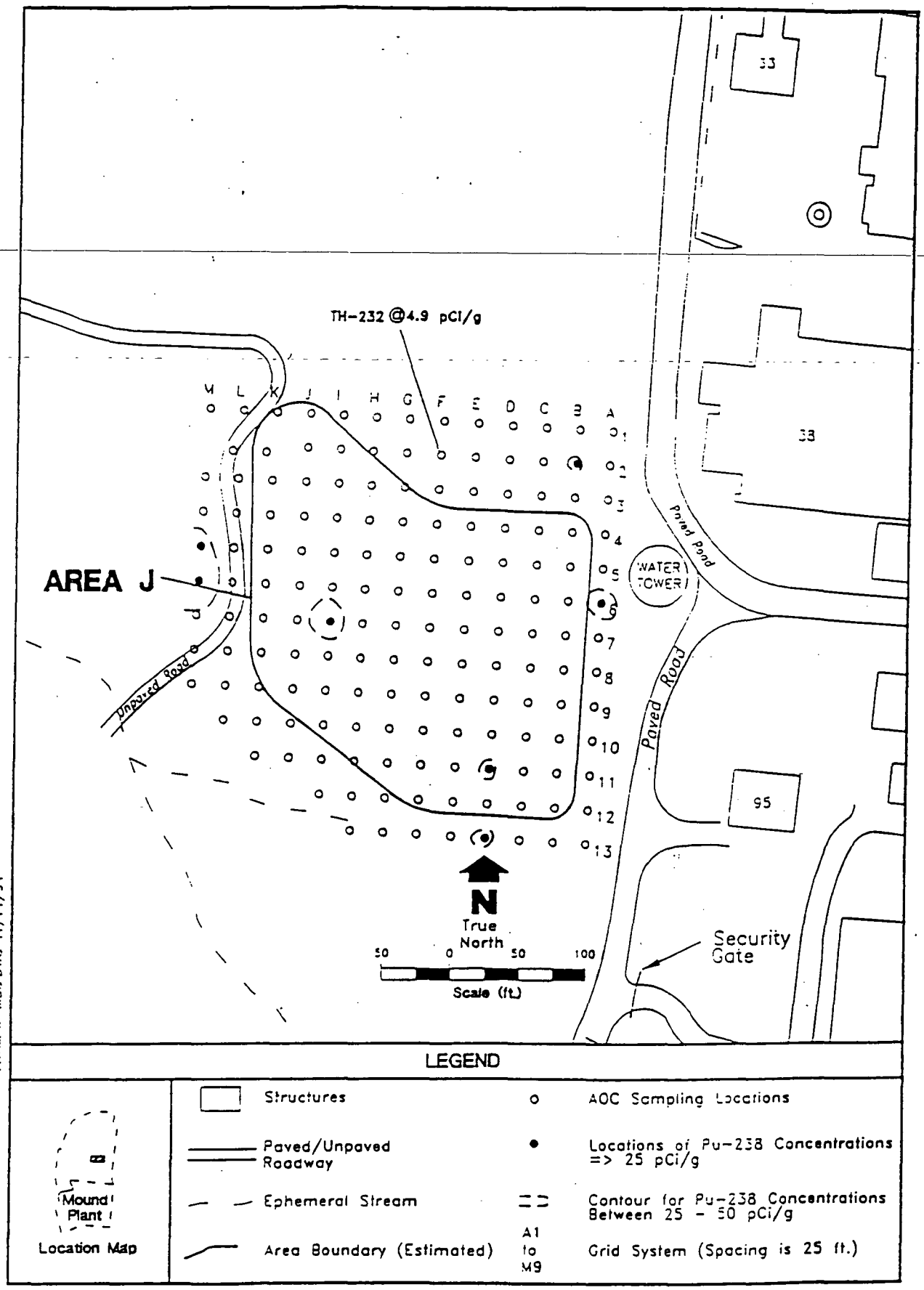


Figure 2.3. Locations of Elevated Surface Soil Radiological Activity

Table II.3. Summary of Elevated Surface Soil Radiological Activity (Soil Screening)

Grid Location[a]	Mound Soil Screening Facility Data	
	Plutonium-238 (pCi/g)	Thorium-232 (pCi/g)
A6	28	ND
B2	31	ND
D11	28	ND
D13	26	ND
F2	ND	4.9
I7	35	ND
M5	27	ND
M6	36	ND

a - See Figure 2.3 for grid location

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

MOUND SOIL SCREEN DATA

Table II.4. Summary of Historical Radiological Data Collected in Area J
(Mound Site Survey Project, 1983-1985)
Page 1 of 3

Sample Location[a]	Coordinates		MRC ID No.	Mo-Yr	Depth (inch)	Plutonium-238 (pCi/g)	Thorium (pCi/g)	Tritium (pCi/L)	Cobalt-60 (pCi/g)	Cesium-137 (pCi/g)	Radium-226 (pCi/g)	Americium-241 (pCi/g)
	South	West										
C0150	3055	2590	10479	08-85	18	3.94	b	NR	NR	NR	NR	NR
			10480	08-85	36	1.55	b	NR	3.0	I.DL	0.2	I.DL
			10481	08-85	54	3.94	b	NR	NR	NR	NR	NR
C0152	3065	2565	1561	04-83	18	2.60	2.80	NR	NR	NR	NR	NR
			1562	04-83	36	0.46	b	NR	NR	NR	NR	NR
			1563	04-83	90	1.89	b	NR	NR	NR	NR	NR
			1564	04-83	108	1.12	b	NR	NR	NR	NR	NR
			1565	04-83	126	1.29	b	NR	NR	NR	NR	NR
			1566	04-83	144	0.06	b	NR	NR	NR	NR	NR
			1567	04-83	162	0.08	b	NR	NR	NR	NR	NR
			1568	04-83	180	0.07	b	NR	NR	NR	NR	NR
			1569	04-83	198	0.27	b	NR	NR	NR	NR	NR
			1570	04-83	216	0.60	b	NR	NR	NR	NR	NR
			1571	04-83	234	5.22	b	NR	NR	NR	NR	NR
C0156	3075	2600	1572	04-83	18	71.30	2.03	NR	NR	NR	NR	NR
			1573	04-83	36	NR	4.30	NR	NR	NR	NR	NR
			1574	04-83	54	6.59	b	NR	NR	NR	NR	NR
			1575	04-83	72	6.45	b	NR	NR	NR	NR	NR

RADIOCHEMICAL ANALYSIS

Table II.4. Summary of Historical Radiological Data Collected in Area J (Mound Site Survey Project, 1983-1985) Page 2 of 3

Sample Location[a]	Coordinates		MRC ID No.	Mo-Yr	Depth (inch)	Plutonium-238 (pCi/g)	Thorium (pCi/g)	Tritium (pCi/L)	Cobalt-60 (pCi/g)	Cesium-137 (pCi/g)	Radium-226 (pCi/g)	Americium-241 (pCi/g)
	South	West										
C0156	3075	2600	1576	04-83	90	4.81	2.02	NR	NR	NR	NR	NR
			1577	04-83	108	40.90	2.33	NR	NR	NR	NR	NR
			1578	04-83	126	1.08	b	NR	NR	NR	NR	NR
			1579	04-83	144	5.22	b	NR	NR	NR	NR	NR
			1580	04-83	162	3.42	b	NR	NR	NR	NR	NR
			1581	04-83	180	8.67	b	NR	NR	NR	NR	NR
			1582	04-83	198	0.72	b	NR	NR	NR	NR	NR
			1583	04-83	216	4.10	b	NR	NR	NR	NR	NR
			1584	04-83	234	9.93	3.02	NR	NR	NR	NR	NR
C0158[c]	3000	2620	8285	10-84	36	1.95	b	NR	NR	NR	NR	NR
			8286	10-84	72	25.00	b	NR	NR	NR	NR	NR
S0633	3025	2645	2923	10-83	0	47.45	b	6.84	NR	NR	NR	NR
C0160	3180	2745	2411	08-83	18	0.80	b	NR	NR	NR	NR	NR
			2442	08-83	36	2.60	b	NR	LDL	LDL	0.94	LDL
			2443	08-83	108	0.53	b	NR	NR	NR	NR	NR
			2444	08-83	126	0.62	b	NR	NR	NR	NR	NR
			2446	08-83	162	0.66	30.42	NR	LDL	LDL	1	LDL
			2447	08-83	180	3.09	14.58	NR	LDL	LDL	0.9	LDL

RADIOCHEMICAL ANALYSIS

Table II.4. Summary of Historical Radiological Data Collected in Area J (Mound Site Survey Project, 1983-1985)
Page 3 of 3

Sample Location[a]	Coordinates		MRC ID No.	Mo-Yr	Depth (inch)	Plutonium-238 (pCi/g)	Thorium (pCi/g)	Tritium (pCi/L)	Cobalt-60 (pCi/g)	Cesium-137 (pCi/g)	Radium-226 (pCi/g)	Americium-241 (pCi/g)
	South	West										
C0160	3180	2745	2448	08-83	198	2.60	10.32	NR	LDL	LDL	0.7	LDL
			2449	08-83	216	2.42	b	NR	NR	NR	NR	NR
			2450	08-83	234	1.70	5.07	NR	NR	NR	NR	NR
S0639	3125	2820	2924	10-83	0	3.00	b	3.09	NR	NR	NR	NR

[a]Map locations are given using a "C" to designate core locations and an "S" to designate surface locations.
[b]A "b" indicates that the total thorium concentration was less than the Mound Plant Soil Screening Facility detection level of 2.0 pCi/g. Therefore, radiochemical analysis was not performed.
[c]Boring logs indicate that these locations were not sampled to bedrock.
LDL - The measured concentration was below the lower detection limit, estimated to be 0.5 pCi/g for cobalt-60, cesium-137, and americium-241; and 1 pCi/g for radium-226.
MRC ID - Monsanto Research Corporation identification
NR - No result given
pCi/g - picocuries per gram
pCi/mL - picocuries per milliliter

RADIOCHEMICAL ANALYSIS

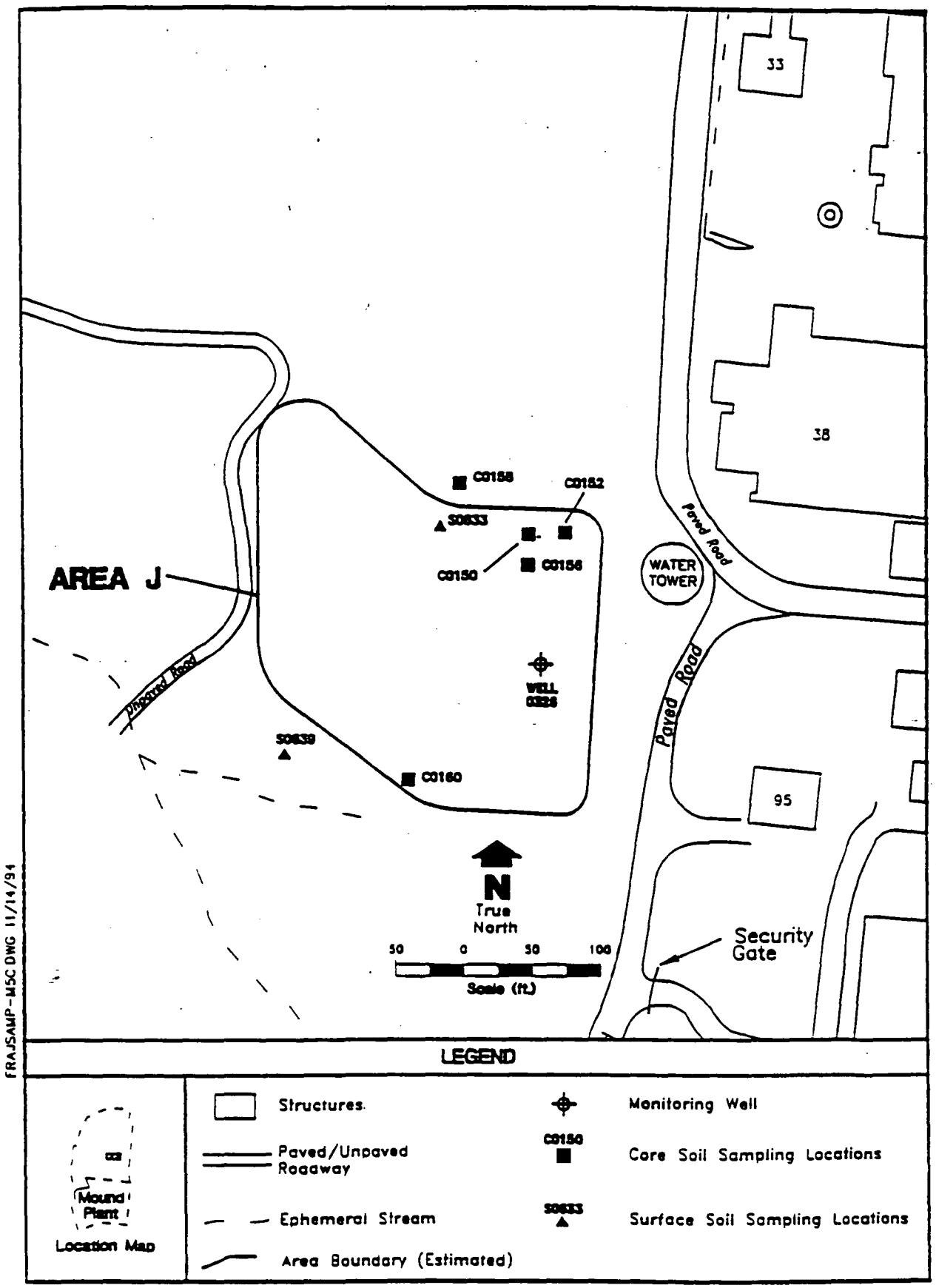


Figure 2.4. Sampling Locations for Historical Radiological Data Collected in Area J (Mound Site Survey Project, 1983-1985)

2.2.4. Presentation of Chemical Data

The report of findings of the Petrex soil gas survey is presented in Appendix D. The report discusses the Petrex method, the scope of work, quality assurance/quality control methods, and results. Appendix D, Plates 1 through 5, show sample locations and significant ion counts of targeted compounds. Ion count values are the unit of measure assigned by the mass spectrometer to the relative intensities associated with each compound. These intensity levels do not represent actual concentrations. Soil gas data are considered qualitative in that multiple sources in soil and/or ground water cannot be differentiated.

Based on a review of historical information for Area J and the immediate vicinity, NERI provided analytical data for the following four general classes of compounds in order to assess the potential for the presence of these compounds below the surface:

- total aromatic hydrocarbons,
- total semi-volatile hydrocarbons,
- total oil and grease range hydrocarbons, and
- total halogenated hydrocarbons.

The following subsections describe the distribution of the compounds listed above.

2.2.4.1. Distribution of Total Aromatic Hydrocarbons

Total aromatic hydrocarbons are reported as the combined levels of C_6 to C_{15} aromatic (benzene based) hydrocarbon compounds detected in the soil gas samples.

Most of the samples contained the light and medium weight aromatic hydrocarbons (e.g. benzene, toluene, ethylbenzene/xylene, and C_9 and C_{10} aromatics). Few samples were observed to contain C_{11} or heavier aromatics.

The soil gas survey indicates that total aromatic hydrocarbons are found in a large zone covering most of the northeastern portion of Area J with several smaller zones scattered in the northwest and southwest portions (see Appendix D, Plate 2). The western edge of the large zone roughly parallels the crest of the hill dividing the area.

Numerous small areas within this zone show the highest relative levels of aromatics. These areas are indicative of soil gas composition typical of vapor from weathered light to medium weight fuels. The soil gas from the area defined by samples B5, B6, C5, and C6 is the exception. These samples exhibited characteristics more typical of partially weathered medium to heavy weight fuels or fuel oils.

2.2.4.2. Distribution of Total Semi-Volatile Hydrocarbons

Total semi-volatile hydrocarbons are reported as the combined response to naphthalene, C_{11} through C_{15} alkyl naphthalenes, and C_{12}, C_{14}, and C_{16} polycyclic hydrocarbons. These compounds are constituents of creosote, coal tar, and other heavy, high boiling point fraction petroleum products. Naphthalene, and C_{11} and C_{12} alkyl naphthalenes (e.g. methylnaphthalene and ethyl or dimethylnaphthalene) may also be found in medium to heavy weight fuels and fuel oils.

Most of the samples which yielded an elevated relative response to semi-volatiles, were from elevated relative levels of naphthalene while some were from elevated relative levels of methylnaphthalene. None of the other semi-volatile polycyclic hydrocarbons named above were clearly identified in the samples.

The distribution of total semi-volatile hydrocarbons is shown in Appendix D, Plate 3. Elevated relative levels of naphthalene and methylnaphthalene are found in several small scattered zones throughout Area J. There is one larger zone located in the east central portion of the area, next to the water tank. The soil gas from these zones also exhibited elevated relative levels of other petroleum hydrocarbons, some up to C_{12} in weight. The occurrence of these hydrocarbons in the proportions observed indicate that these hydrocarbons, naphthalene, and methylnaphthalene likely derive from medium to heavy weight fuels.

Only the soil gas at sample location M8 showed a high relative level of naphthalene and methylnaphthalene in the near absence of other petroleum hydrocarbons. This composition is typical of vapors derived from coal tar, creosote, etc.

2.2.4.3. Distribution of Total Oil and Grease Range Hydrocarbons

Total oil and grease range hydrocarbons reported are C_{13}, C_{14}, and C_{15} alkanes, cycloalkanes, alkenes, cycloalkenes, dienes, and alkynes. These compounds make up the base of most common petroleum

lubricants and are also constituents of most medium and heavy weight petroleum products used as fuels and heating oils.

The distribution of total oil and grease range hydrocarbons is displayed in Appendix D, Plate 4. Elevated relative levels of these compounds were detected in small zones in the northeast corner of Area J.

The soil gas from most of these zones also contained elevated relative levels of light weight aromatics which indicates that the overall composition is more like the vapor derived from fuels than from lubricants. Only soil gas from sample D2 contained other medium and heavy weight hydrocarbons in proportions suggesting derivation from a lubricant or a medium to heavy weight petroleum product.

2.2.4.4. Distribution of Total Halogenated Hydrocarbons

Total halogenated hydrocarbons are reported as the combined levels of tetrachloroethene (PCE), trichloroethene (TCE), trichloroethane (TCA), dichlorobenzene (DCB), trichlorofluoromethane (Freon-11), and trichlorotrifluoroethane (Freon-113). These compounds are volatile liquids commonly used as solvents, cleaning agents, and refrigerants.

PCE was detected more frequently in the soil gas than the other halogenated hydrocarbons. Thus, most of the relative responses to total halogenated hydrocarbons principally reflect the presence of PCE in the soil gas.

Elevated relative levels of halogenated hydrocarbons occur mostly in a large zone extending over the central and northwestern portions of Area J and in a smaller zone in the northeastern corner (see Appendix D, Plate 5). In addition, there are several small zones (defined by a single sample location) showing moderately elevated relative response to halogenated hydrocarbons.

2.2.5. Comparison with Historical Chemical Data

Historical chemical data from Area J include a 1992 soil gas survey and analytical results of samples collected from well 0326. Table II.5 shows chemical contaminants detected during these historical sampling events. To facilitate comparison with the Petrex soil gas survey, only organic compounds from the four general classes of hydrocarbons listed in Section 2.2.4 of this report were considered.

PETREX DATA (RELATIVE)

Table II.5. Summary of Historical Chemical Data Collected in Area J

Sampling Event	Halogenated Hydrocarbons				Aromatic Hydrocarbons	SVOC	VOC
	PCE	TCE	TCA	Freon-11	Toluene	Pyrene	Acetone
Well 0326						JB(1)	X(1)
1992 Soil Gas Survey	X	X	X	X	X		

(1) found in soil sample(s)
X found in detectable quantities
J estimated concentration or below detection limit
B found in laboratory blank
PCE tetrachloroethene
TCE trichloroethene
TCA trichloroethane

Well 0326 is located in Area J near grid coordinate C8. It was completed on April 3, 1993 as part of the Mound Plant installation groundwater assessment program. Four soil samples were collected during drilling of the well at 0-5 feet, 5-10 feet, 10-15 feet, and 15-20 feet (DOE 1994a). Pyrene (at estimated quantities) was found at 5-10 feet. Acetone was found at 5-10 feet and at 10-15 feet. Validated analytical soil results are presented in Appendix C of the OU9 Hydrogeologic Investigation: Soil Chemistry Report (DOE 1994a).

Groundwater samples from well 0326 were collected during the Fall 1993 and Spring 1994 Groundwater Sweeps Program. Freon-113, acetone, and benzoic acid were detected only in the 1993 sampling event. Various phthalate esters and 4-methyl phenol were detected in both the 1993 and the 1994 sampling events.

Analytical data from the Fall 1993 and Spring 1994 Groundwater Sweeps Program are currently unvalidated and are not used for comparison in this report. However, it is anticipated that the data will be validated when Phase 2 investigations (if warranted) are initiated in Area J. At this time, the data will be used in conjunction with Phase 2 analytical results to determine the nature and extent of chemical contamination in Area J.

A soil gas survey was performed at Area J in 1992 (DOE 1993g). A total of 26 samples were collected (see Figure 2.5) and analyzed for various organic compounds, primarily halogenated hydrocarbons. The soil gas sampling was performed by driving sections of drill rod and steel points into the subsurface and drawing soil vapor to a gas collection system mounted on a mobile unit. Soil vapor was analyzed in an on-site mobile laboratory for volatile organic compounds (VOCs). Quality control samples were collected and analyzed throughout the field effort to monitor system efficiency. Targeted contaminant concentrations were reported as parts per billion.

The halogenated hydrocarbons Freon-11, TCA, and TCE were found in a single sample (#3154) at the extreme southeastern corner of the historical study area. Freon-11 and PCE were also found in a single sample (#3171) located in the north central portion of the study area. TCA and Freon-11 were found in two samples (#3175 and #3187) in the east central portion of the study area. Toluene, an aromatic hydrocarbon, was found in scattered samples (#3153, #3155, and #3168) in the southern portion of the study area.

Table II.5 shows that the 1992 soil gas survey detected the presence of several halogenated hydrocarbons in Area J media. This finding is consistent with the Petrex soil gas survey report which shows dispersion of halogenated hydrocarbons in soil gas over much of Area J (see Appendix D, Plate 5). All the halogenated hydrocarbons listed in Table II.5 were detected by the Petrex soil gas survey, though PCE was detected more frequently than the others.

The aromatic hydrocarbon, toluene, was detected by the 1992 soil gas survey but was not found in soil samples from well 0326. This is consistent with the Petrex soil gas survey which indicates that toluene is the principal aromatic detected in most of the soil gas samples. As such, the dispersion of aromatics over the eastern portion of Area J (see Appendix D, Plate 2) may be due to the presence of toluene in the subsurface soils but not in the groundwater.

The semi-volatile organic compound (SVOC), pyrene, was found in well 0326 soil samples but not in the 1992 soil gas survey. Comparison of these findings with the Petrex soil gas survey is inconclusive. The limited dispersion of SVOCs over Area J (see Appendix D, Plate 3) is due in part to the presence of pyrene in soil gas.

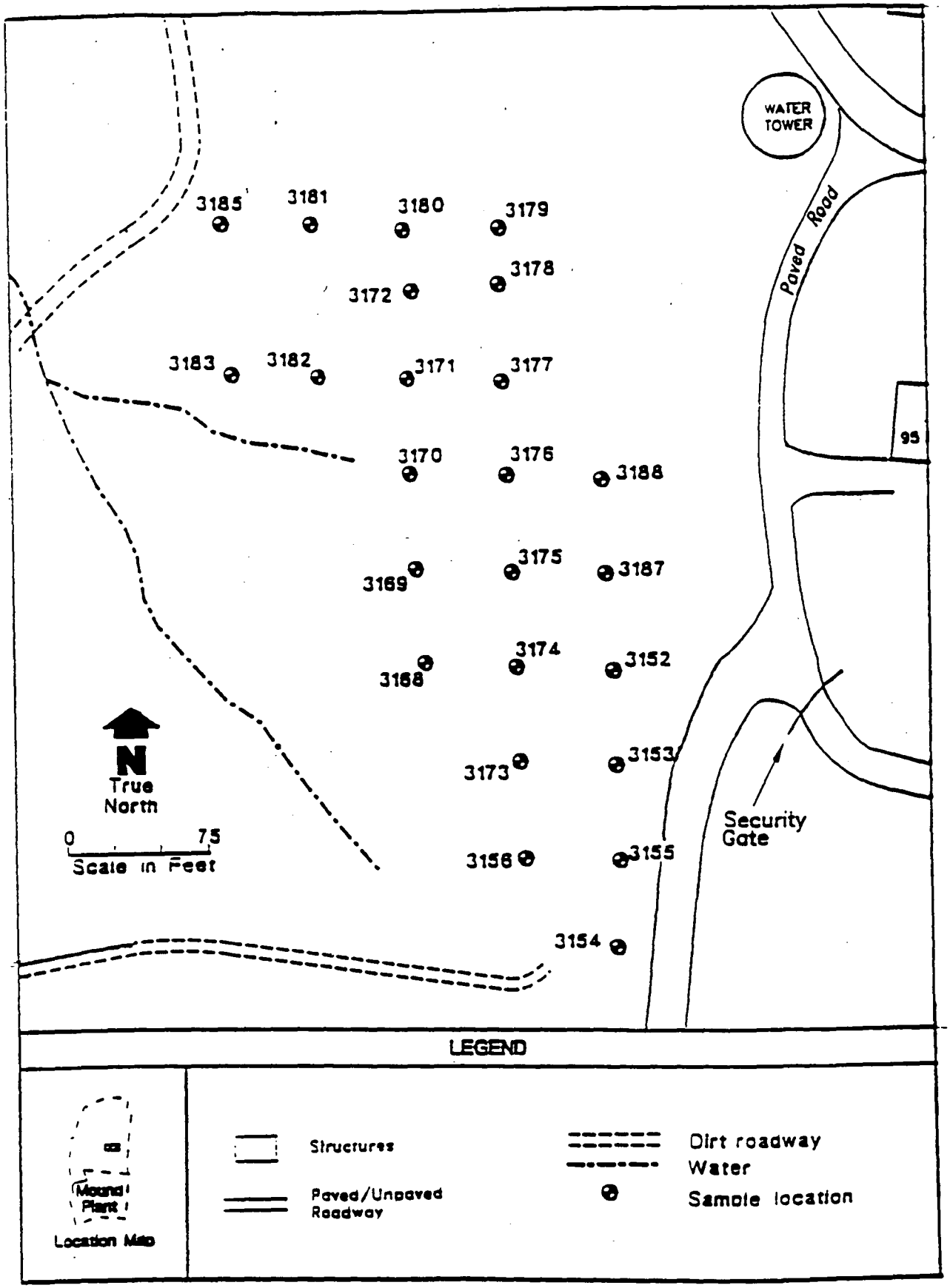


Figure 2.5. Sampling Locations for 1992 Soil Gas Survey in Area J

ENVIRONMENTAL RESTORATION PROGRAM

OPERABLE UNIT 3 – MISCELLANEOUS SITES
LIMITED FIELD INVESTIGATION REPORT
VOLUME I
SECTIONS 1-6

MOUND PLANT
MIAMISBURG, OHIO

July 1993

DEPARTMENT OF ENERGY

ENVIRONMENTAL RESTORATION PROGRAM
EG&G MOUND APPLIED TECHNOLOGIES

FINAL
(REVISION 0)

- MND33-0034-0002 — Interval 1.0 to 4.0 ft BGS. Three boreholes were necessary to obtain the required sample volume. TCL SVOCs, TCL P/PCBs, TAL inorganics, and TPH were taken by WESTON in addition to the requested analyses for TCL VOCs in order to duplicate regulatory agency samples.

- MND33-0036-0002 — Interval 3.0 to 5.0 ft BGS. A TPH sample was taken in addition to the requested analyses of TCL VOCs in order to duplicate regulatory agency samples.

- MND33-0038-0002 — Interval 3.0 to 5.58 ft BGS. TPH sample was taken in addition to the requested analyses of TCL VOCs in order to duplicate regulatory agency samples.

- MND33-0039-0002 — Interval 3.0 to 7.0 ft BGS. Two boreholes were necessary to obtain the required sample volume due to regulatory agency split samples. TCL SVOCs, TCL P/PCBs, TAL inorganics, and TPH were taken in addition to the requested analyses of TCL VOCs.

Field screening of soil samples using an OVA was not conducted on surface samples from locations MND33-0027, MND33-0029, MND33-0030, MND33-0032, and MND33-0033 because of instrument malfunction.

2.23. OLD FIRING RANGE DRUM STORAGE SITE

2.23.1. Site History

2.23.1.1 Description of the Old Firing Range Drum Storage Site

The Old Firing Range Drum Storage Site (OFRDSS) is located northwest of Building 105 on SM/PP Hill (Figures 1.3 and 2.23(a)). The area was in operation from about 1970 to 1974. It was used for the collection and staging of liquid chemical wastes until they could be transported offsite for disposal. It was the first staging and storage area used for such purposes when the Historical Landfill (Area B) was closed to open burning. Its operation was concurrent with the limited operation of the Building 51 waste incinerator. Most hazardous wastes generated during this time were collected weekly and were consolidated at the OFRDSS, although some wastes were incinerated (Vaughters 1991). In 1974, the hazardous chemical staging activities were moved back to the area of the historical landfill and the OFRDSS was abandoned.

The OFRDSS may have included an area approximately 300 ft by 100 ft and photographs indicate that 100 to 500 drums were stored in the open on bare ground. The area has since been regraded, and is sparsely vegetated and partially covered by the intersection of two paved roads.

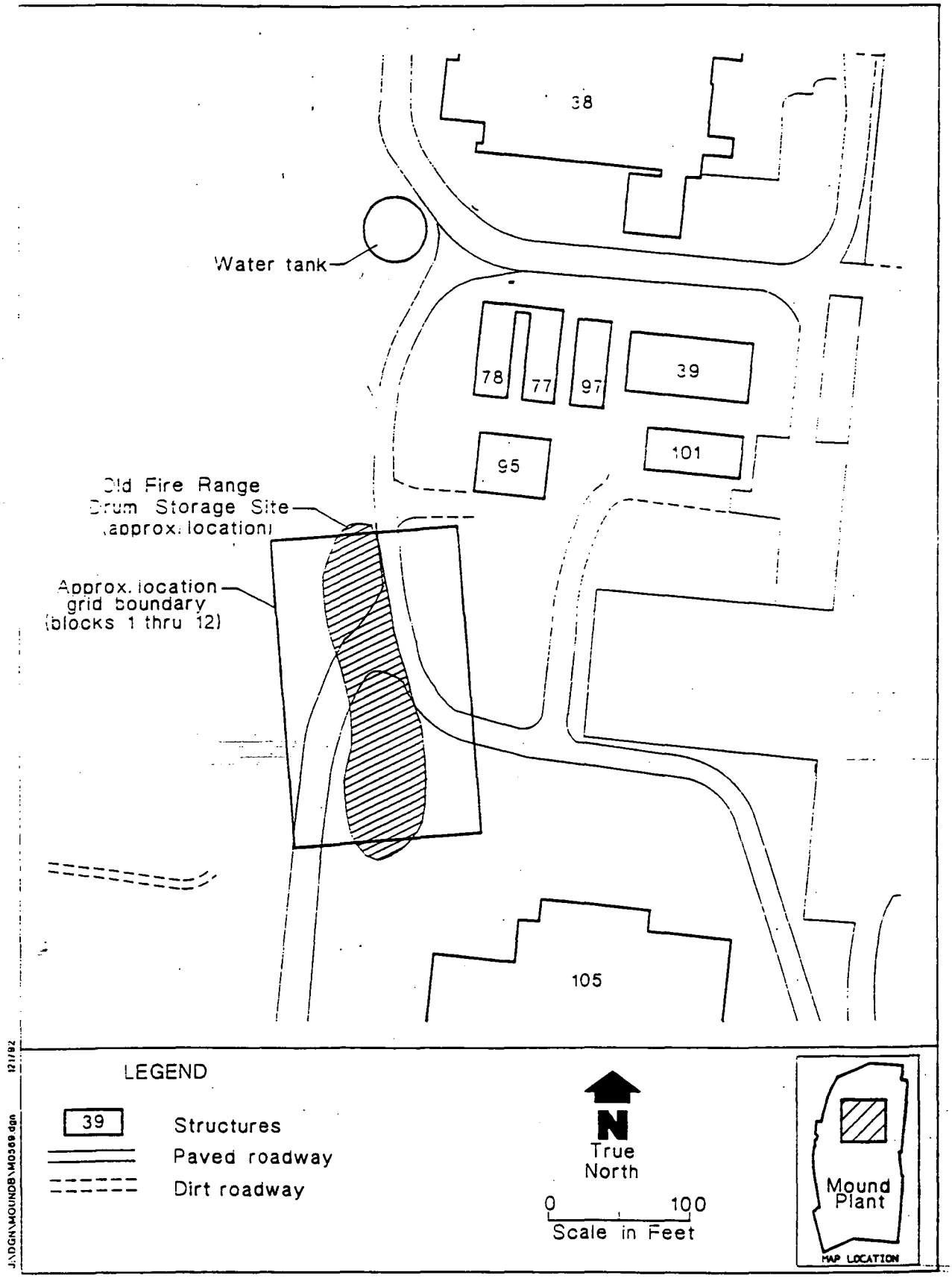


Figure 2.23.(a). Old Firing Range Drum Storage Site.

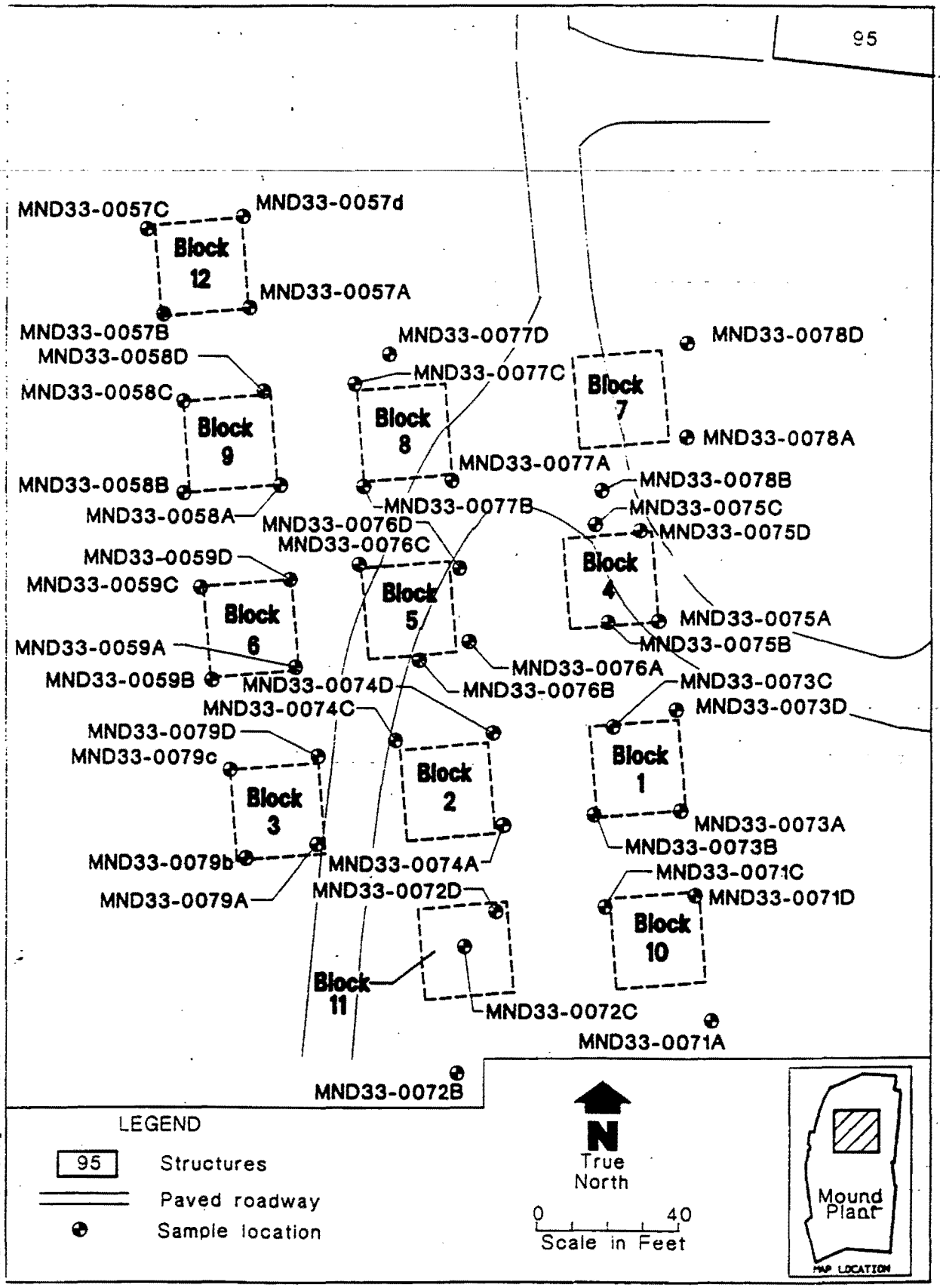


Figure 2.23.(b). Old Firing Range Drum Storage Site soil sample locations.

3.23. OLD FIRING RANGE DRUM STORAGE SITE

The Old Firing Range Drum Storage Site (OFRDSS) is located northwest of Building 105 on SM/PP Hill. The area was used over an approximate 4-year period for the storage of liquid chemical wastes until they could be transported offsite for disposal. Based on photographs showing markings on drums, it is possible that drums stored in the area contained halogenated and nonhalogenated spent solvents. Soil sampling was conducted in the area to assess whether the site is or has been a source of hazardous constituents released to the environment. A summary description at the OFRDSS, including the site history and field investigation procedures, is presented in subsection 2.23.

Twenty-five samples and three duplicates were collected from 12 sampling locations, or blocks (see Figure 2.23(b)). Each sample collected represents a composite of soils collected at the target depth from two to four borings within each block. VOC samples were collected from only one location at each depth interval within each block based on field screening results. Samples were analyzed for VOCs, SVOCs, P/PCBs, TAL inorganics, and radionuclides via gamma spectroscopy. The validated analytical results for all analytes detected above laboratory reporting limits for each sample analyzed are presented in Table III.26.

3.23.1 Volatile Organic Compounds

Five VOCs (acetone, 2-butanone, toluene, xylenes (total), and dichloromethane) were detected in concentrations above laboratory reporting limits. Acetone was detected in samples MND33-0057-0002 and -0003; MND33-0058-0002 and -0003; and MND33-0059-0003. 2-butanone was detected in samples MND33-0058-0002 and -0003; toluene and xylenes (total) were detected in sample MND33-0076-0002; and dichloromethane was detected in samples MND33-0058-0002 and -0003. Concentrations of each of these compounds are all below respective PRGs. The occurrence of low levels of VOCs in soils and soil gas at the edge of the sampling grid may represent a potential impact to site soil quality and indicates that the extent of VOC contamination may not be completely understood.

A soil gas survey was performed in the vicinity of the OFRDSS in August 1992 (DOE 1992e). Soil gas samples were collected from four locations within or near the OU 3 LFI sampling grid at the OFRDSS. Results of the soil gas survey indicate sporadic, low-level concentrations of Freon 11 (43 and 46 ppb), 1,1,1-TCA (7 ppb), TCE (13 ppb), and toluene (11 and 5 ppb) detected in the soil gas in this area. A complete discussion of the survey results is presented in the referenced document (DOE 1992e).

3.23.2. Semivolatile Organic Compounds

Eighteen SVOCs were detected at concentrations above laboratory reporting limits in soil samples analyzed from the OFRDSS. Bis(2-ethylhexyl)phthalate was detected at four OFRDSS sample locations at concentrations above laboratory reporting limits but below the PRG. PAH compounds benzo(a)anthracene, benzo(a)pyrene,benzo(b)fluoranthene,benzo(g,h,i)perylene,chrysene,dibenzo(a,h)anthracene,indeno(1,2,3-CD)pyrene, and pyrene were detected in sample MND33-0079-0002 at concentrations above the respective PRGs. Nine additional SVOCs were detected in samples from locations MND33-0058 and -0079 at concentrations above laboratory reporting limits but below PRGs. The detection of SVOCs in some OFRDSS soil samples at concentrations above laboratory reporting limits could be a result of runoff from nearby asphalt surfaces (bitumen), and does not present an impact to soil quality at the site.

3.23.3. Pesticides and Polychlorinated Biphenyls

Pesticides were not detected in soil samples from the OFRDSS at concentrations above the laboratory reporting limits.

The PCB Aroclor 1254 was detected at soil sample MND33-0058-0001 at a concentration above the laboratory reporting limit but below the proposed action level. No other PCBs were detected in OFRDSS soil samples at concentrations above laboratory reporting limits. The detected concentration of Aroclor 1254 does not reflect an impact to site soil quality.

3.23.4. TAL Inorganics

Inorganic compounds were not detected in soil samples from the OFRDSS at concentrations above PRGs, or proposed action levels.

3.23.5. Gamma Spectroscopy

A cleanup of cesium-137 contaminated soils was reported to have occurred near the OFRDSS. Soil analyses were conducted via gamma spectroscopy to determine if soil quality has been impacted by previous activities near the OFRDSS.

Concentrations of thorium-234 were reported at levels above the PRG of 1.1 pCi/g at five soil sample locations. Radium-224 was detected at one sample location (MND33-0074-0001) at a concentration of 12.2 pCi/g, which is above the PRG of 5.0 pCi/g. Detectable concentrations of cesium-137 were found at soil

sample locations MND33-0058-0001 and -1001; and MND33-0059-0001 at concentrations above the laboratory reporting limits and PRG. The reported concentration of cesium-137 includes a calculated numerical variance equal to plus or minus approximately 0.034 pci/g. The variances for samples MND33-0058-0001, -1001, and MND33-0059-0001 are 0.036, 0.038, and 0.034 pci/g, respectively. When this variance is added to the laboratory reporting limit or subtracted from the reported result, the concentrations of all three soil samples fall below the laboratory reporting limit for cesium-137. Detected concentrations of potassium-40 in soil samples are within background concentration levels (Eisenbud, 1987).

The detected concentrations of radioactive isotopes found at levels above respective PRGs in soils from the OFRDSS may reflect an impact to soil quality from previous site activities.

3.23.6. Summary

Analytical results for soils analyzed from the OFRDSS indicate that low levels of VOCs and SVOCs are present in some of the soil samples from the OFRDSS. A recent soil gas survey for VOCs detected only sporadic, low levels of VOCs in the OFRDSS area. Some of the SVOCs, present at concentrations above laboratory reporting limits, could be a result of runoff from the asphalt (bitumen) surfaces, which bisect the OFRDSS grid. The low concentrations of VOCs and radionuclides detected at the OFRDSS may reflect an impact to soil quality in the area. Therefore, further site characterization at the OFRDSS is recommended.

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MND33-0057
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Type
ACETONE	0002	S	mG/Kg	0.011	0.11	J	2.7E+04	I
ACETONE	0003	S	mG/Kg	0.011	0.036	J	2.7E+04	I
ALUMINUM, TOTAL	0001	S	mG/Kg	4.	6390.		7.8E+05	I
ALUMINUM, TOTAL	0002	S	mG/Kg	4.	10500.		7.8E+05	I
ALUMINUM, TOTAL	0003	S	mG/Kg	4.	7920.		7.8E+05	I
ANTIMONY, TOTAL	0002	S	mG/Kg	3.	4.6	J	1.1E+02	I
ARSENIC, TOTAL	0001	S	mG/Kg	.2	7.5		2.1E+03	I
ARSENIC, TOTAL	0002	S	mG/Kg	.2	4.6	J	2.1E+03	I
ARSENIC, TOTAL	0003	S	mG/Kg	.2	4.8		2.1E+03	I
BARIUM, TOTAL	0001	S	mG/Kg	.2	39.		1.9E+04	I
BARIUM, TOTAL	0002	S	mG/Kg	.2	48.1		1.9E+04	I
BARIUM, TOTAL	0003	S	mG/Kg	.2	39.9		1.9E+04	I
BERYLLIUM	0001	S	mG/Kg	.1	.32		1.5E-01	I
BERYLLIUM	0002	S	mG/Kg	.1	.61		1.5E-01	I
BERYLLIUM	0003	S	mG/Kg	.1	.43		1.5E-01	I
BIS(2-ETHYLHEXYL)PHTHALATE	0003	S	mG/Kg	3.6	4.2	J	4.6E+01	I
CALCIUM, TOTAL	0001	S	mG/Kg	3.	131000.		NA	I
CALCIUM, TOTAL	0002	S	mG/Kg	3.	101000.		NA	I
CALCIUM, TOTAL	0003	S	mG/Kg	3.	94300.		NA	I
CHROMIUM, TOTAL	0001	S	mG/Kg	1.	7.9		1.4E+03	I
CHROMIUM, TOTAL	0002	S	mG/Kg	1.	12.7		1.4E+03	I
CHROMIUM, TOTAL	0003	S	mG/Kg	1.	9.8		1.4E+03	I
COBALT, TOTAL	0001	S	mG/Kg	2.	5.9		3.9E+01	I
COBALT, TOTAL	0002	S	mG/Kg	2.	8.		3.9E+01	I
COBALT, TOTAL	0003	S	mG/Kg	2.	7.3		3.9E+01	I
COPPER, TOTAL	0001	S	mG/Kg	1.	11.8		1.0E+04	I
COPPER, TOTAL	0002	S	mG/Kg	1.	17.4		1.0E+04	I
COPPER, TOTAL	0003	S	mG/Kg	1.	12.9		1.0E+04	I
IRON, TOTAL	0001	S	mG/Kg	1.	12900.	J	NA	I
IRON, TOTAL	0002	S	mG/Kg	1.	20000.		NA	I
IRON, TOTAL	0003	S	mG/Kg	1.	15900.		NA	I
LEAD, TOTAL	0001	S	mG/Kg	.2	11.6		5.3E+01	I
LEAD, TOTAL	0002	S	mG/Kg	.2	10.9		5.3E+01	I
LEAD, TOTAL	0003	S	mG/Kg	.2	8.		5.3E+01	I
MAGNESIUM, TOTAL	0001	S	mG/Kg	3.	46500.	J	NA	I
MAGNESIUM, TOTAL	0002	S	mG/Kg	3.	26300.		NA	I
MAGNESIUM, TOTAL	0003	S	mG/Kg	3.	26700.		NA	I
MANGANESE, TOTAL	0001	S	mG/Kg	.2	373.	J	2.7E+04	I
MANGANESE, TOTAL	0002	S	mG/Kg	.2	392.		2.7E+04	I
MANGANESE, TOTAL	0003	S	mG/Kg	.2	338.	J	2.7E+04	I
MERCURY, TOTAL	0002	S	mG/Kg	.02	.04		8.1E+01	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MND33-0057
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Type
NICKEL, TOTAL	0001	S	mG/Kg	2.	11.		5.4E+03	I
NICKEL, TOTAL	0002	S	mG/Kg	2.	16.5		5.4E+03	I
NICKEL, TOTAL	0003	S	mG/Kg	2.	13.		5.4E+03	I
POTASSIUM, TOTAL	0001	S	mG/Kg	100.	602.		NA	I
POTASSIUM, TOTAL	0002	S	mG/Kg	100.	1770.		NA	I
POTASSIUM, TOTAL	0003	S	mG/Kg	100.	965.		NA	I
POTASSIUM-40	0001	S	pCi/g	.5	20.		NA	I
POTASSIUM-40	0002	S	pCi/g	.5	15.9		NA	I
POTASSIUM-40	0003	S	pCi/g	.5	14.6		NA	I
RADIUM-224	0001	S	pCi/g	.1	1.11		5.0E+00	I
RADIUM-224	0002	S	pCi/g	.1	.878		5.0E+00	I
RADIUM-224	0003	S	pCi/g	.1	.886		5.0E+00	I
RADIUM-226	0001	S	pCi/g	.1	.756		5.0E+00	I
RADIUM-226	0002	S	pCi/g	.1	.651		5.0E+00	I
RADIUM-226	0003	S	pCi/g	.1	.595		5.0E+00	I
RADIUM-228	0001	S	pCi/g	.2	1.03		5.0E+00	I
RADIUM-228	0002	S	pCi/g	.2	.821		5.0E+00	I
RADIUM-228	0003	S	pCi/g	.2	.829		5.0E+00	I
SODIUM, TOTAL	0001	S	mG/Kg	20.	241.		NA	I
SODIUM, TOTAL	0002	S	mG/Kg	20.	217.		NA	I
SODIUM, TOTAL	0003	S	mG/Kg	20.	190.		NA	I
THORIUM-234	0001	S	pCi/g	.5	.934		1.1E+00	I
THORIUM-234	0002	S	pCi/g	.5	1.11		1.1E+00	I
THORIUM-234	0003	S	pCi/g	.5	.710		1.1E+00	I
VANADIUM, TOTAL	0001	S	mG/Kg	1.	12.1		1.9E+03	I
VANADIUM, TOTAL	0002	S	mG/Kg	1.	16.6		1.9E+03	I
VANADIUM, TOTAL	0003	S	mG/Kg	1.	13.2		1.9E+03	I
ZINC, TOTAL	0001	S	mG/Kg	.5	31.5	J	5.4E+04	I
ZINC, TOTAL	0002	S	mG/Kg	.5	64.		5.4E+04	I
ZINC, TOTAL	0003	S	mG/Kg	.5	40.1		5.4E+04	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
pCi/g - Picocuries per Gram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MND33-0058
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Type
2-BUTANONE	0002	S	mG/Kg	0.012	0.028	J	1.4E+04	I
2-BUTANONE	0003	S	mG/Kg	0.01	0.022	J	1.4E+04	I
ACETONE	0002	S	mG/Kg	0.012	0.21	J	2.7E+04	I
ACETONE	0003	S	mG/Kg	0.01	0.23	J	2.7E+04	I
ALUMINUM, TOTAL	0001	S	mG/Kg	4.	12500.		7.8E+05	I
ALUMINUM, TOTAL	1001	S	mG/Kg	4.	9700.		7.8E+05	I
ALUMINUM, TOTAL	0002	S	mG/Kg	4.	1240.		7.8E+05	I
ALUMINUM, TOTAL	0003	S	mG/Kg	4.	12800.		7.8E+05	I
AROCLOR-1254	0001	S	mG/Kg	0.09	0.56	J	50. total	I
ARSENIC, TOTAL	0001	S	mG/Kg	.2	6.2	J	2.1E+03	I
ARSENIC, TOTAL	1001	S	mG/Kg	.2	5.4	J	2.1E+03	I
ARSENIC, TOTAL	0002	S	mG/Kg	.2	1.7	J	2.1E+03	I
ARSENIC, TOTAL	0003	S	mG/Kg	.2	6.6	J	2.1E+03	I
BARIUM, TOTAL	0001	S	mG/Kg	.2	61.3		1.9E+04	I
BARIUM, TOTAL	1001	S	mG/Kg	.2	48.3		1.9E+04	I
BARIUM, TOTAL	0002	S	mG/Kg	.2	5.		1.9E+04	I
BARIUM, TOTAL	0003	S	mG/Kg	.2	78.8		1.9E+04	I
BENZO(A)ANTHRACENE	0002	S	mG/Kg	0.77	1.8	J	6.0E-01	I
BENZO(A)PYRENE	0002	S	mG/Kg	0.77	1.7	J	8.8E-02	I
BENZO(B)FLUORANTHENE	0002	S	mG/Kg	0.77	1.5	J	6.4E-01	I
BENZO(G,H,I)PERYLENE	0002	S	mG/Kg	0.77	0.78	J	4.0E+00	I
BENZO(K)FLUORANTHENE	0002	S	mG/Kg	0.77	1.3	J	1.3E+00	I
BERYLLIUM	0001	S	mG/Kg	.1	.76		1.5E-01	I
BERYLLIUM	1001	S	mG/Kg	.1	.57		1.5E-01	I
BERYLLIUM	0002	S	mG/Kg	.1	.14		1.5E-01	I
BERYLLIUM	0003	S	mG/Kg	.1	.75		1.5E-01	I
BIS(2-ETHYLHEXYL)PHTHALATE	0001	S	mG/Kg	0.38	4.1	J	4.6E+01	I
BIS(2-ETHYLHEXYL)PHTHALATE	1001	S	mG/Kg	0.39	3.2	J	4.6E+01	I
BIS(2-ETHYLHEXYL)PHTHALATE	0002	S	mG/Kg	0.77	3.6	J	4.6E+01	I
BIS(2-ETHYLHEXYL)PHTHALATE	0003	S	mG/Kg	0.84	3.7	J	4.6E+01	I
CALCIUM, TOTAL	0001	S	mG/Kg	3.	71800.		NA	I
CALCIUM, TOTAL	1001	S	mG/Kg	3.	87700.		NA	I
CALCIUM, TOTAL	0002	S	mG/Kg	3.	15500.		NA	I
CALCIUM, TOTAL	0003	S	mG/Kg	3.	105000.		NA	I
CESIUM-137	0001	S	pCi/g	.1	.106		2.1E-02	I
CESIUM-137	1001	S	pCi/g	.1	.116		2.1E-02	I
CHROMIUM, TOTAL	0001	S	mG/Kg	1.	14.4		1.4E+03	I
CHROMIUM, TOTAL	1001	S	mG/Kg	1.	11.9		1.4E+03	I
CHROMIUM, TOTAL	0002	S	mG/Kg	1.	2.8		1.4E+03	I
CHROMIUM, TOTAL	0003	S	mG/Kg	1.	14.6		1.4E+03	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
pCi/g - Picocuries per Gram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MND33-0058
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Type
CHRYSENE	0002	S	mG/Kg	0.77	1.7	J	2.0E+01	I
COBALT, TOTAL	0001	S	mG/Kg	2.	11.1		3.9E+01	I
COBALT, TOTAL	1001	S	mG/Kg	2.	8.5		3.9E+01	I
COBALT, TOTAL	0003	S	mG/Kg	2.	9.5		3.9E+01	I
COPPER, TOTAL	0001	S	mG/Kg	1.	17.4		1.0E+04	I
COPPER, TOTAL	1001	S	mG/Kg	1.	12.9		1.0E+04	I
COPPER, TOTAL	0002	S	mG/Kg	1.	4.8		1.0E+04	I
COPPER, TOTAL	0003	S	mG/Kg	1.	16.5		1.0E+04	I
DICHLOROMETHANE-METHYLENE CHLORIDE	0002	S	mG/Kg	0.006	0.01		8.5E+01	I
DICHLOROMETHANE-METHYLENE CHLORIDE	0003	S	mG/Kg	0.005	0.009		8.5E+01	I
FLUORANTHENE	0002	S	mG/Kg	0.77	2.	J	1.1E+04	I
INDENO(1,2,3-CD)PYRENE	0002	S	mG/Kg	0.77	0.81	J	3.8E-01	I
IRON, TOTAL	0001	S	mG/Kg	1.	24900.	J	NA	I
IRON, TOTAL	1001	S	mG/Kg	1.	19400.	J	NA	I
IRON, TOTAL	0002	S	mG/Kg	1.	2880.		NA	I
IRON, TOTAL	0003	S	mG/Kg	1.	24100.		NA	I
LEAD, TOTAL	0001	S	mG/Kg	.2	9.4		5.3E+01	I
LEAD, TOTAL	1001	S	mG/Kg	.2	11.7		5.3E+01	I
LEAD, TOTAL	0002	S	mG/Kg	.2	7.6	J	5.3E+01	I
LEAD, TOTAL	0003	S	mG/Kg	.2	18.5		5.3E+01	I
MAGNESIUM, TOTAL	0001	S	mG/Kg	3.	11700.		NA	I
MAGNESIUM, TOTAL	1001	S	mG/Kg	3.	11100.		NA	I
MAGNESIUM, TOTAL	0002	S	mG/Kg	3.	3330.		NA	I
MAGNESIUM, TOTAL	0003	S	mG/Kg	3.	13400.		NA	I
MANGANESE, TOTAL	0001	S	mG/Kg	.2	651.	J	2.7E+04	I
MANGANESE, TOTAL	1001	S	mG/Kg	.2	583.	J	2.7E+04	I
MANGANESE, TOTAL	0002	S	mG/Kg	.2	60.9		2.7E+04	I
MANGANESE, TOTAL	0003	S	mG/Kg	.2	685.		2.7E+04	I
NICKEL, TOTAL	0001	S	mG/Kg	2.	21.5		5.4E+03	I
NICKEL, TOTAL	1001	S	mG/Kg	2.	15.7		5.4E+03	I
NICKEL, TOTAL	0002	S	mG/Kg	2.	3.		5.4E+03	I
NICKEL, TOTAL	0003	S	mG/Kg	2.	17.7		5.4E+03	I
PHENANTHRENE	0002	S	mG/Kg	0.77	1.3	J	7.8E+03	I
POTASSIUM, TOTAL	0001	S	mG/Kg	100.	1220.		NA	I
POTASSIUM, TOTAL	1001	S	mG/Kg	100.	1160.		NA	I
POTASSIUM, TOTAL	0002	S	mG/Kg	100.	291.		NA	I
POTASSIUM, TOTAL	0003	S	mG/Kg	100.	1380.		NA	I
POTASSIUM-40	0001	S	pCi/g	.5	26.2		NA	I
POTASSIUM-40	1001	S	pCi/g	.5	23.6		NA	I
POTASSIUM-40	0002	S	pCi/g	.5	16.5		NA	I
POTASSIUM-40	0003	S	pCi/g	.5	20.		NA	I
PYRENE	0002	S	mG/Kg	0.77	3.	J	1.1E+00	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
pCi/g - Picocuries per Gram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MWD33-0058
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Type
RADIUM-224	0001	S	pCi/g	.1	1.36		5.0E+00	I
RADIUM-224	1001	S	pCi/g	.1	1.25		5.0E+00	I
RADIUM-224	0002	S	pCi/g	.1	.677		5.0E+00	I
RADIUM-224	0003	S	pCi/g	.1	1.01		5.0E+00	I
RADIUM-226	0001	S	pCi/g	.1	.722		5.0E+00	I
RADIUM-226	1001	S	pCi/g	.1	.733		5.0E+00	I
RADIUM-226	0002	S	pCi/g	.1	.499		5.0E+00	I
RADIUM-226	0003	S	pCi/g	.1	.74		5.0E+00	I
RADIUM-228	0001	S	pCi/g	.2	1.34		5.0E+00	I
RADIUM-228	1001	S	pCi/g	.2	1.16		5.0E+00	I
RADIUM-228	0002	S	pCi/g	.2	.671		5.0E+00	I
RADIUM-228	0003	S	pCi/g	.2	.912		5.0E+00	I
SODIUM, TOTAL	0001	S	mG/Kg	20.	204.		NA	I
SODIUM, TOTAL	1001	S	mG/Kg	20.	161.		NA	I
SODIUM, TOTAL	0002	S	mG/Kg	20.	57.3		NA	I
SODIUM, TOTAL	0003	S	mG/Kg	20.	203.		NA	I
THORIUM-234	0001	S	pCi/g	.5	1.32		1.1E+00	I
THORIUM-234	1001	S	pCi/g	.5	.925		1.1E+00	I
THORIUM-234	0002	S	pCi/g	.5	1.08		1.1E+00	I
THORIUM-234	0003	S	pCi/g	.5	.739		1.1E+00	I
VANADIUM, TOTAL	0001	S	mG/Kg	1.	17.3		1.9E+03	I
VANADIUM, TOTAL	1001	S	mG/Kg	1.	15.6		1.9E+03	I
VANADIUM, TOTAL	0002	S	mG/Kg	1.	1.9		1.9E+03	I
VANADIUM, TOTAL	0003	S	mG/Kg	1.	16.3		1.9E+03	I
ZINC, TOTAL	0001	S	mG/Kg	.5	52.4		5.4E+04	I
ZINC, TOTAL	1001	S	mG/Kg	.5	46.1		5.4E+04	I
ZINC, TOTAL	0002	S	mG/Kg	.5	44.2		5.4E+04	I
ZINC, TOTAL	0003	S	mG/Kg	.5	66.2		5.4E+04	I

PRG - Preliminary Remediation Goals (Risk Based)
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
pCi/g - Picocuries per Gram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MND33-0059
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Typ
ACETONE	0003	S	mG/Kg	0.006	0.14		2.7E+04	I
ALUMINUM, TOTAL	0001	S	mG/Kg	4.	8040.		7.8E+05	I
ALUMINUM, TOTAL	0002	S	mG/Kg	6.	7170.		7.8E+05	I
ALUMINUM, TOTAL	0003	S	mG/Kg	6.	6820.		7.8E+05	I
ANTIMONY, TOTAL	0002	S	mG/Kg	3.	14.6	J	1.1E+02	I
ANTIMONY, TOTAL	0003	S	mG/Kg	3.	13.8	J	1.1E+02	I
ARSENIC, TOTAL	0002	S	mG/Kg	.2	2.0	J	2.1E+03	I
ARSENIC, TOTAL	0003	S	mG/Kg	.2	1.5	J	2.1E+03	I
BARIUM, TOTAL	0001	S	mG/Kg	.2	32.8		1.9E+04	I
BARIUM, TOTAL	0002	S	mG/Kg	.2	26.2		1.9E+04	I
BARIUM, TOTAL	0003	S	mG/Kg	.2	43.8		1.9E+04	I
BERYLLIUM	0001	S	mG/Kg	.1	.51		1.5E-01	I
BERYLLIUM	0002	S	mG/Kg	.2	.67		1.5E-01	I
BERYLLIUM	0003	S	mG/Kg	.2	.7		1.5E-01	I
BIS(2-ETHYLHEXYL)PHTHALATE	0003	S	mG/Kg	0.8	1.3	J	4.6E+01	I
CADMIUM, TOTAL	0002	S	mG/Kg	.2	2.1	J	1.4E+02	I
CADMIUM, TOTAL	0003	S	mG/Kg	.2	1.7	J	1.4E+02	I
CALCIUM, TOTAL	0001	S	mG/Kg	3.	112000.		NA	I
CALCIUM, TOTAL	0002	S	mG/Kg	2.	110000.		NA	I
CALCIUM, TOTAL	0003	S	mG/Kg	2.	113000.		NA	I
CESIUM-137	0001	S	pCi/g	.1	.121		2.1E-02	I
CHROMIUM, TOTAL	0001	S	mG/Kg	1.	11.7		1.4E+03	I
CHROMIUM, TOTAL	0002	S	mG/Kg	1.	24.1		1.4E+03	I
CHROMIUM, TOTAL	0003	S	mG/Kg	1.	24.6		1.4E+03	I
COBALT, TOTAL	0001	S	mG/Kg	2.	7.7		3.9E+01	I
COBALT, TOTAL	0002	S	mG/Kg	1.	13.7	J	3.9E+01	I
COBALT, TOTAL	0003	S	mG/Kg	1.	11.9	J	3.9E+01	I
COPPER, TOTAL	0001	S	mG/Kg	1.	14.1		1.0E+04	I
COPPER, TOTAL	0002	S	mG/Kg	1.	16.3		1.0E+04	I
COPPER, TOTAL	0003	S	mG/Kg	1.	19.3		1.0E+04	I
IRON, TOTAL	0001	S	mG/Kg	1.	16600.	J	NA	I
IRON, TOTAL	0002	S	mG/Kg	1.	15800.		NA	I
IRON, TOTAL	0003	S	mG/Kg	1.	18900.		NA	I
LEAD, TOTAL	0001	S	mG/Kg	.2	1.7		5.3E+01	I
LEAD, TOTAL	0002	S	mG/Kg	.2	14.9		5.3E+01	I
LEAD, TOTAL	0003	S	mG/Kg	.2	7.4		5.3E+01	I
MAGNESIUM, TOTAL	0001	S	mG/Kg	3.	27200.		NA	I
MAGNESIUM, TOTAL	0002	S	mG/Kg	5.	16800.		NA	I
MAGNESIUM, TOTAL	0003	S	mG/Kg	5.	12200.		NA	I
MANGANESE, TOTAL	0001	S	mG/Kg	.2	385.	J	2.7E+04	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
pCi/g - Picocuries per Gram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MND33-0059
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Type
MANGANESE, TOTAL	0002	S	mG/Kg	.2	405.		2.7E+04	I
MANGANESE, TOTAL	0003	S	mG/Kg	.2	484.		2.7E+04	I
NICKEL, TOTAL	0001	S	mG/Kg	2.	14.6		5.4E+03	I
NICKEL, TOTAL	0002	S	mG/Kg	2.	22.6		5.4E+03	I
NICKEL, TOTAL	0003	S	mG/Kg	2.	17.9		5.4E+03	I
POTASSIUM, TOTAL	0001	S	mG/Kg	100.	948.		NA	I
POTASSIUM, TOTAL	0002	S	mG/Kg	10.	922.		NA	I
POTASSIUM, TOTAL	0003	S	mG/Kg	10.	748.		NA	I
POTASSIUM-40	0001	S	pCi/g	.5	18.3		NA	I
POTASSIUM-40	0002	S	pCi/g	.5	19.9		NA	I
POTASSIUM-40	0003	S	pCi/g	.5	20.6		NA	I
RADIUM-224	0001	S	pCi/g	.1	1.1		5.0E+00	I
RADIUM-224	0002	S	pCi/g	.1	1.17		5.0E+00	I
RADIUM-224	0003	S	pCi/g	.1	1.25		5.0E+00	I
RADIUM-226	0001	S	pCi/g	.1	.766		5.0E+00	I
RADIUM-226	0002	S	pCi/g	.1	.656		5.0E+00	I
RADIUM-226	0003	S	pCi/g	.1	.548		5.0E+00	I
RADIUM-228	0001	S	pCi/g	.2	1.02		5.0E+00	I
RADIUM-228	0002	S	pCi/g	.2	1.52		5.0E+00	I
RADIUM-228	0003	S	pCi/g	.2	1.26		5.0E+00	I
SILVER, TOTAL	0002	S	mG/Kg	1.	12.6	J	1.4E+03	I
SILVER, TOTAL	0003	S	mG/Kg	1.	12.9	J	1.4E+03	I
SODIUM, TOTAL	0001	S	mG/Kg	20.	293.		NA	I
SODIUM, TOTAL	0002	S	mG/Kg	10.	143.		NA	I
SODIUM, TOTAL	0003	S	mG/Kg	10.	162.		NA	I
THORIUM-234	0001	S	pCi/g	.5	.854		1.1E+00	I
THORIUM-234	0002	S	pCi/g	.5	1.48		1.1E+00	I
THORIUM-234	0003	S	pCi/g	.5	.837		1.1E+00	I
VANADIUM, TOTAL	0001	S	mG/Kg	1.	13.		1.9E+03	I
VANADIUM, TOTAL	0002	S	mG/Kg	1.	21.8	J	1.9E+03	I
VANADIUM, TOTAL	0003	S	mG/Kg	1.	22.0	J	1.9E+03	I
ZINC, TOTAL	0001	S	mG/Kg	.5	40.6		5.4E+04	I
ZINC, TOTAL	0002	S	mG/Kg	.5	79.5	J	5.4E+04	I
ZINC, TOTAL	0003	S	mG/Kg	.5	754.	J	5.4E+04	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
pCi/g - Picocuries per Gram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MWD33-0071
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Type
RADIUM-224	0002	S	pCi/g	.1	.629		5.0E+00	I
RADIUM-226	0001	S	pCi/g	.1	.506		5.0E+00	I
RADIUM-226	0002	S	pCi/g	.1	.42		5.0E+00	I
RADIUM-228	0002	S	pCi/g	.2	.631		5.0E+00	I
SILVER, TOTAL	0001	S	mG/Kg	1.	14.		1.4E+03	I
SILVER, TOTAL	0002	S	mG/Kg	1.	18.6		1.4E+03	I
SODIUM, TOTAL	0001	S	mG/Kg	10.	168.		NA	I
SODIUM, TOTAL	0002	S	mG/Kg	10.	188.		NA	I
VANADIUM, TOTAL	0001	S	mG/Kg	1.	24.5		1.9E+03	I
VANADIUM, TOTAL	0002	S	mG/Kg	1.	17.8		1.9E+03	I
ZINC, TOTAL	0001	S	mG/Kg	.5	29.0	J	5.4E+04	I
ZINC, TOTAL	0002	S	mG/Kg	.5	32.7	J	5.4E+04	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
pCi/g - Picocuries per Gram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MND33-0072
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Typ
ALUMINUM, TOTAL	0001	S	mG/Kg	6.	7530.		7.8E+05	I
ALUMINUM, TOTAL	0002	S	mG/Kg	6.	8850.		7.8E+05	I
ALUMINUM, TOTAL	1002	S	mG/Kg	6.	7200.		7.8E+05	I
ANTIMONY, TOTAL	0001	S	mG/Kg	3.	14.4	J	1.1E+02	I
ANTIMONY, TOTAL	0002	S	mG/Kg	3.	15.0	J	1.1E+02	I
ANTIMONY, TOTAL	1002	S	mG/Kg	3.	14.0	J	1.1E+02	I
ARSENIC, TOTAL	0001	S	mG/Kg	.2	3.8	J	2.1E+03	I
ARSENIC, TOTAL	0002	S	mG/Kg	.2	2.1	J	2.1E+03	I
ARSENIC, TOTAL	1002	S	mG/Kg	.2	2.1	J	2.1E+03	I
BARIUM, TOTAL	0001	S	mG/Kg	.2	38.6		1.9E+04	I
BARIUM, TOTAL	0002	S	mG/Kg	.2	48.5		1.9E+04	I
BARIUM, TOTAL	1002	S	mG/Kg	.2	45.2		1.9E+04	I
BERYLLIUM	0001	S	mG/Kg	.2	.66		1.5E-01	I
BERYLLIUM	0002	S	mG/Kg	.2	.79		1.5E-01	I
BERYLLIUM	1002	S	mG/Kg	.2	.77		1.5E-01	I
CADMIUM, TOTAL	0001	S	mG/Kg	.2	3.1		1.4E+02	I
CADMIUM, TOTAL	0002	S	mG/Kg	.2	4.1		1.4E+02	I
CADMIUM, TOTAL	1002	S	mG/Kg	.2	3.		1.4E+02	I
CALCIUM, TOTAL	0001	S	mG/Kg	2.	64600.		NA	I
CALCIUM, TOTAL	0002	S	mG/Kg	2.	110000.		NA	I
CALCIUM, TOTAL	1002	S	mG/Kg	2.	152000.		NA	I
CHROMIUM, TOTAL	0001	S	mG/Kg	1.	23.2	J	1.4E+03	I
CHROMIUM, TOTAL	0002	S	mG/Kg	1.	28.9	J	1.4E+03	I
CHROMIUM, TOTAL	1002	S	mG/Kg	1.	28.0	J	1.4E+03	I
COBALT, TOTAL	0001	S	mG/Kg	1.	11.2	J	3.9E+01	I
COBALT, TOTAL	0002	S	mG/Kg	1.	12.6	J	3.9E+01	I
COBALT, TOTAL	1002	S	mG/Kg	1.	10.4	J	3.9E+01	I
COPPER, TOTAL	0001	S	mG/Kg	1.	19.1		1.0E+04	I
COPPER, TOTAL	0002	S	mG/Kg	1.	23.9		1.0E+04	I
COPPER, TOTAL	1002	S	mG/Kg	1.	18.5		1.0E+04	I
IRON, TOTAL	0001	S	mG/Kg	1.	16300.		NA	I
IRON, TOTAL	0002	S	mG/Kg	1.	18300.		NA	I
IRON, TOTAL	1002	S	mG/Kg	1.	15400.		NA	I
LEAD, TOTAL	0001	S	mG/Kg	.2	6.5		5.3E+01	I
LEAD, TOTAL	0002	S	mG/Kg	.2	5.4		5.3E+01	I
LEAD, TOTAL	1002	S	mG/Kg	.2	5.4		5.3E+01	I
MAGNESIUM, TOTAL	0001	S	mG/Kg	.5	21900.	J	NA	I
MAGNESIUM, TOTAL	0002	S	mG/Kg	.5	20100.	J	NA	I
MAGNESIUM, TOTAL	1002	S	mG/Kg	.5	18000.	J	NA	I
MANGANESE, TOTAL	0001	S	mG/Kg	.2	358.	J	2.7E+04	I
MANGANESE, TOTAL	0002	S	mG/Kg	.2	461.	J	2.7E+04	I
MANGANESE, TOTAL	1002	S	mG/Kg	.2	438	J	2.7E+04	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
pCi/g - Picocuries per Gram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MND33-0072
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Type
NICKEL, TOTAL	0001	S	mG/Kg	2.	24.1	J	5.4E+03	I
NICKEL, TOTAL	0002	S	mG/Kg	2.	25.6	J	5.4E+03	I
NICKEL, TOTAL	1002	S	mG/Kg	2.	20.2	J	5.4E+03	I
POTASSIUM, TOTAL	0001	S	mG/Kg	10.	980.		NA	I
POTASSIUM, TOTAL	0002	S	mG/Kg	10.	1270.		NA	I
POTASSIUM, TOTAL	1002	S	mG/Kg	10.	987.		NA	I
POTASSIUM-40	0001	S	pCi/g	.5	19.0		NA	I
POTASSIUM-40	0002	S	pCi/g	.5	22.4		NA	I
RADIUM-224	0001	S	pCi/g	.1	.916		5.0E+00	I
RADIUM-224	0002	S	pCi/g	.1	.95		5.0E+00	I
RADIUM-226	0001	S	pCi/g	.1	.755		5.0E+00	I
RADIUM-226	0002	S	pCi/g	.1	.552		5.0E+00	I
RADIUM-228	0001	S	pCi/g	.2	.861		5.0E+00	I
RADIUM-228	0002	S	pCi/g	.2	.848		5.0E+00	I
SILVER, TOTAL	0001	S	mG/Kg	1.	11.6		1.4E+03	I
SILVER, TOTAL	0002	S	mG/Kg	1.	15.5		1.4E+03	I
SILVER, TOTAL	1002	S	mG/Kg	1.	17.1		1.4E+03	I
SODIUM, TOTAL	0001	S	mG/Kg	10.	151.		NA	I
SODIUM, TOTAL	0002	S	mG/Kg	10.	191.		NA	I
SODIUM, TOTAL	1002	S	mG/Kg	10.	199.		NA	I
THORIUM-234	0001	S	pCi/g	.5	1.17		1.1E+00	I
THORIUM-234	0002	S	pCi/g	.5	.523		1.1E+00	I
VANADIUM, TOTAL	0001	S	mG/Kg	1.	22.5		1.9E+03	I
VANADIUM, TOTAL	0002	S	mG/Kg	1.	25.2		1.9E+03	I
VANADIUM, TOTAL	1002	S	mG/Kg	1.	22.6		1.9E+03	I
ZINC, TOTAL	0001	S	mG/Kg	.5	43.2	J	5.4E+04	I
ZINC, TOTAL	0002	S	mG/Kg	.5	41.1	J	5.4E+04	I
ZINC, TOTAL	1002	S	mG/Kg	.5	37.8	J	5.4E+04	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
pCi/g - Picocuries per Gram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MND33-0073
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Type
ALUMINUM, TOTAL	0001	S	mG/Kg	.06	2920.		7.8E+05	I
ANTIMONY, TOTAL	0001	S	mG/Kg	.03	37.6	J	1.1E+02	I
ARSENIC, TOTAL	0001	S	mG/Kg	.002	2.1	J	2.1E+03	I
BARIUM, TOTAL	0001	S	mG/Kg	.002	27.0	J	1.9E+04	I
BERYLLIUM	0001	S	mG/Kg	.002	0.63	J	1.5E-01	I
BIS(2-ETHYLHEXYL)PHTHALATE	0001	S	mG/Kg	0.33	0.43	J	4.6E+01	I
CADMIUM, TOTAL	0001	S	mG/Kg	.002	9.4		1.4E+02	I
CALCIUM, TOTAL	0001	S	mG/Kg	.02	156000.		NA	I
CHROMIUM, TOTAL	0001	S	mG/Kg	.01	23.4	J	1.4E+03	I
COBALT, TOTAL	0001	S	mG/Kg	.01	7.4	J	3.9E+01	I
COPPER, TOTAL	0001	S	mG/Kg	.01	12.5	J	1.0E+04	I
IRON, TOTAL	0001	S	mG/Kg	.01	6900.		NA	I
LEAD, TOTAL	0001	S	mG/Kg	.002	5.4		5.3E+01	I
MAGNESIUM, TOTAL	0001	S	mG/Kg	.05	63700.	J	NA	I
MANGANESE, TOTAL	0001	S	mG/Kg	.05	229.	J	2.7E+04	I
NICKEL, TOTAL	0001	S	mG/Kg	.02	16.8	J	5.4E+03	I
POTASSIUM, TOTAL	0001	S	mG/Kg	.1	310.		NA	I
POTASSIUM-40	0001	S	pCi/g	.5	9.15		NA	I
RADIUM-224	0001	S	pCi/g	.1	.551		5.0E+00	I
RADIUM-226	0001	S	pCi/g	.1	.369		5.0E+00	I
RADIUM-228	0001	S	pCi/g	.2	.408		5.0E+00	I
SILVER, TOTAL	0001	S	mG/Kg	.01	17.6	J	1.4E+03	I
SODIUM, TOTAL	0001	S	mG/Kg	.1	265.		NA	I
THORIUM-234	0001	S	pCi/g	.5	.81		1.1E+00	I
VANADIUM, TOTAL	0001	S	mG/Kg	.01	22.1	J	1.9E+03	I
ZINC, TOTAL	0001	S	mG/Kg	.005	18.9	J	5.4E+04	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
pCi/g - Picocuries per Gram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MND33-0074
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Type
ALUMINUM, TOTAL	0001	S	mG/Kg	.06	6620.		7.8E+05	I
ANTIMONY, TOTAL	0001	S	mG/Kg	.03	16.4	J	1.1E+02	I
ARSENIC, TOTAL	0001	S	mG/Kg	.002	3.0	J	2.1E+03	I
BARIUM, TOTAL	0001	S	mG/Kg	.002	33.6		1.9E+04	I
BERYLLIUM	0001	S	mG/Kg	.002	.65		1.5E-01	I
CADMIUM, TOTAL	0001	S	mG/Kg	.002	3.1		1.4E+02	I
CALCIUM, TOTAL	0001	S	mG/Kg	.02	72600.		NA	I
CHROMIUM, TOTAL	0001	S	mG/Kg	.01	24.4	J	1.4E+03	I
COBALT, TOTAL	0001	S	mG/Kg	.01	11.4	J	3.9E+01	I
COPPER, TOTAL	0001	S	mG/Kg	.01	19.8		1.0E+04	I
IRON, TOTAL	0001	S	mG/Kg	.01	17600.	J	NA	I
LEAD, TOTAL	0001	S	mG/Kg	.002	9.5		5.3E+01	I
MAGNESIUM, TOTAL	0001	S	mG/Kg	.05	21200.	J	NA	I
MANGANESE, TOTAL	0001	S	mG/Kg	.002	395.	J	2.7E+04	I
NICKEL, TOTAL	0001	S	mG/Kg	.02	24.7	J	5.4E+03	I
POTASSIUM, TOTAL	0001	S	mG/Kg	.1	869.		NA	I
POTASSIUM-40	0001	S	pCi/g	.5	24.4		NA	I
RADIUM-224	0001	S	pCi/g	.1	12.2		5.0E+00	I
RADIUM-226	0001	S	pCi/g	.1	.748		5.0E+00	I
RADIUM-228	0001	S	pCi/g	.2	1.22		5.0E+00	I
SILVER, TOTAL	0001	S	mG/Kg	.01	12.9		1.4E+03	I
SODIUM, TOTAL	0001	S	mG/Kg	.1	167.		NA	I
THORIUM-234	0001	S	pCi/g	.5	.826		1.1E+00	I
VANADIUM, TOTAL	0001	S	mG/Kg	.01	23.1		1.9E+03	I
ZINC, TOTAL	0001	S	mG/Kg	.005	37.4	J	5.4E+04	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
pCi/g - Picocuries per Gram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MND33-0075
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Type
ALUMINUM, TOTAL	0001	S	mG/Kg	6.	7780.		7.8E+05	I
ANTIMONY, TOTAL	0001	S	mG/Kg	3.	21.5	J	1.1E+02	I
ARSENIC, TOTAL	0001	S	mG/Kg	.2	2.4	J	2.1E+03	I
BARIUM, TOTAL	0001	S	mG/Kg	.2	70.5		1.9E+04	I
BERYLLIUM	0001	S	mG/Kg	.2	.76		1.5E-01	I
CADMIUM, TOTAL	0001	S	mG/Kg	.2	4.7		1.4E+02	I
CALCIUM, TOTAL	0001	S	mG/Kg	2.	74100.		NA	I
CHROMIUM, TOTAL	0001	S	mG/Kg	1.	24.4	J	1.4E+03	I
COBALT, TOTAL	0001	S	mG/Kg	1.	10.4	J	3.9E+01	I
COPPER, TOTAL	0001	S	mG/Kg	1.	15.4		1.0E+04	I
IRON, TOTAL	0001	S	mG/Kg	1.	16100.		NA	I
LEAD, TOTAL	0001	S	mG/Kg	.2	7.		5.3E+01	I
MAGNESIUM, TOTAL	0001	S	mG/Kg	5.	31700.	J	NA	I
MANGANESE, TOTAL	0001	S	mG/Kg	.2	504.	J	2.7E+04	I
NICKEL, TOTAL	0001	S	mG/Kg	2.	24.5	J	5.4E+03	I
POTASSIUM, TOTAL	0001	S	mG/Kg	10.	598.		NA	I
SILVER, TOTAL	0001	S	mG/Kg	1.	13.6	J	1.4E+03	I
SODIUM, TOTAL	0001	S	mG/Kg	10.	519.		NA	I
VANADIUM, TOTAL	0001	S	mG/Kg	1.	26.2		1.9E+03	I
ZINC, TOTAL	0001	S	mG/Kg	.5	39.6	J	5.4E+04	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
pCi/g - Picocuries per Gram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MND33-0076
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Ru Ty
2-METHYLNAPHTHALENE	0001	S	mG/Kg	0.71	1.4	J	NA	I
ALUMINUM, TOTAL	0001	S	mG/Kg	6.	4450.		7.8E+05	I
ALUMINUM, TOTAL	0002	S	mG/Kg	6.	5060.		7.8E+05	I
ANTIMONY, TOTAL	0001	S	mG/Kg	3.	30.9	J	1.1E+02	I
ANTIMONY, TOTAL	0002	S	mG/Kg	3.	21.8	J	1.1E+02	I
ARSENIC, TOTAL	0001	S	mG/Kg	.2	2.2	J	2.1E+03	I
ARSENIC, TOTAL	0002	S	mG/Kg	.2	3.1	J	2.1E+03	I
BARIUM, TOTAL	0001	S	mG/Kg	.2	35.6		1.9E+04	I
BARIUM, TOTAL	0002	S	mG/Kg	.2	45.9		1.9E+04	I
BERYLLIUM	0001	S	mG/Kg	.2	.66		1.5E-01	I
BERYLLIUM	0002	S	mG/Kg	.2	.68		1.5E-01	I
CADMIUM, TOTAL	0001	S	mG/Kg	.2	8.1		1.4E+02	I
CADMIUM, TOTAL	0002	S	mG/Kg	.2	4.		1.4E+02	I
CALCIUM, TOTAL	0001	S	mG/Kg	2.	140000.		NA	I
CALCIUM, TOTAL	0002	S	mG/Kg	2.	142000.		NA	I
CHROMIUM, TOTAL	0001	S	mG/Kg	1.	23.8	J	1.4E+03	I
CHROMIUM, TOTAL	0002	S	mG/Kg	1.	25.6	J	1.4E+03	I
COBALT, TOTAL	0001	S	mG/Kg	1.	8.3	J	3.9E+01	I
COBALT, TOTAL	0002	S	mG/Kg	1.	8.9	J	3.9E+01	I
COPPER, TOTAL	0001	S	mG/Kg	1.	13.7		1.0E+04	I
COPPER, TOTAL	0002	S	mG/Kg	1.	15.7		1.0E+04	I
CYANIDE	0001	S	mG/Kg	.2	.57	J	5.4E+03	I
CYANIDE	0002	S	mG/Kg	.2	.62	J	5.4E+03	I
IRON, TOTAL	0001	S	mG/Kg	1.	9610.		NA	I
IRON, TOTAL	0002	S	mG/Kg	1.	11100.		NA	I
LEAD, TOTAL	0001	S	mG/Kg	.2	5.7		5.3E+01	I
LEAD, TOTAL	0002	S	mG/Kg	.2	9.6		5.3E+01	I
MAGNESIUM, TOTAL	0001	S	mG/Kg	5.	47700.	J	NA	I
MAGNESIUM, TOTAL	0002	S	mG/Kg	5.	27900.	J	NA	I
MANGANESE, TOTAL	0001	S	mG/Kg	.2	258.	J	2.7E+04	I
MANGANESE, TOTAL	0002	S	mG/Kg	.2	409.	J	2.7E+04	I
NICKEL, TOTAL	0001	S	mG/Kg	2.	19.3	J	5.4E+03	I
NICKEL, TOTAL	0002	S	mG/Kg	2.	20.4	J	5.4E+03	I
POTASSIUM, TOTAL	0001	S	mG/Kg	10.	621.		NA	I
POTASSIUM, TOTAL	0002	S	mG/Kg	10.	525.		NA	I
POTASSIUM-40	0001	S	pCi/g	.5	13.9		NA	I
POTASSIUM-40	0002	S	pCi/g	.5	20.4		NA	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
pCi/g - Picocuries per Gram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MND33-0076
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Type
RADIUM-224	0001	S	pCi/g	.1	.73		5.0E+00	I
RADIUM-224	0002	S	pCi/g	.1	1.17		5.0E+00	I
RADIUM-226	0001	S	pCi/g	.1	.482		5.0E+00	I
RADIUM-226	0002	S	pCi/g	.1	.648		5.0E+00	I
RADIUM-228	0001	S	pCi/g	.2	.668		5.0E+00	I
RADIUM-228	0002	S	pCi/g	.2	.98		5.0E+00	I
SILVER, TOTAL	0001	S	mG/Kg	1.	16.8	J	1.4E+03	I
SILVER, TOTAL	0002	S	mG/Kg	1.	17.7	J	1.4E+03	I
SODIUM, TOTAL	0001	S	mG/Kg	10.	386.		NA	I
SODIUM, TOTAL	0002	S	mG/Kg	10.	233.		NA	I
THORIUM-234	0001	S	pCi/g	.5	.859		1.1E+00	I
THORIUM-234	0002	S	pCi/g	.5	.801		1.1E+00	I
TOLUENE	0002	S	mG/Kg	0.006	0.016		5.4E+04	I
TOTAL XYLENES	0002	S	mG/Kg	0.006	0.019		5.4E+05	I
VANADIUM, TOTAL	0001	S	mG/Kg	1.	21.9		1.9E+03	I
VANADIUM, TOTAL	0002	S	mG/Kg	1.	21.3		1.9E+03	I
ZINC, TOTAL	0001	S	mG/Kg	.5	21.4	J	5.4E+04	I
ZINC, TOTAL	0002	S	mG/Kg	.5	27.7	J	5.4E+04	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
pCi/g - Picocuries per Gram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MND33-0077
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Type
ALUMINUM, TOTAL	0001	S	mG/Kg	.06	2680.		7.8E+05	I
ALUMINUM, TOTAL	0002	S	mG/Kg	.06	5450.		7.8E+05	I
ALUMINUM, TOTAL	0003	S	mG/Kg	.06	10700.		7.8E+05	I
ALUMINUM, TOTAL	1002	S	mG/Kg	.06	6620.		7.8E+05	I
ANTIMONY, TOTAL	0001	S	mG/Kg	.03	39.2	J	1.1E+02	I
ANTIMONY, TOTAL	0002	S	mG/Kg	.03	24.1	J	1.1E+02	I
ANTIMONY, TOTAL	0003	S	mG/Kg	.03	15.	J	1.1E+02	I
ANTIMONY, TOTAL	1002	S	mG/Kg	.03	18.8	J	1.1E+02	I
ARSENIC, TOTAL	0001	S	mG/Kg	.002	1.8	J	2.1E+03	I
ARSENIC, TOTAL	0002	S	mG/Kg	.002	3.6	J	2.1E+03	I
ARSENIC, TOTAL	0003	S	mG/Kg	.002	3.6	J	2.1E+03	I
ARSENIC, TOTAL	1002	S	mG/Kg	.002	2.	J	2.1E+03	I
BARIUM, TOTAL	0001	S	mG/Kg	.002	35.7		1.9E+04	I
BARIUM, TOTAL	0002	S	mG/Kg	.002	35.8		1.9E+04	I
BARIUM, TOTAL	0003	S	mG/Kg	.002	90.4		1.9E+04	I
BARIUM, TOTAL	1002	S	mG/Kg	.002	37.7		1.9E+04	I
BERYLLIUM	0001	S	mG/Kg	.002	.78		1.5E-01	I
BERYLLIUM	0002	S	mG/Kg	.002	.77		1.5E-01	I
BERYLLIUM	0003	S	mG/Kg	.002	.98		1.5E-01	I
BERYLLIUM	1002	S	mG/Kg	.002	.78		1.5E-01	I
CADMIUM, TOTAL	0001	S	mG/Kg	.002	10.2		1.4E+02	I
CADMIUM, TOTAL	0002	S	mG/Kg	.002	4.		1.4E+02	I
CADMIUM, TOTAL	0003	S	mG/Kg	.002	2.2		1.4E+02	I
CADMIUM, TOTAL	1002	S	mG/Kg	.002	2.9		1.4E+02	I
CALCIUM, TOTAL	0001	S	mG/Kg	.02	169000.		NA	I
CALCIUM, TOTAL	0002	S	mG/Kg	.02	114000.		NA	I
CALCIUM, TOTAL	0003	S	mG/Kg	.02	46000.		NA	I
CALCIUM, TOTAL	1002	S	mG/Kg	.02	100000.		NA	I
CHROMIUM, TOTAL	0001	S	mG/Kg	.01	24.6	J	1.4E+03	I
CHROMIUM, TOTAL	0002	S	mG/Kg	.01	24.7	J	1.4E+03	I
CHROMIUM, TOTAL	0003	S	mG/Kg	.01	24.3	J	1.4E+03	I
CHROMIUM, TOTAL	1002	S	mG/Kg	.01	24.9	J	1.4E+03	I
COBALT, TOTAL	0001	S	mG/Kg	.01	7.1	J	3.9E+01	I
COBALT, TOTAL	0002	S	mG/Kg	.01	9.4	J	3.9E+01	I
COBALT, TOTAL	0003	S	mG/Kg	.01	14.2	J	3.9E+01	I
COBALT, TOTAL	1002	S	mG/Kg	.01	10.4	J	3.9E+01	I
COPPER, TOTAL	0001	S	mG/Kg	.01	12.3		1.0E+04	I
COPPER, TOTAL	0002	S	mG/Kg	.01	15.6		1.0E+04	I
COPPER, TOTAL	0003	S	mG/Kg	.01	17.6		1.0E+04	I
COPPER, TOTAL	1002	S	mG/Kg	.01	25.2		1.0E+04	I
CYANIDE	0001	S	mG/Kg	.002	.14	J	5.4E+03	I
CYANIDE	0003	S	mG/Kg	.002	.16	J	5.4E+03	I
IRON, TOTAL	0001	S	mG/Kg	.01	6010.		NA	I
IRON, TOTAL	0002	S	mG/Kg	.01	13000.		NA	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
pCi/g - Picocuries per Gram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MND33-0077
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Typ
IRON, TOTAL	0003	S	mG/Kg	.01	23800.		NA	I
IRON, TOTAL	1002	S	mG/Kg	.01	15600.		NA	I
LEAD, TOTAL	0001	S	mG/Kg	.002	4.9		5.3E+01	I
LEAD, TOTAL	0002	S	mG/Kg	.002	8.6		5.3E+01	I
LEAD, TOTAL	0003	S	mG/Kg	.002	9.8		5.3E+01	I
LEAD, TOTAL	1002	S	mG/Kg	.002	7.3		5.3E+01	I
MAGNESIUM, TOTAL	0001	S	mG/Kg	.05	64500.	J	NA	I
MAGNESIUM, TOTAL	0002	S	mG/Kg	.05	30100.	J	NA	I
MAGNESIUM, TOTAL	0003	S	mG/Kg	.05	16400.	J	NA	I
MAGNESIUM, TOTAL	1002	S	mG/Kg	.05	21400.	J	NA	I
MANGANESE, TOTAL	0001	S	mG/Kg	.002	253.	J	2.7E+04	I
MANGANESE, TOTAL	0002	S	mG/Kg	.002	354.	J	2.7E+04	I
MANGANESE, TOTAL	0003	S	mG/Kg	.002	698.	J	2.7E+04	I
MANGANESE, TOTAL	1002	S	mG/Kg	.002	373.	J	2.7E+04	I
MOLYBDENUM	0003	S	mG/Kg	.01	14.5		1.4E+03	I
NICKEL, TOTAL	0001	S	mG/Kg	.02	17.8	J	5.4E+03	I
NICKEL, TOTAL	0002	S	mG/Kg	.02	20.6	J	5.4E+03	I
NICKEL, TOTAL	0003	S	mG/Kg	.02	25.5	J	5.4E+03	I
NICKEL, TOTAL	1002	S	mG/Kg	.02	22.6	J	5.4E+03	I
POTASSIUM, TOTAL	0001	S	mG/Kg	.1	571.		NA	I
POTASSIUM, TOTAL	0002	S	mG/Kg	.1	703.		NA	I
POTASSIUM, TOTAL	0003	S	mG/Kg	.1	1080.		NA	I
POTASSIUM, TOTAL	1002	S	mG/Kg	.1	955.		NA	I
POTASSIUM-40	0001	S	pCi/g	.5	7.13		NA	I
POTASSIUM-40	0002	S	pCi/g	.5	19.4		NA	I
POTASSIUM-40	0003	S	pCi/g	.5	24.8		NA	I
RADIUM-224	0001	S	pCi/g	.1	.369		5.0E+00	I
RADIUM-224	0002	S	pCi/g	.1	.862		5.0E+00	I
RADIUM-224	0003	S	pCi/g	.1	1.21		5.0E+00	I
RADIUM-226	0001	S	pCi/g	.1	.409		5.0E+00	I
RADIUM-226	0002	S	pCi/g	.1	.63		5.0E+00	I
RADIUM-226	0003	S	pCi/g	.1	.83		5.0E+00	I
RADIUM-228	0001	S	pCi/g	.2	.333		5.0E+00	I
RADIUM-228	0002	S	pCi/g	.2	.892		5.0E+00	I
RADIUM-228	0003	S	pCi/g	.2	1.11		5.0E+00	I
SILICON, TOTAL	0003	S	mG/Kg	.01	1100.		NA	I
SILVER, TOTAL	0001	S	mG/Kg	.01	16.5		1.4E+03	I
SILVER, TOTAL	0002	S	mG/Kg	.01	14.6		1.4E+03	I
SILVER, TOTAL	0003	S	mG/Kg	.01	9.3		1.4E+03	I
SILVER, TOTAL	1002	S	mG/Kg	.01	13.8		1.4E+03	I
SODIUM, TOTAL	0001	S	mG/Kg	.1	625.		NA	I
SODIUM, TOTAL	0002	S	mG/Kg	.1	234.		NA	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
pCi/g - Picocuries per Gram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MND33-0077
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Type
SODIUM, TOTAL	0003	S	mG/Kg	.1	199.		NA	I
SODIUM, TOTAL	1002	S	mG/Kg	.1	279.		NA	I
THORIUM-234	0001	S	pCi/g	.5	.778		1.1E+00	I
THORIUM-234	0002	S	pCi/g	.5	.627		1.1E+00	I
THORIUM-234	0003	S	pCi/g	.5	1.34		1.1E+00	I
VANADIUM, TOTAL	0001	S	mG/Kg	.01	21.8		1.9E+03	I
VANADIUM, TOTAL	0002	S	mG/Kg	.01	22.3		1.9E+03	I
VANADIUM, TOTAL	0003	S	mG/Kg	.01	27.		1.9E+03	I
VANADIUM, TOTAL	1002	S	mG/Kg	.01	21.8		1.9E+03	I
ZINC, TOTAL	0001	S	mG/Kg	.005	14.3	J	5.4E+04	I
ZINC, TOTAL	0002	S	mG/Kg	.005	30.3	J	5.4E+04	I
ZINC, TOTAL	0003	S	mG/Kg	.005	44.8	J	5.4E+04	I
ZINC, TOTAL	1002	S	mG/Kg	.005	33.5	J	5.4E+04	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
pCi/g - Picocuries per Gram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MND33-0078
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Type
ALUMINUM, TOTAL	0001	S	mG/Kg	.06	3260.		7.8E+05	I
ALUMINUM, TOTAL	0002	S	mG/Kg	.06	5480.		7.8E+05	I
ANTIMONY, TOTAL	0001	S	mG/Kg	.03	34.6	J	1.1E+02	I
ANTIMONY, TOTAL	0002	S	mG/Kg	.03	11.3	J	1.1E+02	I
ARSENIC, TOTAL	0001	S	mG/Kg	.002	2.5	J	2.1E+03	I
ARSENIC, TOTAL	0002	S	mG/Kg	.002	1.3	J	2.1E+03	I
BARIUM, TOTAL	0001	S	mG/Kg	.002	33.8		1.9E+04	I
BARIUM, TOTAL	0002	S	mG/Kg	.002	44.1		1.9E+04	I
BERYLLIUM	0001	S	mG/Kg	.002	.78		1.5E-01	I
BERYLLIUM	0002	S	mG/Kg	.002	.81		1.5E-01	I
CADMIUM, TOTAL	0001	S	mG/Kg	.002	6.6		1.4E+02	I
CALCIUM, TOTAL	0001	S	mG/Kg	.02	147000.		NA	I
CALCIUM, TOTAL	0002	S	mG/Kg	.02	178000.		NA	I
CHROMIUM, TOTAL	0001	S	mG/Kg	.01	24.1	J	1.4E+03	I
CHROMIUM, TOTAL	0002	S	mG/Kg	.01	25.9	J	1.4E+03	I
COBALT, TOTAL	0001	S	mG/Kg	.01	7.6	J	3.9E+01	I
COBALT, TOTAL	0002	S	mG/Kg	.01	7.5	J	3.9E+01	I
COPPER, TOTAL	0001	S	mG/Kg	.01	13.6		1.0E+04	I
COPPER, TOTAL	0002	S	mG/Kg	.01	12.8		1.0E+04	I
IRON, TOTAL	0001	S	mG/Kg	.01	7400.		NA	I
IRON, TOTAL	0002	S	mG/Kg	.01	12200.		NA	I
LEAD, TOTAL	0001	S	mG/Kg	.002	6.5		5.3E+01	I
LEAD, TOTAL	0002	S	mG/Kg	.002	5.6		5.3E+01	I
MAGNESIUM, TOTAL	0001	S	mG/Kg	.05	53900.	J	NA	I
MAGNESIUM, TOTAL	0002	S	mG/Kg	.05	8220.	J	NA	I
MANGANESE, TOTAL	0001	S	mG/Kg	.002	342.	J	2.7E+04	I
MANGANESE, TOTAL	0002	S	mG/Kg	.002	296.	J	2.7E+04	I
NICKEL, TOTAL	0001	S	mG/Kg	.02	19.7	J	5.4E+03	I
NICKEL, TOTAL	0002	S	mG/Kg	.02	15.	J	5.4E+03	I
POTASSIUM, TOTAL	0001	S	mG/Kg	.1	398.		NA	I
POTASSIUM, TOTAL	0002	S	mG/Kg	.1	552.		NA	I
POTASSIUM-40	0001	S	pCi/g	.5	11.7		NA	I
POTASSIUM-40	0002	S	pCi/g	.5	15.8		NA	I
RADIUM-224	0001	S	pCi/g	.1	.718		5.0E+00	I
RADIUM-224	0002	S	pCi/g	.1	.705		5.0E+00	I
RADIUM-226	0001	S	pCi/g	.1	.662		5.0E+00	I
RADIUM-226	0002	S	pCi/g	.1	.387		5.0E+00	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
pCi/g - Picocuries per Gram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MND33-0078
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Type
RADIUM-228	0001	S	pCi/g	.2	.574		5.0E+00	I
RADIUM-228	0002	S	pCi/g	.2	.694		5.0E+00	I
SILVER, TOTAL	0001	S	mG/Kg	.01	16.5		1.4E+03	I
SILVER, TOTAL	0002	S	mG/Kg	.01	16.6		1.4E+03	I
SODIUM, TOTAL	0001	S	mG/Kg	.1	302.		NA	I
SODIUM, TOTAL	0002	S	mG/Kg	.1	176.		NA	I
THORIUM-234	0001	S	pCi/g	.5	.559		1.1E+00	I
THORIUM-234	0002	S	pCi/g	.5	.845		1.1E+00	I
VANADIUM, TOTAL	0001	S	mG/Kg	.01	22.2		1.9E+03	I
VANADIUM, TOTAL	0002	S	mG/Kg	.01	18.6		1.9E+03	I
ZINC, TOTAL	0001	S	mG/Kg	.005	22.9	J	5.4E+04	I
ZINC, TOTAL	0002	S	mG/Kg	.005	25.7	J	5.4E+04	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
pCi/g - Picocuries per Gram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MND33-0079
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Type
2-METHYLNAPHTHALENE	0002	S	mG/Kg	0.37	0.77	J	NA	I
ACENAPHTHENE	0002	S	mG/Kg	0.37	6.	J	1.6E+04	I
ACENAPHTHENE	0002	S	mG/Kg	3.7	6.8	J	1.6E+04	D
ALUMINUM, TOTAL	0001	S	mG/Kg	6.	6310.		7.8E+05	I
ALUMINUM, TOTAL	0002	S	mG/Kg	6.	6110.		7.8E+05	I
ANTHRACENE	0002	S	mG/Kg	0.37	8.3	J	8.1E+04	I
ANTHRACENE	0002	S	mG/Kg	3.7	15.	J	8.1E+04	D
ANTIMONY, TOTAL	0001	S	mG/Kg	3.	27.4	J	1.1E+02	I
ANTIMONY, TOTAL	0002	S	mG/Kg	3.	12.5	J	1.1E+02	I
ARSENIC, TOTAL	0001	S	mG/Kg	.2	2.7	J	2.1E+03	I
ARSENIC, TOTAL	0002	S	mG/Kg	.2	4.2	J	2.1E+03	I
BARIUM, TOTAL	0001	S	mG/Kg	.2	29.6		1.9E+04	I
BARIUM, TOTAL	0002	S	mG/Kg	.2	45.1		1.9E+04	I
BENZO(A)ANTHRACENE	0002	S	mG/Kg	0.37	40.	J	6.0E-01	I
BENZO(A)ANTHRACENE	0002	S	mG/Kg	3.7	43.	J	6.0E-01	D
BENZO(A)PYRENE	0002	S	mG/Kg	0.37	32.	J	8.8E-02	I
BENZO(A)PYRENE	0002	S	mG/Kg	3.7	35.	J	8.8E-02	D
BENZO(B)FLUORANTHENE	0002	S	mG/Kg	0.37	47.	J	6.4E-01	I
BENZO(B)FLUORANTHENE	0002	S	mG/Kg	3.7	59.	J	6.4E-01	D
BENZO(G,H,I)PERYLENE	0002	S	mG/Kg	3.7	19.	J	4.0E+00	D
BERYLLIUM	0001	S	mG/Kg	.2	.73		1.5E-01	I
BERYLLIUM	0002	S	mG/Kg	.2	.68		1.5E-01	I
BIS(2-ETHYLHEXYL)PHTHALATE	0002	S	mG/Kg	0.37	0.62	J	4.6E+01	I
CADMIUM, TOTAL	0001	S	mG/Kg	.2	5.3		1.4E+02	I
CADMIUM, TOTAL	0002	S	mG/Kg	.2	2.6		1.4E+02	I
CALCIUM, TOTAL	0001	S	mG/Kg	2.	114000.		NA	I
CALCIUM, TOTAL	0002	S	mG/Kg	2.	62000.		NA	I
CHROMIUM, TOTAL	0001	S	mG/Kg	1.	26.7	J	1.4E+03	I
CHROMIUM, TOTAL	0002	S	mG/Kg	1.	22.5	J	1.4E+03	I
CHRYSENE	0002	S	mG/Kg	0.37	48.	J	2.0E+01	I
CHRYSENE	0002	S	mG/Kg	3.7	55.	J	2.0E+01	D
COBALT, TOTAL	0001	S	mG/Kg	1.	9.4	J	3.9E+01	I
COBALT, TOTAL	0002	S	mG/Kg	1.	9.1	J	3.9E+01	I
COPPER, TOTAL	0001	S	mG/Kg	1.	16.		1.0E+04	I
COPPER, TOTAL	0002	S	mG/Kg	1.	19.9		1.0E+04	I
CYANIDE	0002	S	mG/Kg	.2	0.32	J	5.4E+03	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
D - Dilution
S - Soil
mG/Kg - Milligrams per Kilogram
pCi/g - Picocuries per Gram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MND33-0079
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Typ
DIBENZO(A,H)ANTHRACENE	0002	S	mG/Kg	3.7	5.3	J	7.9E-02	D
DIBENZOFURAN	0002	S	mG/Kg	0.37	4.	J	NA	I
FLUORANTHENE	0002	S	mG/Kg	0.37	32.	J	1.1E+04	I
FLUORANTHENE	0002	S	mG/Kg	3.7	98.	J	1.1E+04	D
FLUORENE	0002	S	mG/Kg	0.37	6.1	J	1.1E+04	I
FLUORENE	0002	S	mG/Kg	3.7	6.5	J	1.1E+04	D
INDENO(1,2,3-CD)PYRENE	0002	S	mG/Kg	0.37	23.	J	3.8E-01	I
INDENO(1,2,3-CD)PYRENE	0002	S	mG/Kg	3.7	18.	J	3.8E-01	D
IRON, TOTAL	0001	S	mG/Kg	1.	13200.		NA	I
IRON, TOTAL	0002	S	mG/Kg	1.	13800.		NA	I
LEAD, TOTAL	0001	S	mG/Kg	.2	5.6		5.3E+01	I
LEAD, TOTAL	0002	S	mG/Kg	.2	31.3		5.3E+01	I
MAGNESIUM, TOTAL	0001	S	mG/Kg	5.	42900.	J	NA	I
MAGNESIUM, TOTAL	0002	S	mG/Kg	5.	18000.	J	NA	I
MANGANESE, TOTAL	0001	S	mG/Kg	.2	330.	J	2.7E+04	I
MANGANESE, TOTAL	0002	S	mG/Kg	.2	474.	J	2.7E+04	I
NAPHTHALENE	0002	S	mG/Kg	0.37	1.8	J	1.1E+04	I
NICKEL, TOTAL	0001	S	mG/Kg	2.	23.4	J	5.4E+03	I
NICKEL, TOTAL	0002	S	mG/Kg	2.	19.4	J	5.4E+03	I
PHENANTHRENE	0002	S	mG/Kg	0.37	26.	J	7.8E+03	I
PHENANTHRENE	0002	S	mG/Kg	3.7	73.	J	7.8E+03	D
POTASSIUM, TOTAL	0001	S	mG/Kg	10.	1270.		NA	I
POTASSIUM, TOTAL	0002	S	mG/Kg	10.	696.		NA	I
POTASSIUM-40	0001	S	pCi/g	.5	18.4		NA	I
POTASSIUM-40	0002	S	pCi/g	.5	15.7		NA	I
PYRENE	0002	S	mG/Kg	0.37	41.	J	1.1E+00	I
PYRENE	0002	S	mG/Kg	3.7	83.	J	1.1E+00	D
RADIUM-224	0001	S	pCi/g	.1	.883		5.0E+00	I
RADIUM-224	0002	S	pCi/g	.1	1.04		5.0E+00	I
RADIUM-226	0001	S	pCi/g	.1	.603		5.0E+00	I
RADIUM-226	0002	S	pCi/g	.1	.600		5.0E+00	I
RADIUM-228	0001	S	pCi/g	.2	.80		5.0E+00	I
RADIUM-228	0002	S	pCi/g	.2	1.05		5.0E+00	I
SILVER, TOTAL	0001	S	mG/Kg	1.	15.3		1.4E+03	I
SILVER, TOTAL	0002	S	mG/Kg	1.	12.7		1.4E+03	I
SODIUM, TOTAL	0001	S	mG/Kg	10.	420.		NA	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
D - Dilution
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
pCi/g - Picocuries per Gram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE III.26
OLD FIRING RANGE DRUM STORAGE SITE
Location: MND33-0079
Summary of analytical data
for analyte concentrations
above reporting limits
Report Date: 03/17/93

Parameter	Sample Id	Matrix	Units of Measure	Laboratory Reporting Limit	Validated Result (1)	Data Validation Qualifier	PRG	Run Type
SODIUM, TOTAL	0002	S	mG/Kg	10.	162.		NA	I
THORIUM-234	0001	S	pCi/g	.5	.787		1.1E+00	I
THORIUM-234	0002	S	pCi/g	.5	.961		1.1E+00	I
VANADIUM, TOTAL	0001	S	mG/Kg	1.	23.8		1.9E+03	I
VANADIUM, TOTAL	0002	S	mG/Kg	1.	22.5		1.9E+03	I
ZINC, TOTAL	0001	S	mG/Kg	.5	32.5	J	5.4E+04	I
ZINC, TOTAL	0002	S	mG/Kg	.5	60.6	J	5.4E+04	I

PRG - Preliminary Remediation Goals (Risk Based)
J - The associated value is an estimated quantity
I - Initial Analysis
S - Soil
mG/Kg - Milligrams per Kilogram
pCi/g - Picocuries per Gram
(1) - This includes laboratory results that were not qualified from data validation, but were accepted by data validators

TABLE II.6 SUMMARY OF POSITIVE DETECTIONS – AREA J
(ppb)

SAMPLE ID	SAMPLE DATE	FREON 11	FREON 113	TRAN-12DCE	CIS-12DCE	111TCA	PCE	TCE	TOLUENE
MND-01-3153-0005	27 AUG 92	---	---	---	---	---	---	---	11
MND-01-3154-0005	27 AUG 92	43	---	---	---	---	---	---	---
MND-01-3154-1005	27 AUG 92	46	---	---	---	7	10 *	13	---
MND-01-3155-0005	27 AUG 92	---	---	---	---	---	---	---	5
MND-01-3171-0005	31 AUG 92	2	---	---	---	---	15	---	---
MND-01-3173-0005	31 AUG 92	---	---	---	---	---	---	---	5 *
MND-01-3175-0005	1 SEP 92	---	---	---	---	37	---	---	---
MND-01-3176-0005	31 AUG 92	---	---	---	---	---	---	---	8 *
MND-01-3187-0005	1 SEP 92	5	---	---	---	---	---	---	---
MND-01-3209-0017	26 SEP 92	---	---	---	---	---	---	---	5

Notes:

Only sample locations having positive detections are shown.

*: Associated trip, ambient, equipment or field blank contained specified compound.

B: Indicates blank sample.

SOIL GAS DATA (ABSOLUTE)

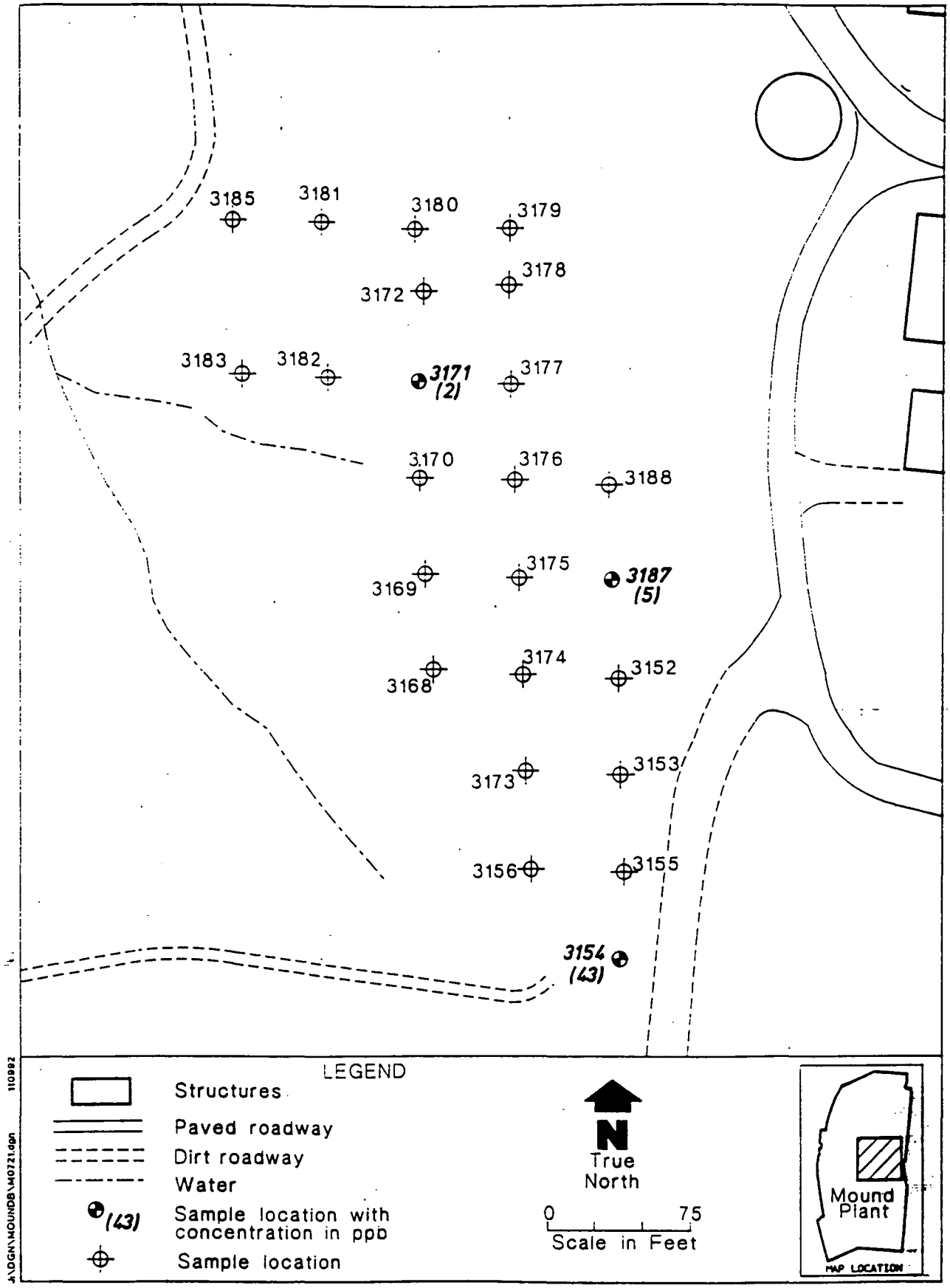


Figure 2.23. Freon II detection map for Area J.

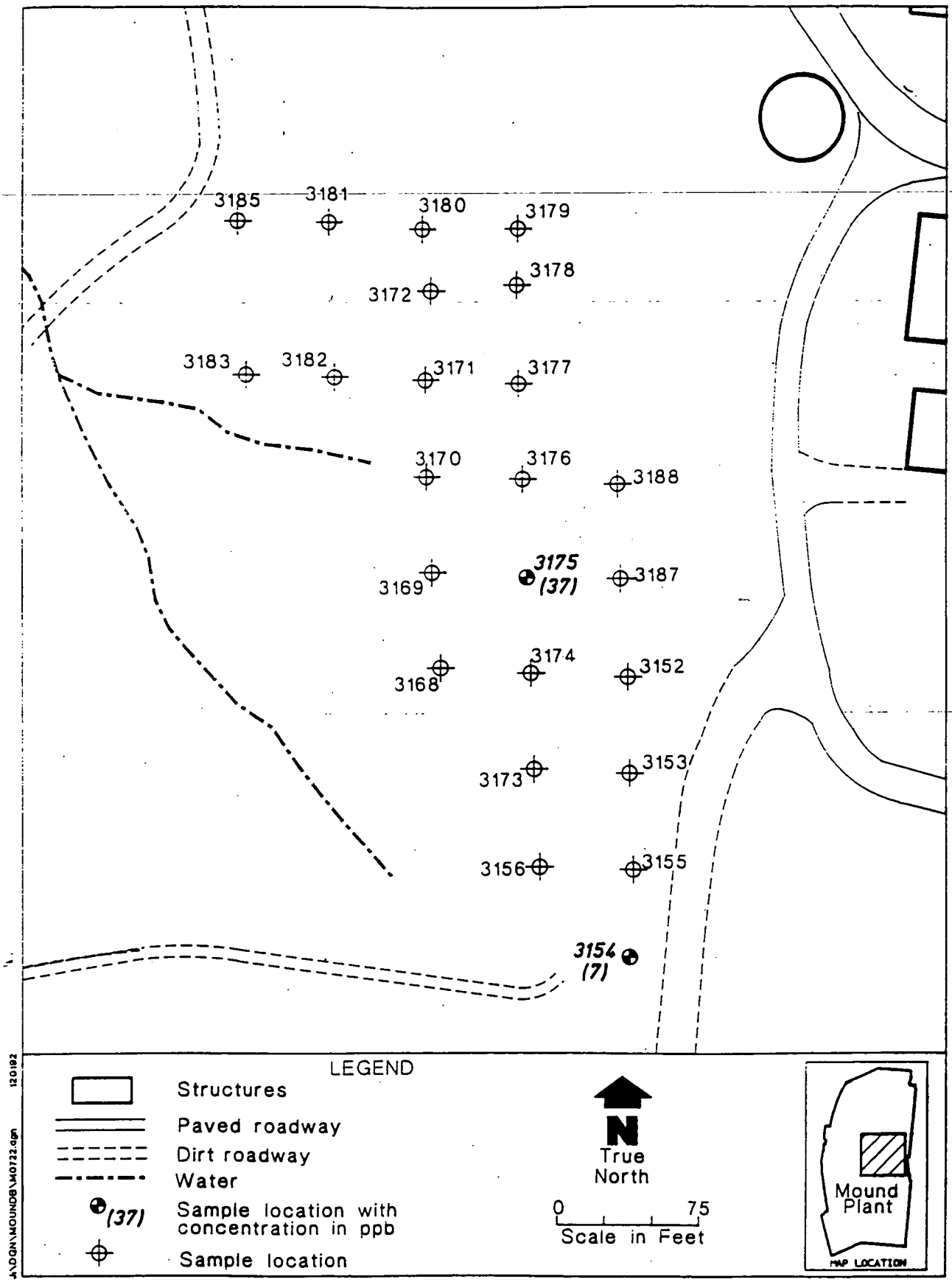


Figure 2.24. 1,1,1-Trichloroethane detection map for Area J .

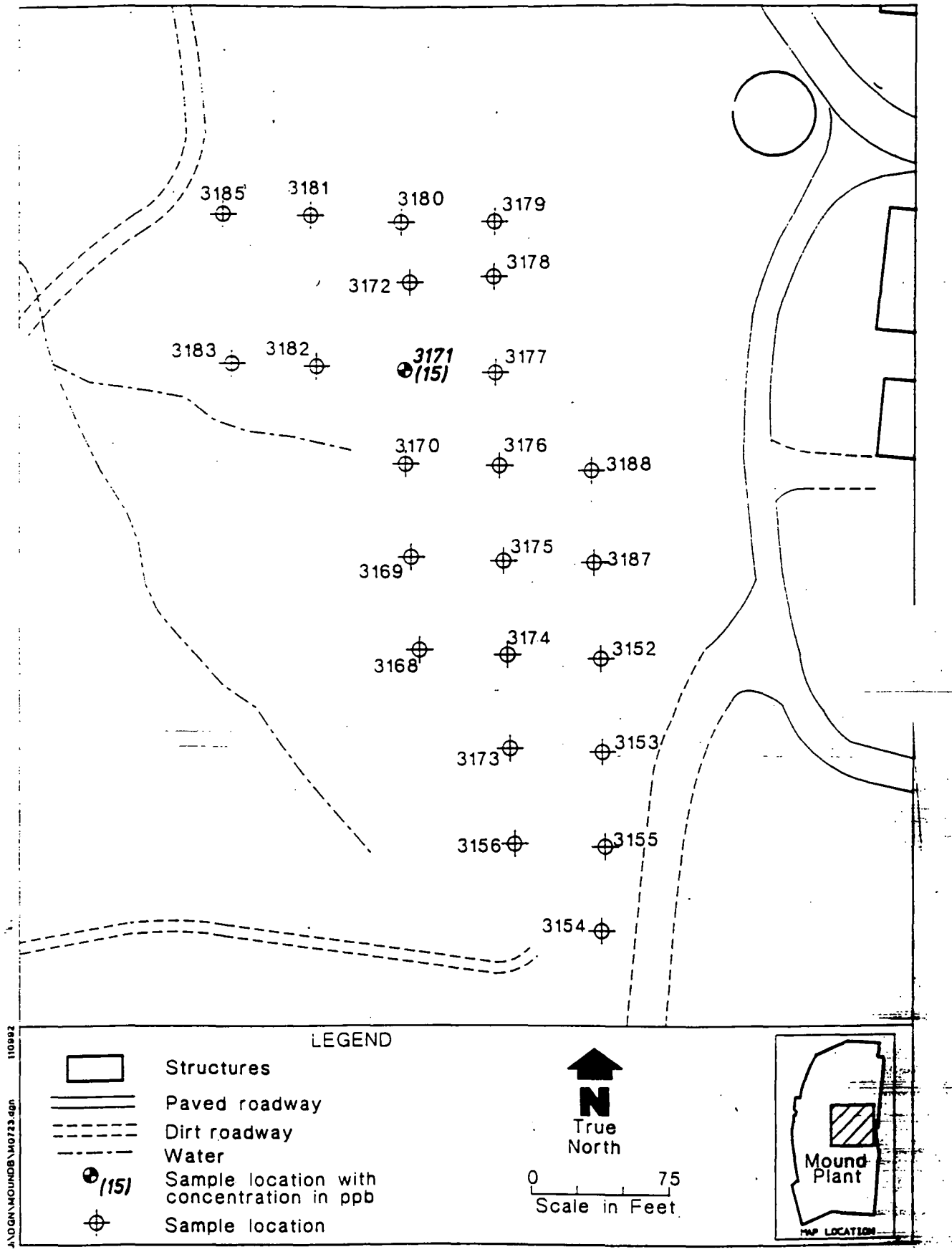


Figure 2.25. Tetrachloroethene detection map for Area J .

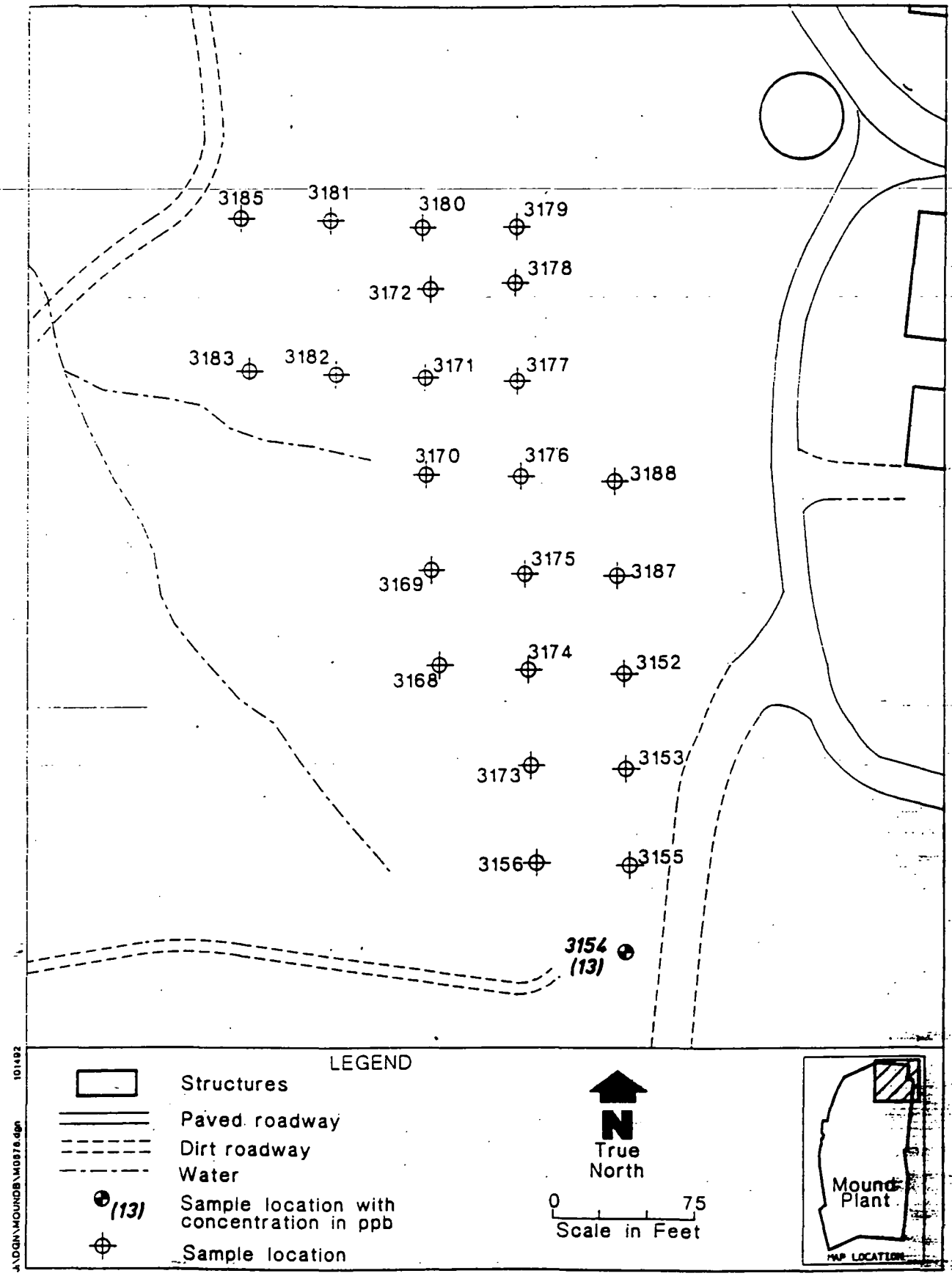


Figure 2.26. Trichloroethene detection map for map Area J.

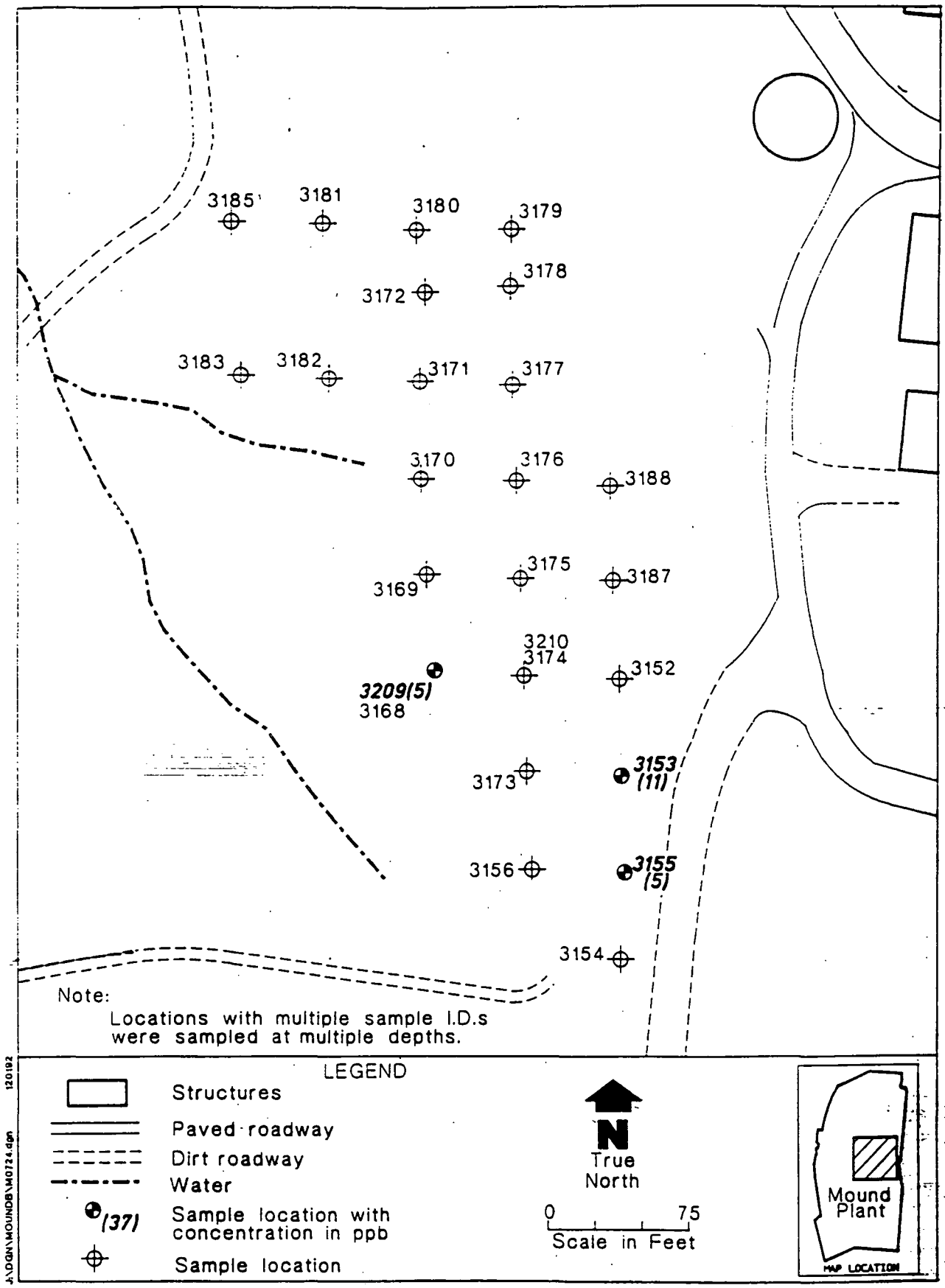


Figure 2.27. Toluene detection map for Area J .

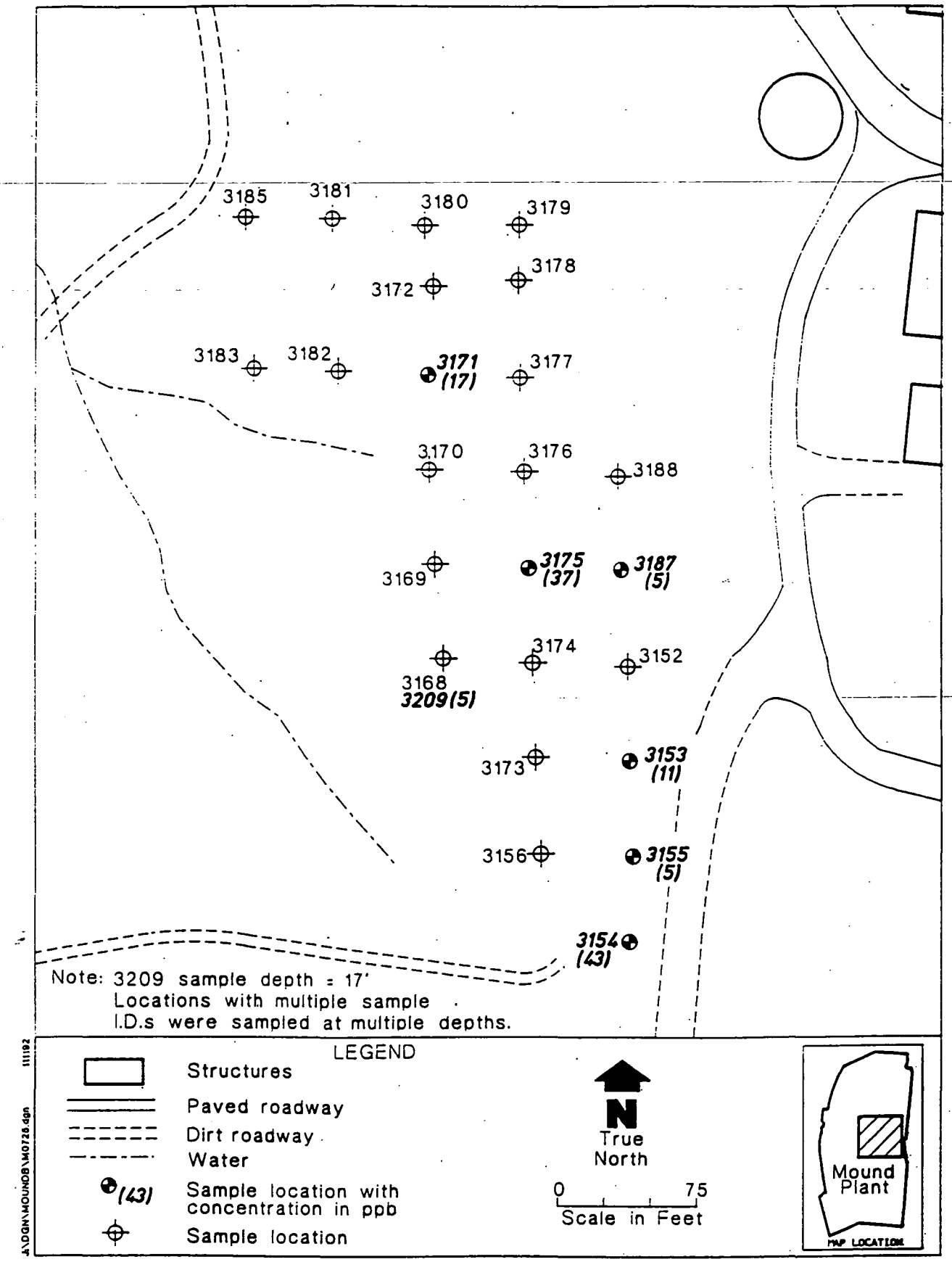


Figure 2.28. Total VOCs detection map for Area J.

TABLE II.7. SUMMARY OF POSITIVE BLANK DETECTIONS–AREA J
(ppb)

SAMPLE ID	SAMPLE DATE	FREON 11	FREON 113	TRAN–12DCE	CIS–12DCE	111TCA	PCE	TCE	TOLUENE
MND–01–3153–3002	27 AUG 92	---	---	---	---	---	6	---	---

Notes:
Only QA/QC sample locations having positive detections are shown.

SOIL GAS DATA (ABSOLUTE)

EG&G MOUND-22-03 -10 -10 - -9502160001

Environmental Restoration Program

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

REPORT
APPENDICES A, B AND D

MOUND PLANT
MIAMISBURG, OHIO

February 1993

Department of Energy
Albuquerque Field Office

Environmental Restoration Program
EG&G Mound Applied Technologies

2.15 and 2.16). Trichloroethylene (TCE) was detected at 33 locations ranging from 2 to 34,780 ppb (Figures 2.17 and 2.18). Toluene was detected at 41 locations ranging from 3 to 23,142 ppb (Figures 2.19 and 2.20). Figures 2.21 and 2.22 illustrate the total VOCs detected at each location on the Main Hill.

Some of the trip blanks, ambient blanks, and field blanks collected during the Main Hill investigation contained minor amounts of some of the target compounds. Table II.5 presents the positive blank detections from the Main Hill sampling effort. Neither of the Main Hill groundwater samples contained measurable concentrations of the target compounds.

2.3.2 Old Firing Range Drum Storage Site/Area J

A total of 26 investigative samples were collected and analyzed from the grid at Area J at depths ranging from 5 to 20 feet. All samples initially were collected from a 5-foot depth (samples 3152-3188). Samples 3209 and 3210 were collected as discretionary locations following a review of the geophysical survey data, which showed potential for the burial of ferrous materials below a depth of 10 feet. These samples were collected at depths of 17 and 20 feet near the geophysical anomalies to determine the presence of VOCs at that greater depth. No groundwater was sampled nor encountered during the Area J field effort. Samples 3184 and 3186 could not be collected due to shallow obstructions encountered during probe placement.

Table II.6 summarizes the positive detections from the Area J sampling effort. Five of the eight target compounds were detected. Freon 11 was detected at three locations at concentrations ranging from 2 to 46 ppb (Figure 2.23). The compound 111TCA was detected at two locations ranging from 7 to 37 ppb (Figure 2.24). PCE was detected at one location at 15 ppb (Figure 2.25). TCE was detected at one location at 13 ppb (Figure 2.26). Toluene was detected at three locations ranging from 5 to 11 ppb (Figure 2.27). Figure 2.28 illustrates the total VOCs detected at each location in Area J.

There was one detection of PCE in an ambient blank sample during the Area J sampling effort at a concentration of 6 ppb. Table II.7 describes this blank detection.

2.3.3. Building 51

A total of 18 investigative samples were collected from 10 locations near Building 51. Sampling depths were planned to be 15 and 25 feet at each location, however, two locations were only sampled from 13 to 15 feet due to soil probe refusal. Of the eight locations having 25-foot samples, two were water samples (4159 and 4160).

ENVIRONMENTAL RESTORATION PROGRAM

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

MOUND PLANT
MIAMISBURG, OHIO

February 1993

DEPARTMENT OF ENERGY
ALBUQUERQUE FIELD OFFICE

ENVIRONMENTAL RESTORATION PROGRAM
EG&G MOUND APPLIED TECHNOLOGIES

FINAL

inflow and outflow of solvents. Supply Freon TF is pumped from a 55-gallon drum (located inside the shed) into a 5-gallon can and transported to Building 49 where it is stored for use. Both supply and waste Freon are stored in a fire-proof cabinet. Approximately 2.5 gallons of waste Freon are generated from the ultrasonic cleaning operations per year. The waste Freon was picked up by Mound waste management personnel as needed. Two sealed 55-gallon drums containing ethyl alcohol are currently staged in the solvent shed (Hatfield 1991).

5.3.9. Old Firing Range Drum Storage Area (Historical)

The old firing range drum storage area is just west of Building 105, in the southeastern portion of Mound (Figure 5.1) (DOE 1991a). The area was in operation from about 1970 to 1974. It was used for the collection and staging of liquid chemical wastes until they could be transported off-plant for disposal; it was the first staging and storage area used for such purposes when the historic landfill (Area B) was closed to open burning. Its operation was concurrent with the limited operation of the Building 51 waste incinerator. Most hazardous wastes generated during this time were collected weekly and consolidated at the old firing range drum storage area, although some waste solvents were incinerated. In September 1971, of the approximately 50 55-gallon drums of oil and solvent that had accumulated, 530 gallons were transferred to the incinerator for disposal (Russell 1971). Another test burn was conducted in January 1972, in which 80 gallons of waste oils and solvents were burned (Werner 1972a). The destruction of waste oils and solvents by incineration was generally not successful and is described in subsection 4.14. In 1974, the hazardous chemical staging activities moved back to the area of the historic landfill and the old firing range drum storage area was abandoned.

The area was approximately 100 ft by 100 ft, and photographs show that 100 to 500 drums were stored in the open on bare ground. Historic photographs reveal oil sheens of undetermined origins. No radiological contamination was detected during a 1988 Mound Site Survey (DOE 1992g). The area is sparsely vegetated and partially covered by the intersection of the new paved road and a dirt road.

5.3.10. Area B Drum Storage Area (Historical)

The Area B drum storage area was located at the site of the historic landfill (Figure 5.1). It was used in the mid-1970s to stage and temporarily store hazardous chemical wastes before they were shipped off-plant for disposal. The area replaced the old firing range drum storage area for this activity. The waste chemicals were typically picked up weekly by waste management personnel and transferred from small laboratory vessels to 55-gallon drums. The drums were placed in open-topped, steel dumpsters that could be moved around to allow the solid waste landfill operations to continue

MOUND

Environmental
Restoration
Program

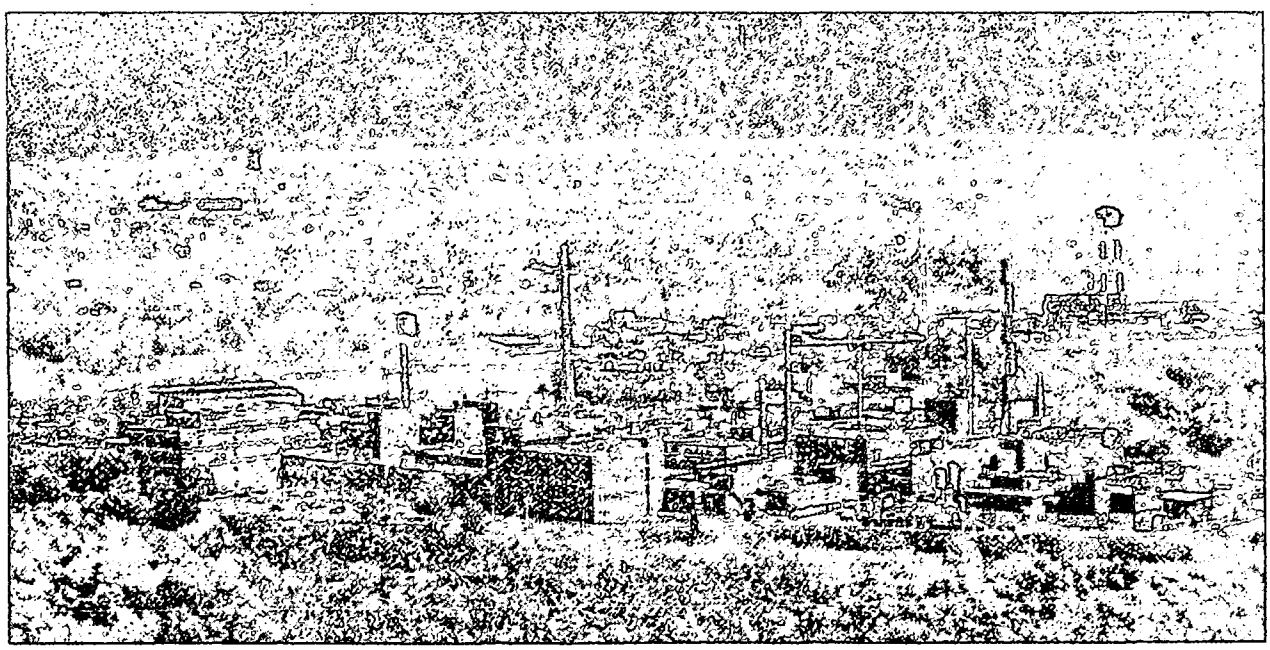
OhioEPA

MOUND PLANT

Potential Release Site Package

PRS 278

FINAL
JUNE 2002



MOUND PLANT

Release Block F

Potential Release Site

PRS 278

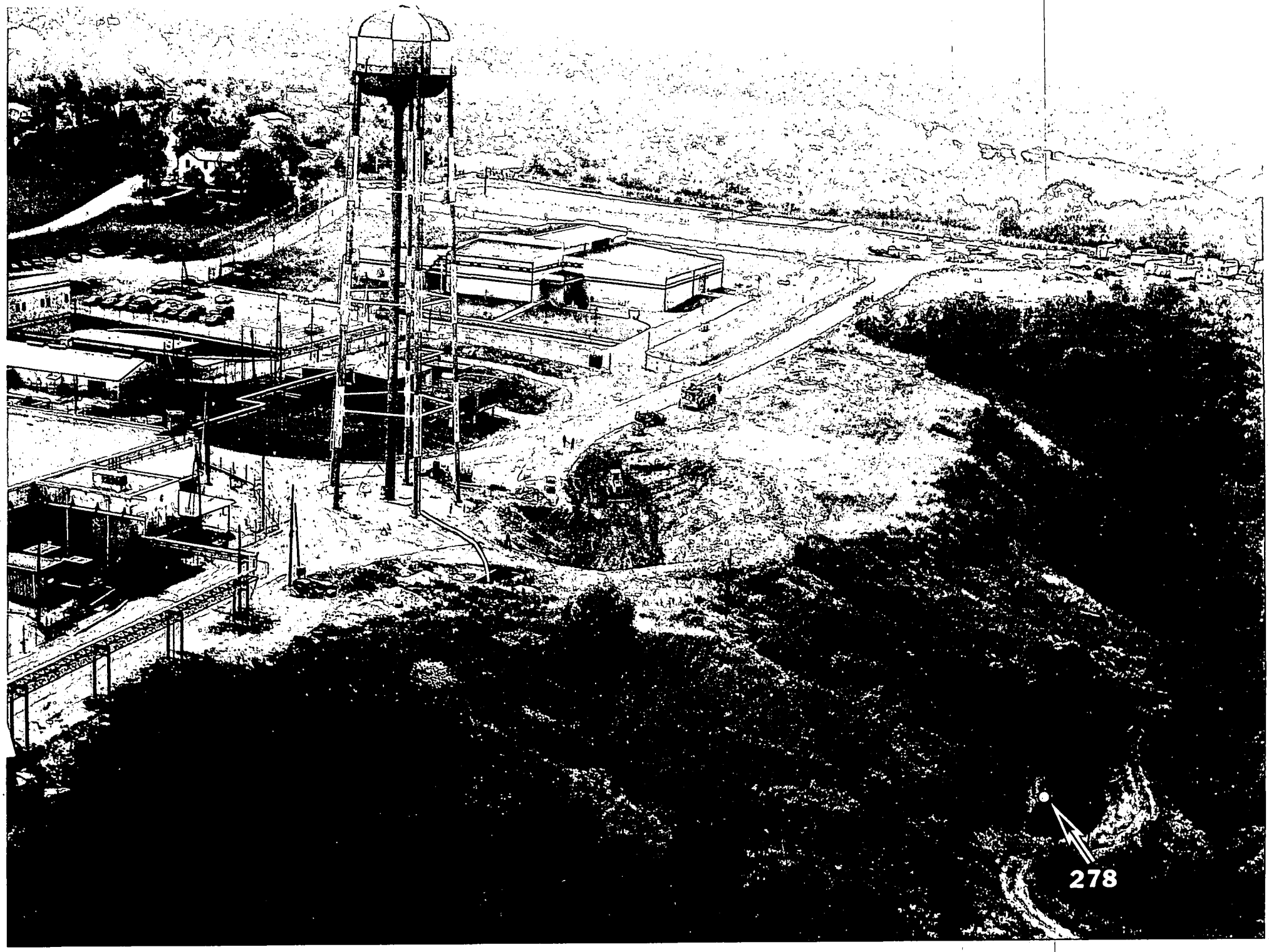
N
O
P
H
L
G
R
O
M
K
278
C
J
I
E
D
S
B
A

MOUND PLANT

Release Block F

Potential Release Site

PRS 278


278

PRS 278

PRS HISTORY:

PRS 278 (Area J Hillside Catch Basin) is located on the side of the SM/PP Hill, north-west of the SM/PP water tower. This catch basin is located down slope from Area J which was a historically uncontrolled area and could have received contaminated materials. This location was identified as a potential release site because it is suspected that it has become contaminated by rain run-off from areas up slope.[1, 3]

PROCESS DESCRIPTION:

The storm water catch basin is located down slope from Area J which encompasses approximately four acreas.

CONTAMINATION:

It is suspected that the catch basin has become contaminated with Pu-238 from soil disposal areas within Area J due to rain run-off, however radiological data within the catch basin area indicates a maximum Pu-238 level of 22 pCi/g and a maximum Th-232 level of 1 pCi/g which is below the Mound guideline criteria of 25 pCi/g of Pu-238 and 5 pCi/g of Th-232.[2, 3]

PETREX soil gas samples were taken in the vincinity of PRS 278.[2] Samples indicate relatively low to moderate readings for total aromatic hydrocarbons, relatively low readings for semivolatile hydrocarbons, non-detect to relatively low for petroleum hydrocabons and halogenated hydrocarbons.[2]

READING ROOM REFERENCES:

1) OU9, Site Scoping Report: Volume 12 - Site Summary Report, December 1994. (pages 5-8)
2) OU5, Operational Area Phse I Investigation, Area J Field Report, June 1995. (pages 9-16)
3) OU9, Site Scoping Report: Volume 3 - Radiological Site Survey, June 1993. (pages 17-23)

OTHER REFERENCES:

4) Topographical Drawing of Area J and PRS 278. (pages 24-25)

PREPARED BY:

Gerald F. Maul, Member of EG&G Technical Staff

MOUND PLANT
PRS 278

RECOMMENDATION: _____

_____

_____

CONCURRENCE:

DOE: _____

USEPA: _____

OEPA: _____

Reference Material
PRS 278

Document Control No. _____

Environmental Restoration Program

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

MOUND PLANT
MIAMISBURG, OHIO

December 1994

Final

U.S. Department of Energy
Ohio Field Office

EG&G Mound Applied Technologies

Table A.1. Comprehensive Tabulation of Potential Release Sites

Description of History and Nature of Waste Handling						Hazardous Conditions and Incidents			Environmental Data		
No.	Site Name	Location	Status	Potential Hazardous Substances	Ref	Releases	Media	Ref	Analytes[a]	Results	Ref
272	Area 10, Concrete Debris	G-8 G-9	Grounds	Polonium-210, Cobalt-60, Plutonium-238 (from runoff)	1, 4, 5, 18	Suspected	S	4, 6	14	Table B.1 (Table III.6 in Ref. 6)	6
273	Area 12, Thorium-Contaminated Soil from Area 1	G-9	Grounds	Thorium, Plutonium-238 (from runoff)	1, 4, 5, 18	Suspected thorium	S	4, 6	14, 15	Table B.1 (Table V.5 in Ref. 6)	6
274	Area 21, Old Bunker	H-9	Grounds	Cesium-137, Strontium-90, Actinium-227, Radium-226	4, 5, 18	Suspected thorium	S	4, 6	14, 15, 16	Table B.1 (Table VII.2 in Ref. 6)	6
275	Area 21, Detonator Shack	H-8	Grounds	Cesium-137, Strontium-90, Actinium-227, Radium-226	4, 5, 18	Suspected thorium	S	4, 6	14, 15, 16	Table B.1 (Table VII.2 in Ref. 6)	6
276	Area 22, Orphan Soil from other Areas	I-8	Inactive	Polonium-210, Radium-226, Cobalt-60, Plutonium-238, Cesium-237	4, 5, 18	Suspected	S	6	14, 15, 16	Table B.1 (Table X.1 in Ref. 6)	6
277	Area J, Hillside Disposal Area (AKA Dredged Material Disposal Area 11a)	H-8 H-9	Historical	Construction/building debris, Paints, Thinners, Chemical contaminants, Asbestos, Thorium, Plutonium-238	1, 4, 18	Suspected VOCs	S	4	1 14, 15, 16	SGS[b] Table B.2 Table B.1 (Table X.2 in Ref. 6)	12 6
278	Area J, Hillside catch basin	H-8	In service	Plutonium-238 (from runoff)	1, 4, 18	Suspected	SW	18	No Data		
279	Old Firing Range Drum Storage Area	H-9	Historical	Liquid chemical wastes	5, 18	Confirmed VOCs	S	4	1 2, 3, 4, 5, 6 14, 15	SGS[b] Table B.2 Locations 3152, 3153, and 3187 Tables B.6, B.7, B.8, and B.9 RSS[c] Locations S0162, S0163, and S0647 (Appendix E in Ref. 6)	12 7 6

[a]Analyte List Codes
[b]SGS, Soil Gas Survey
[c]RSS, Radiological Site Survey

Page 6

Table A.2. Assignment of Regulatory Authorities to Potential Release Sites and Recommendations for Further Action

				Operational Jurisdiction				Historic Activities			
No.	Site Name	Location	Status	Regulated Units	Regulatory Authority	Spill Response	SWMU	Evidence Of Release	Response Authority	Further Action Recommended	FFA OU
263	Building 90 Blockhouse	I-7	In Service	(Cont.)	(Cont.)	(Cont.)	SWMU	No	NA	OM	
264	Explosive Waste Storage Bunker (Magazine 53)	I-7	In Service				SWMU	No	NA	OM	
265	Biodegradation Unit	I-7	Inactive				SWMU	No	NA	OM	
266	Area 8, Thorium-Contaminated Soils from Areas 1 and 9	F-9	Grounds	runoff to aphalt-lined pond	AEA	AEA		Yes	AEA	Yes	6
267	Area 9, Thorium Storage and Redrumming Area (AKA Former Thorium Storage)	F-9 G-9	Grounds		AEA	AEA		Yes	AEA	Yes	6
268	Building 31, Contaminated Material Storage Building	F-9	In Service		AEA	AEA		No	NA	OM	
269	Building 36 Historic Gasoline Tanks (Tanks 239 and 240)	G-10	Historical		NA	NA		No	CERCLA	No	5
270	Underground Sanitary Sewer Lines G6 & G7	G-10	In service		AEA	AEA	SWMU	No	NA	OM	
271	Building 37 Sanitary Waste Tank (Tank 100)	F-10	In Service	effluent to wastewater treatment	CWA	AEA		No	NA	OM	
272	Area 10, Concrete Debris	G-8 G-9	Grounds	runoff to plant drainage ditch	AEA			Yes	AEA	Yes	6
273	Area 12, Thorium-Contaminated Soil from Area 1	G-9						Yes	AEA	Yes	6
274	Area 21 Old Bunker	H-9						Yes	CERCLA	Yes	5
275	Area 21 Detonator Shack	H-8	Grounds					Yes	CERCLA	Yes	5
276	Area 22, Orphan Soil from other Areas	I-8	Inactive					Yes	CERCLA	Yes	5
277	Area J, Hillside Disposal Area (AKA Dredged Material Disposal Area 11a)	H-8 H-9	Historical				SWMU	Yes	CERCLA	Yes	5
278	Area J, Hillside catch basin	H-8	In Service	Potential wetlands (under Section 404 CWA)	AEA (CWA)		SWMU	No	CERCLA	Yes	5
279	Old Firing Range Drum Storage Area	H-9	Historical		NA		SWMU	Yes	CERCLA	Yes	5
[illegible]	[illegible]	I-8	Historical		NA		SWMU	Yes	CERCLA	Yes	5
[illegible]	[illegible]	I-8	Historical		NA			Yes*	CERCLA	No	5

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 5
OPERATIONAL AREA PHASE I INVESTIGATION
AREA J FIELD REPORT

MOUND PLANT
MIAMISBURG, OHIO

VOLUME I - TEXT

June 1995

Final (Revision 1)

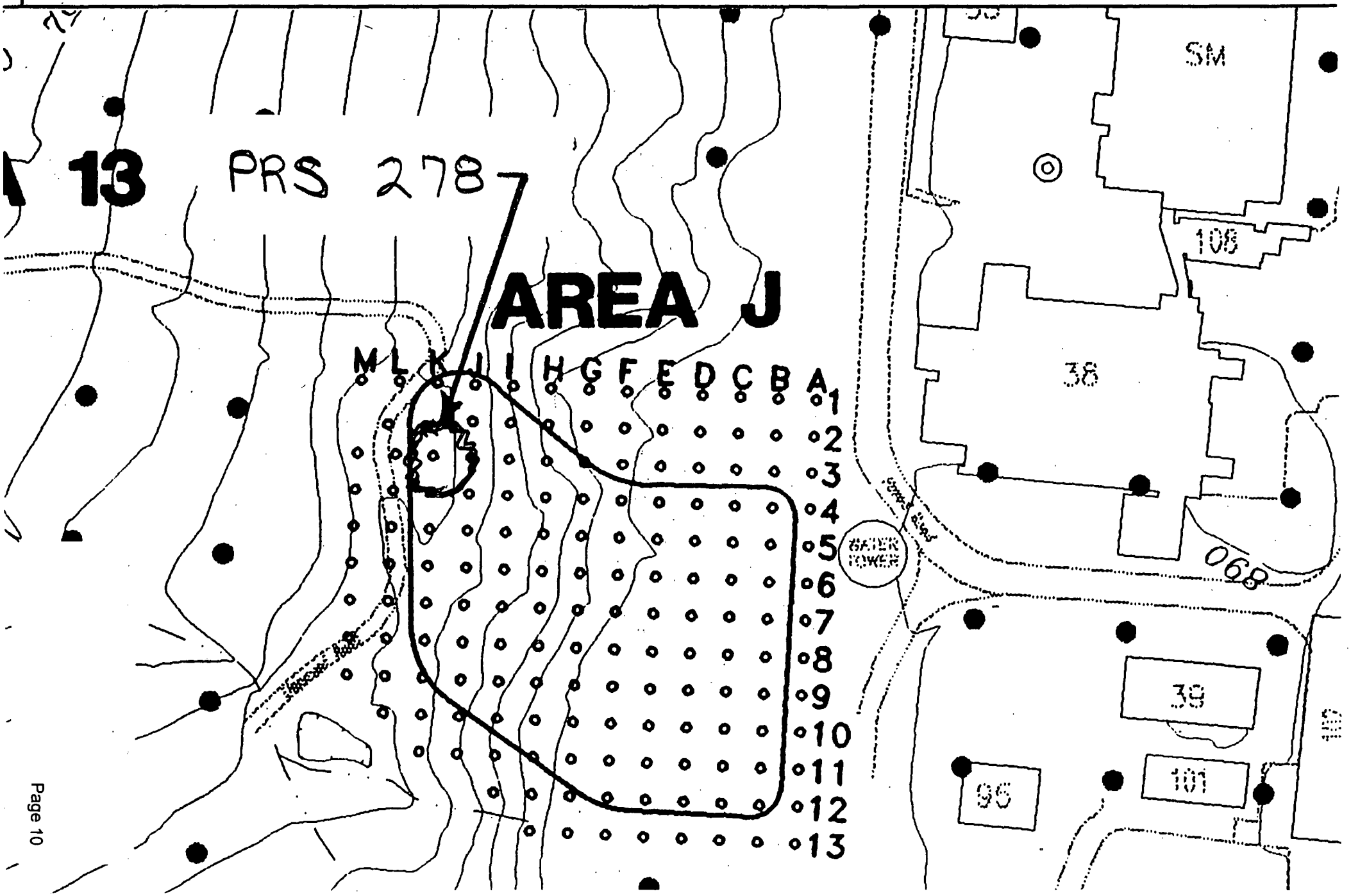
U.S. Department of Energy
Ohio Field Office

EG&G Mound Applied Technologies

TITLE:

MOUND PLANT OPERABLE UNIT 5 PHASE 1 RI/FS OPERATIONAL AREA

LOCATIONS OF AREAS OF CONCERN



APPENDIX C

RADIOLOGICAL DATA (FIDLER SURVEY MOUND SOIL SCREENING FACILITY DATA)

	FIDLER SURVEY DATA						MOUND SOIL SCREENING FACILITY DATA			
SMPID	Contamination Criteria CH1	FIDLER Readings CH1	Contamination Criteria CH2	FIDLER Readings CH2	Contamination Criteria Out Channel	FIDLER Readings Out Channel	Plutonium - 238		Thorium - 232	
	Units: CPM	Units: CPM	Units: KCPM	Units: KCPM	Units: KCPM	Units: KCPM	Units: pCi/g		Units: pCi/g	
	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	Note:	RESULTS	Note:
JH13	NA	NA	NA	NA	NA	NR	21		1	
~~JI01~~	~~118.3~~	~~NA~~	~~11.7~~	~~NA~~	~~12.61~~	~~7.0~~	~~14~~		~~1~~	
JI02	118.3	NA	11.7	NA	12.61	5.5	13		1	
JI03	118.3	NA	11.7	NA	12.61	5.5	11		1	
JI04	118.3	NA	11.7	NA	12.61	7.5	22		1	
~~JI05~~	~~118.3~~	~~NA~~	~~11.7~~	~~NA~~	~~12.61~~	~~8.5~~	~~8~~		~~1~~	
JI06	118.3	NA	11.7	NA	12.61	8.5	21		1	
JI07	118.3	NA	11.7	NA	12.61	7.5	35	a	1	
JI08	158.6	NA	13.26	NA	15.47	7.0	9		1	
JI09	158.6	NA	13.26	NA	15.47	7.5	7		1	
JI10	158.6	NA	13.26	NA	15.47	7.5	21		1	
JI11	158.6	NA	13.26	NA	15.47	8.0	11		1	
JI12	118.3	NA	11.7	NA	12.61	7.0	8		1	
JJ01	118.3	NA	11.7	NA	12.61	5.0	15		1	
JJ02	118.3	NA	11.7	NA	12.61	6.0	9		1	
JJ03	118.3	NA	11.7	NA	12.61	6.5	20		1	
JJ04	118.3	NA	11.7	NA	12.61	6.5	19		1	
JJ05	118.3	NA	11.7	NA	12.61	6.5	9		1	
JJ06	118.3	NA	11.7	NA	12.61	7.0	13		1	
JJ07	118.3	NA	11.7	NA	12.61	8.5	19		2	
JJ08	158.6	NA	13.26	NA	15.47	7.5	10		1	
JJ09	158.6	NA	13.26	NA	15.47	5.5	17		1	
JJ10	158.6	NA	13.26	NA	15.47	6.0	17		1	
~~JJ11~~	~~158.6~~	~~NA~~	~~13.26~~	~~NA~~	~~15.47~~	~~8.5~~	~~16~~		~~1~~	
JK01	118.3	NA	11.7	NA	12.61	7.0	21		1	
JK02	118.3	NA	11.7	NA	12.61	6.5	NS		NS	
JK03	118.3	NA	11.7	NA	12.61	8.0	17		1	
JK04	118.3	NA	11.7	NA	12.61	9.5	24		1	
~~JK05~~	~~118.3~~	~~NA~~	~~11.7~~	~~NA~~	~~12.61~~	~~8.5~~	~~11~~		~~1~~	

Mound Soil Screen Data

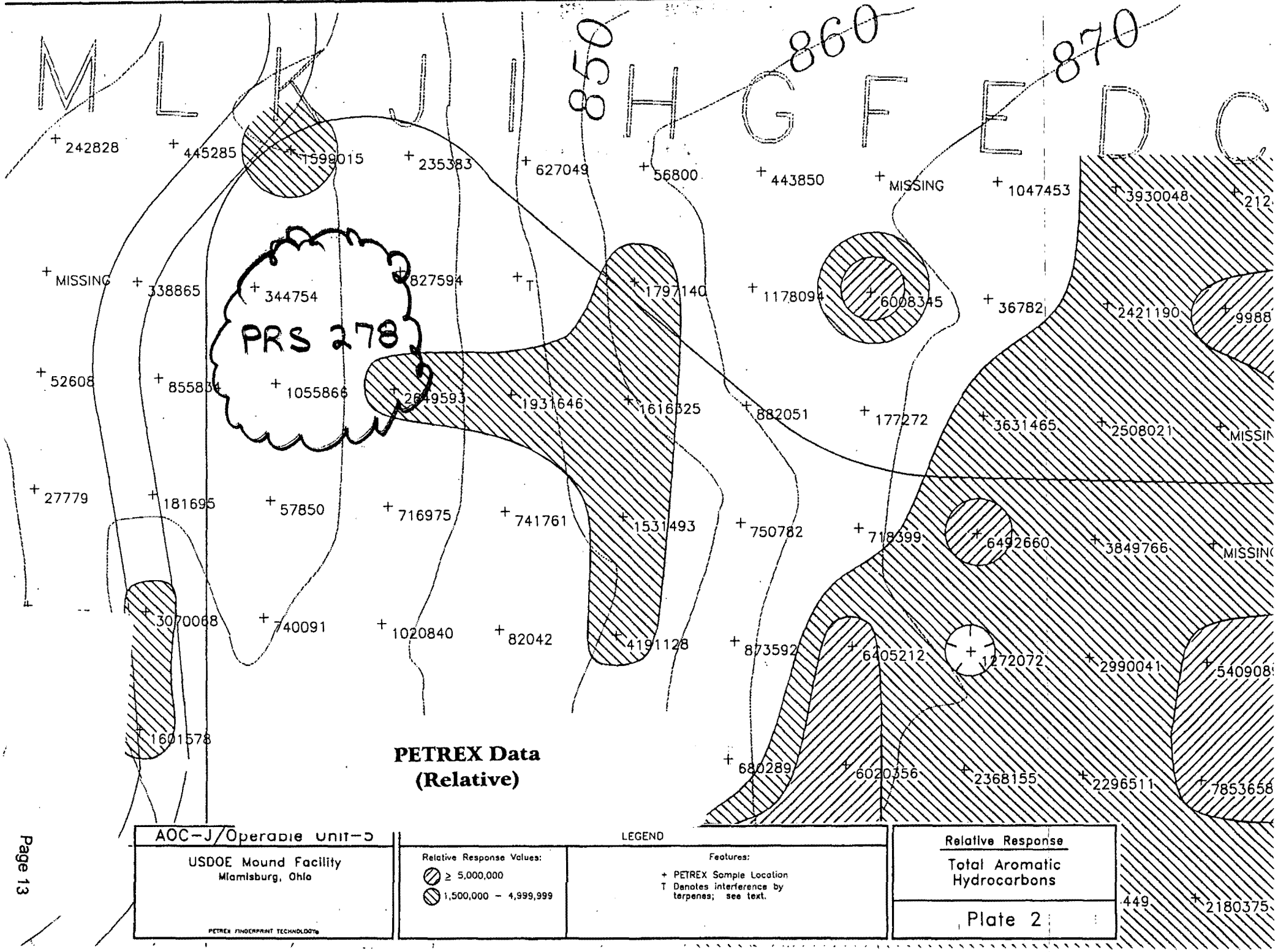
APPENDIX C

RADIOLOGICAL DATA (FIDLER SURVEY MOUND SOIL SCREENING FACILITY DATA)

	FIDLER SURVEY DATA						MOUND SOIL SCREENING FACILITY DATA			
SMPID	Contamination Criteria CH1	FIDLER Readings CH1	Contamination Criteria CH2	FIDLER Readings CH2	Contamination Criteria Out Channel	FIDLER Readings Out Channel	Plutonium - 238		Thorium - 232	
	Units: CPM	Units: CPM	Units: KCPM	Units: KCPM	Units: KCPM	Units: KCPM	Units: pCi/g		Units: pCi/g	
	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	Note:	RESULTS	Note:
JL01-23	249.6	NA	4.29	NA	9.36	7.0	NC		NC	
JL01-24	249.6	NA	4.29	NA	9.36	8.5	NC		NC	
~~JL01-25~~	~~249.6~~	~~NA~~	~~4.29~~	~~NA~~	~~9.36~~	~~8.5~~	~~NC~~		~~NC~~	
JL02	118.3	NA	11.7	NA	12.61	10.0	21		1	
JL03	118.3	NA	11.7	NA	12.61	9.0	22		1	
~~JL03-01~~	~~123.5~~	~~NA~~	~~6.76~~	~~NA~~	~~7.8~~	~~7.0~~	~~NC~~		~~NC~~	
JL03-02	123.5	NA	6.76	NA	7.8	7.5	NC		NC	
JL03-03	123.5	NA	6.76	NA	7.8	7.5	NC		NC	
JL03-04	NA	NA	NA	NA	NA	NS	NC		NC	
JL03-05	NA	NA	NA	NA	NA	NS	NC		NC	
JL03-06	NA	NA	NA	NA	NA	NS	NC		NC	
JL03-07	NA	NA	NA	NA	NA	NS	NC		NC	
JL03-08	123.5								NC	
JL03-09	123.5								NC	
JL03-10	123.5								NC	
JL03-11	123.5								NC	
JL03-12	123.5								NC	
JL03-13	123.5								NC	
JL03-14	NA								NC	
JL03-15	NA								NC	
JL03-16	NA								NC	
JL03-17	NA								NC	
JL03-18	123.5								NC	
JL03-19	123.5								NC	
JL03-20	123.5		6.76	NA	7.8	7.5	NC		NC	
JL03-21	123.5	NA	6.76	NA	7.8	6.5	NC		NC	
JL03-22	123.5	NA	6.76	NA	7.8	7.0	NC		NC	
JL03-23	123.5	NA	6.76	NA	7.8	7.0	NC		NC	
JL03-24	NA	NA	NA	NA	NA	NS	NC		NC	

CH1 - Channel 1
CH2 - Channel 2
NR - Reading not recorded.
NC - No sample collected; location not at grid point.
NA - Reading not taken; contamination criteria for the out channel not exceeded.
NS - No sample collected; insufficient soil volume due to gravel/rocky soil conditions
a - Mound Soil Screening Facility detection level of 25.0 pCi/g for Pu-238 and 2.0 pCi/g for Th-232 exceeded.
CPM - counts per minute
KCPM - counts per minute X 1000
pCi/g - picocuries per gram
SMPID - Sample identification number

Mound Soil Screen Data



AOC-J/Operable Unit-5

USDOE Mound Facility
Miamisburg, Ohio

PETREX FINGERPRINT TECHNOLOGY®

LEGEND

Relative Response Values:

≥ 5,000,000

1,500,000 – 4,999,999

Features:

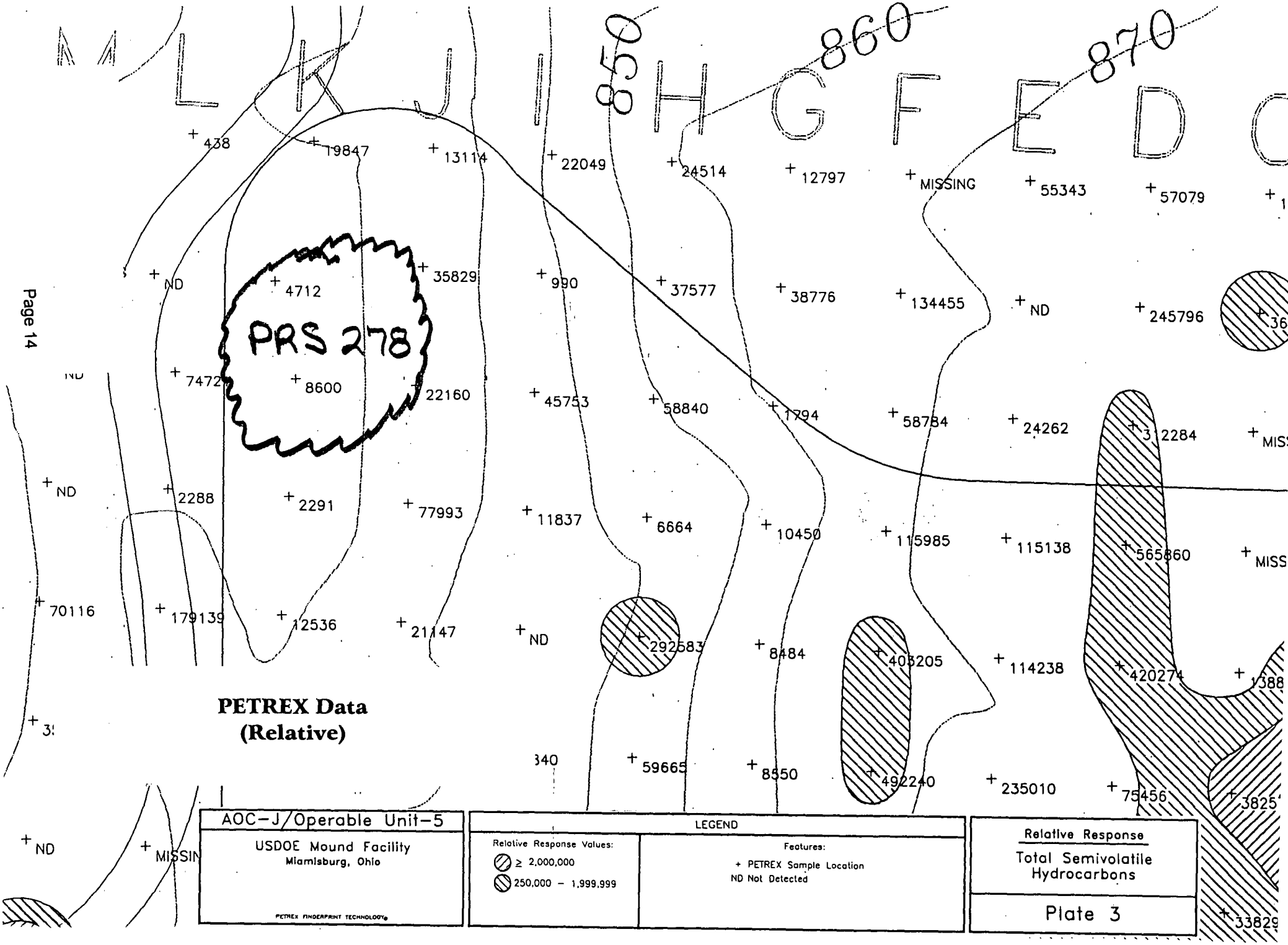
+ PETREX Sample Location

T Denotes interference by terpenes; see text.

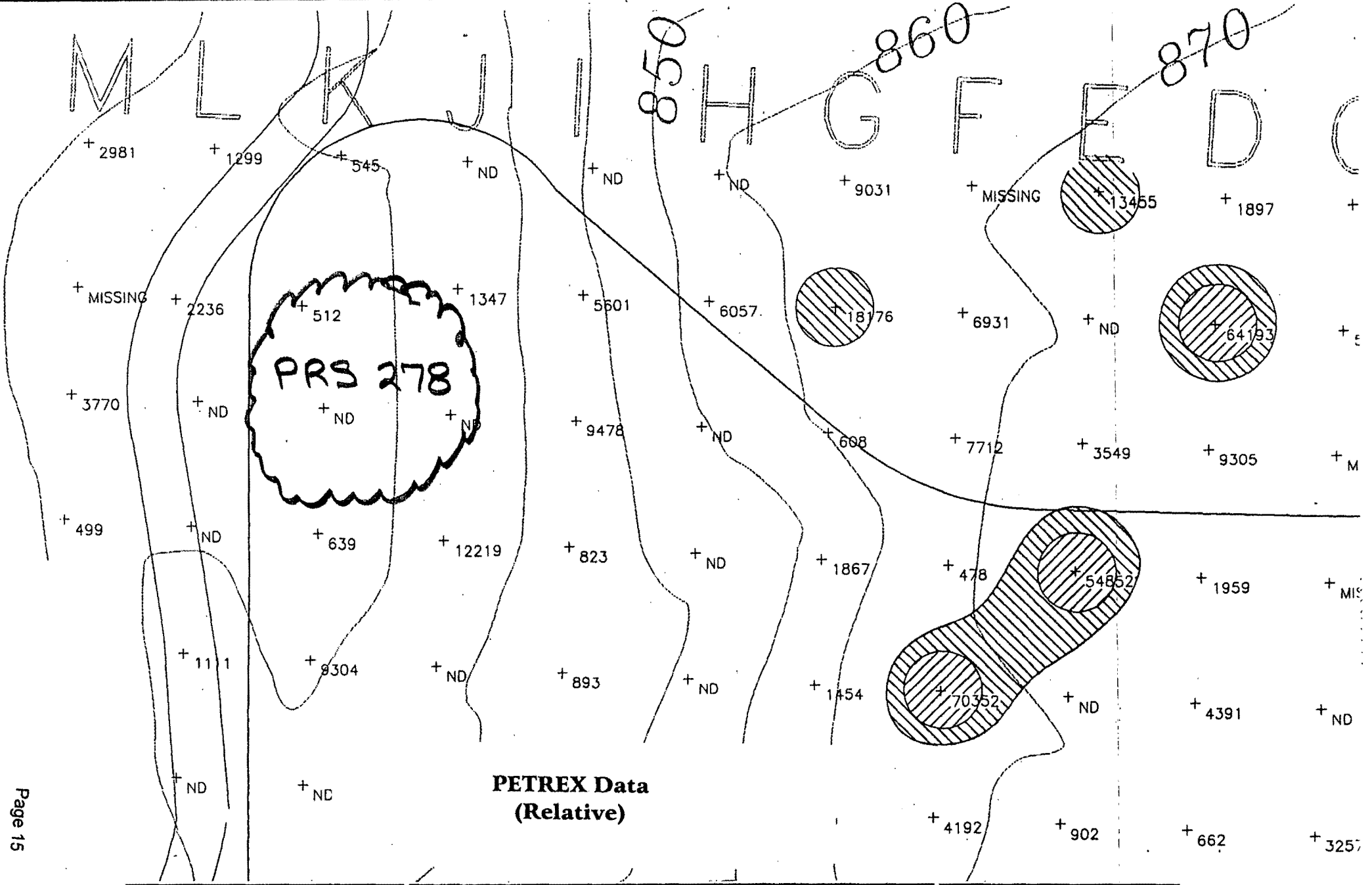
Relative Response

Total Aromatic Hydrocarbons

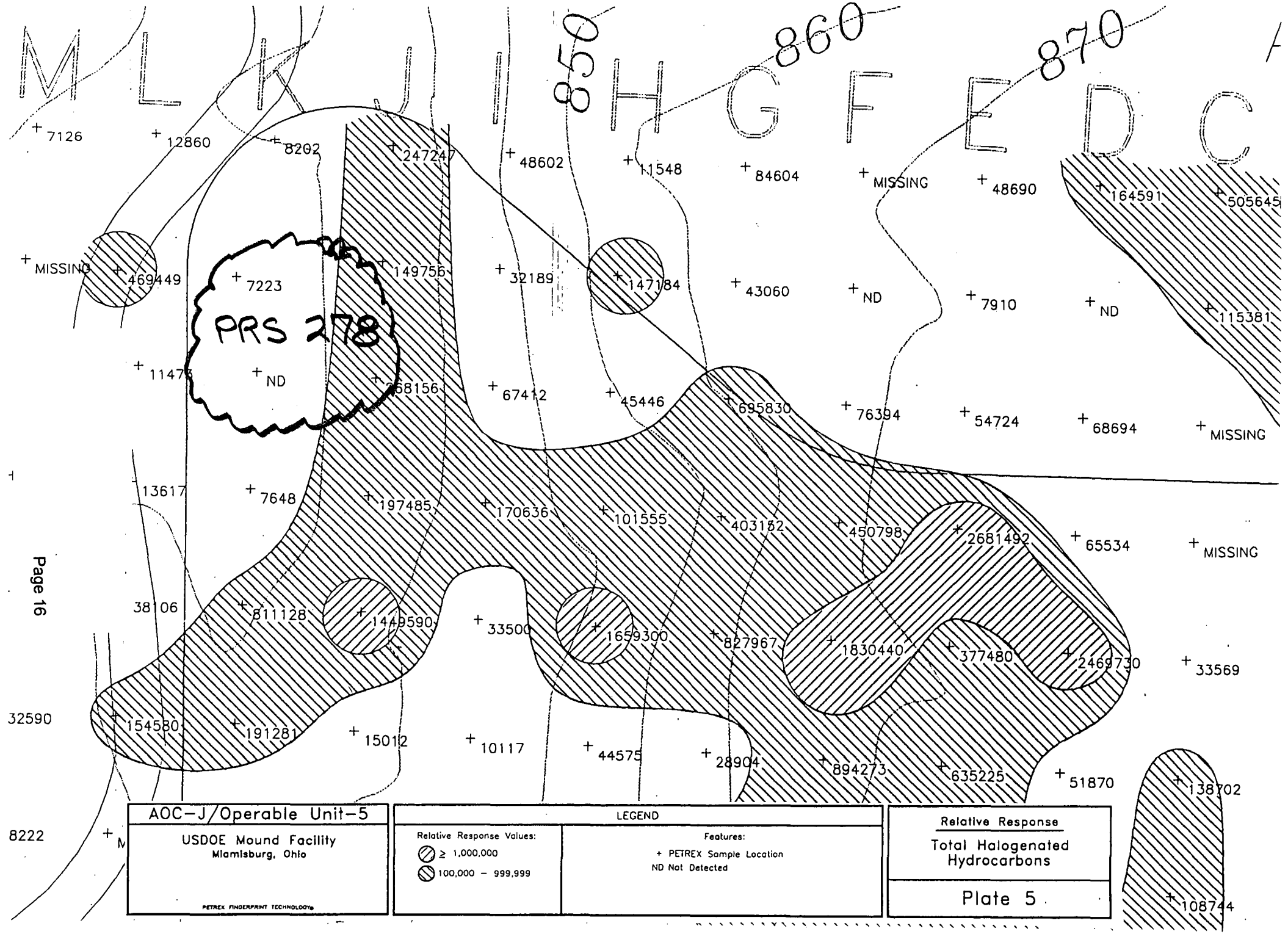
Plate 2



AOC-J/Operable Unit-5	LEGEND		Relative Response
USDOE Mound Facility Miamisburg, Ohio	Relative Response Values: ≥ 2,000,000 250,000 – 1,999,999	Features: + PETREX Sample Location ND Not Detected	Total Semivolatile Hydrocarbons
PETREX FINGERPRINT TECHNOLOGY®			Plate 3



AOC-J/Operable Unit-5	LEGEND		Relative Response
USDOE Mound Facility Miamisburg, Ohio	Relative Response Values: ≥ 52,000 13,000 - 51,999	Features: + PETREX Sample Location ND Not Detected	Total Oil & Grease Range Hydrocarbons
PETREX FINGERPRINT TECHNOLOGY®			Plate 4



AOC-J/Operable Unit-5	LEGEND		Relative Response
USDOE Mound Facility Miamisburg, Ohio	Relative Response Values: ≥ 1,000,000 100,000 – 999,999	Features: + PETREX Sample Location ND Not Detected	Total Halogenated Hydrocarbons
PETREX FINGERPRINT TECHNOLOGY®			Plate 5

ENVIRONMENTAL RESTORATION PROGRAM

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

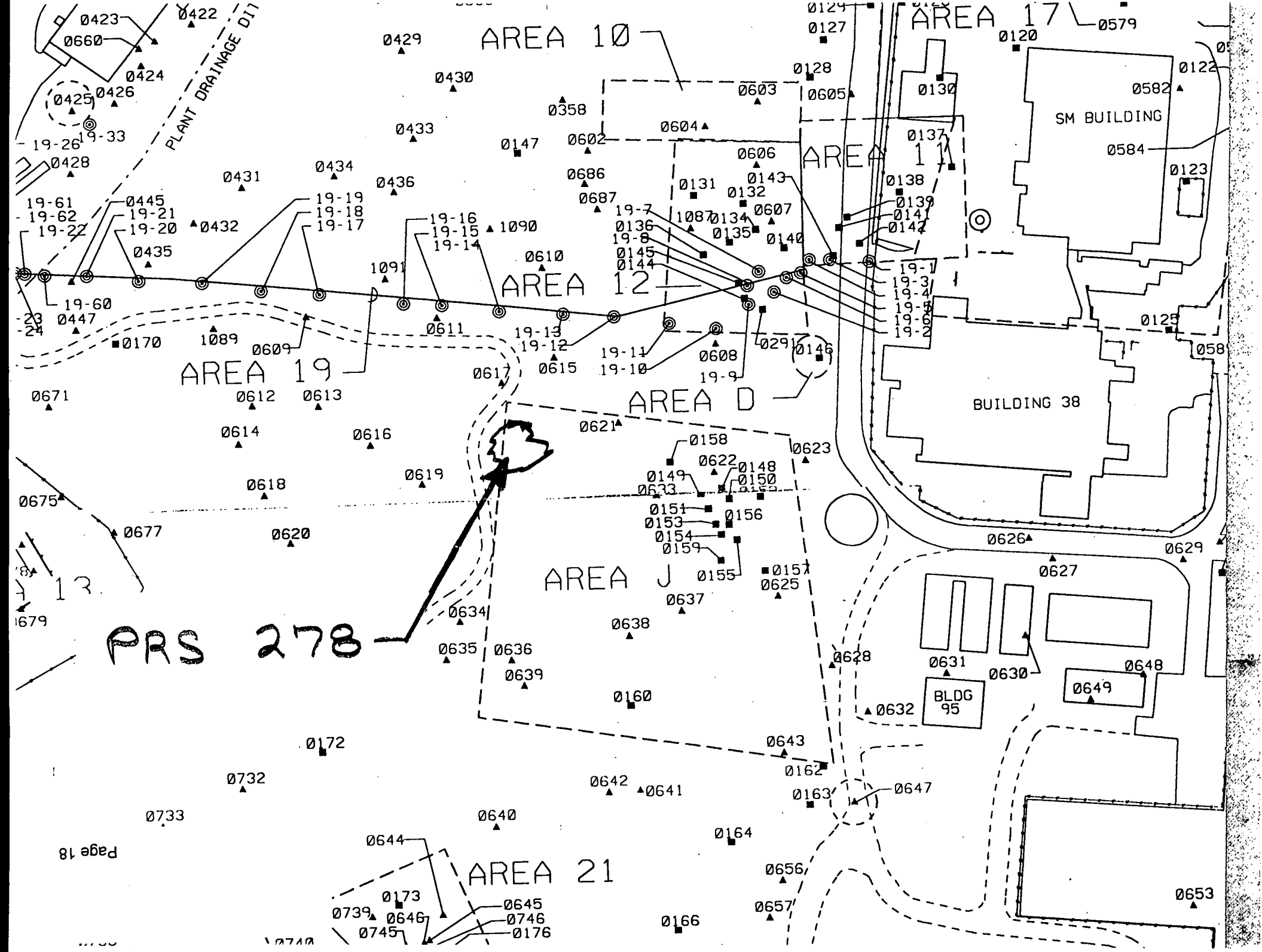
MOUND PLANT
MIAMISBURG, OHIO

June 1993

DEPARTMENT OF ENERGY
ALBUQUERQUE FIELD OFFICE

ENVIRONMENTAL RESTORATION PROGRAM
EG&G MOUND APPLIED TECHNOLOGIES

FINAL


AREA 10
AREA 11
AREA 12
AREA 17
AREA 19
AREA D
AREA J
AREA 21
PLANT DRAINAGE DI
SM BUILDING
BUILDING 38
BLDG 95
PRS 278

10. GENERAL USE AREAS

Several areas of the Mound Plant were included in the investigations of the Site Survey Project or are known to contain low levels of radioactivity, but are not associated with a specific program or project. These areas include the Orphan Soils Area 22, the Hillside Disposal Area J, and the spoils disposal areas. These areas and any results reported in the Site Survey Project report are described in the subsections that follow.

10.1. AREA 22

Area 22 is located on the south part of the SM/PP Hill adjacent to Building 53 (Plate 1). This area consists of many piles of soil excavated from other areas at Mound Plant, including Area 20 (subsection 3.9). It is also called the "orphan soils" area because it was created when construction projects did not have funding for disposal of unexpected contaminated soil, which was then staged at Area 22 while waiting for funding. Area 22 was not part of the original compilation of radioactively contaminated areas when the Site Survey Project began, but was identified by the initial gamma surveys (Stought et al. 1988).

The Area 22 sampling results are given in Table X.1 and the sampling locations are shown on Plate 1. Only surface locations were sampled. Cobalt-60 was detected in two of the samples, at levels of 13 and 54 pCi/g. The same samples showed radium-226 present in concentrations of 0.4 and 0.7 pCi/g, respectively. The sample from location S0787 also contained 7.0 pCi/g of cesium-137. The remaining two samples contained relatively low levels of plutonium-238, with a maximum level of 1.67 pCi/g, but these samples were not analyzed by gamma spectroscopy. No results were indicated for bismuth-207 or bismuth-210m, which may be expected to occur with cobalt-60 from speculation of process (see subsection 3.3.6 for discussion). Since cesium-137 was identified, it is possible that strontium-90 may also be present, but was not included in the analyses conducted by the Site Survey Project.

10.2. AREA J

Area J, known as the hillside disposal area, is located on the west slope of the SM/PP Hill, south of Areas D and 12 (Plate 1). This area was used from the early 1970s to the early 1980s for the disposal

of construction residues, such as excavated soils, pieces of concrete, piping, metal banding, plumbing fixtures, and roofing materials, which were either dumped or bulldozed over the side of the hill (DOE 1992c). Area J also includes three areas of ponded water at the base of the slope (DOE 1992g).

Twelve core locations and nine surface locations were sampled, either within or near Area J, as part of the Site Survey Project (Plate 1, and Table X.2). The maximum plutonium-238 concentration measured in these samples was 71.30 pCi/g in the sample taken at a depth of 18 inches at core location 0156 on Plate 1 (C0156 on Table X.2). The maximum thorium activity measured was 30.42 pCi/g in a sample taken at a depth of 162 inches at core location 0160 on Plate 1 (C0160 on Table X.2). Of the nine surface locations sampled, four (0634, 0635, 0636, and 0639 on Plate 1) appear to have been located on the slope of the SM/PP Hill. The other five surface locations and the 12 core locations were probably located in the more level area at the top of the hill.

The maximum depth of the core locations in Area J was 234 inches (C0152 and C0156 on Table X.2), and most were sampled at 54 to 72 inches. Mound Plant drawing #FSE 16472 (DOE 1992f) indicates that the depth to bedrock in this area is approximately 36 inches, but this depth probably varies greatly due to the presence of fill material. It is likely that the Area J core locations were sampled to bedrock, but drilling logs are not available to confirm this.

The upper, relatively flat portion of Area J was historically used to stage soils contaminated with thorium and plutonium. Soils and possible other debris were placed in the area as part of excavation projects, including a water line repair below the adjacent water tower, and possible plutonium-contaminated soils from the construction of the overflow pond in the mid-1970s (DOE 1992g). The area may have also been referred to as the dredged materials disposal area (Area 11a) in the map of Hot Waste Burial Sites, reproduced in the Site Scoping Report: Volume 7 - Waste Management (DOE 1992c). In 1988, 150 half-size low specific activity boxes (approximately 150 cubic yards) of soil were removed from the area. Subsequent screening by the Mound Plant soil screening facility indicated levels of thorium and plutonium-238 below 2 and 147 pCi/g, respectively (Rader 1988). The data sheets are included in Appendix E.

10.3. SPOILS DISPOSAL AREA

The spoils disposal area (also known as the construction spoils area) is located south of the overflow pond and Area 18 (Plate 1). This is an engineered disposal area that has been in use since 1985. Soils containing less than 25 pCi/g of plutonium-238 and less than 5 pCi/g of thorium from construction areas at Mound Plant are dumped onto the ground surface, graded, and compacted. This area was not identified in the original Site Survey Project Report, probably because it is only used for the disposal of soils with radioactivity below the guidelines.

Radiochemical Analysis

Table X.2. Mound Site Survey Project - Area J

Plate 1 Location[a]	Coordinates South	Coordinates West	MRC ID No.	Mo-Yr	Depth (inch)	Plutonium-238 (pCi/g)	Thorium[b] (pCi/g)	Tritium (pCi/mL)	Cobalt-60 (pCi/g)	Cesium-137 (pCi/g)	Radium-226 (pCi/g)	Americium-241 (pCi/g)
C0148	3040	2590	10471	08-85	18	0.72	b					
			10472	08-85	36	0.87	b					
			10473	08-85	54	1.29	b					
			10474	08-85	72	4.94	b					
C0149	3040	2610	10475	08-85	18	0.38	b					
			10476	08-85	36	0.45	b					
			10477	08-85	54	5.40	b					
			10478	08-85	72	4.80	b					
C0150	3055	2590	10479	08-85	18	3.94	b					
			10480	08-85	36	1.55	b		3.0	LDL	0.2	LDL
			10481	08-85	54	3.94	b					
C0151	3055	2610	10482	08-85	18	3.58	b					
			10483	08-85	36	10.30	b					
			10484	08-85	54	7.88	b					
C0152	3065	2565	1561	04-83	18	2.60	2.80					
			1562	04-83	36	0.46	b					
			1563	04-83	90	1.89	b					
			1564	04-83	108	1.12	b					
			1565	04-83	126	1.29	b					
			1566	04-83	144	0.06	b					
			1567	04-83	162	0.08	b					
			1568	04-83	180	0.07	b					
			1569	04-83	198	0.27	b					
			1570	04-83	216	0.60	b					
			1571	04-83	234	5.22	b					

Gamma Spectroscopy

[a]Map locations are given using a "C" to designate core locations and an "S" to designate surface locations.

[b]A "b" indicates that the total thorium concentration was less than the background level of 2.0 pCi/g, using FIDLER screening. Therefore, radiochemical analysis was not performed.

[c]Boring logs indicate that these locations were not sampled to bedrock.

FIDLER - field instrument for the detection of low-energy radiation

LDL - The measured concentration was below the lower detection limit, estimated to be 0.5 pCi/g for cobalt-60, cesium-137, and americium-241; and 1 pCi/g for radium-226.

MRC ID - Monsanto Research Corporation identification

NR - No result given

pCi/g - picocuries per gram

pCi/mL - picocuries per milliliter

Table X.2. (page 2 of 3)

Radiochemical Analysis

Plate 1 Location[a]	Coordinates South	Coordinates West	MRC ID No.	Mo-Yr	Depth (inch)	Plutonium-238 (pCi/g)	Thorium[b] (pCi/g)	Tritium (pCi/mL)	Cobalt-60 (pCi/g)	Cesium-137 (pCi/g)	Radium-226 (pCi/g)	Americium-241 (pCi/g)
C0153	3070	2610	10505	08-85	18	0.86	b					
			10506	08-85	36	1.14	b					
			10507	08-85	54	1.16	b					
			10508	08-85	72	0.89	b					
C0154	3080	2610	10509	08-85	18	0.56	b					
			10510	08-85	36	0.14	b					
			10511	08-85	54	0.89	b					
C0155	3090	2600	10512	08-85	18	0.27	b					
			10513	08-85	36	2.24	b					
			10514	08-85	54	11.40	b					
C0156	3075	2600	1572	04-83	18	71.30	2.03					
			1573	04-83	36	NR	4.30					
			1574	04-83	54	6.59	b					
			1575	04-83	72	6.45	b					
			1576	04-83	90	4.81	2.02					
			1577	04-83	108	40.90	2.33					
			1578	04-83	126	1.08	b					
			1579	04-83	144	5.22	b					
			1580	04-83	162	3.42	b					
			1581	04-83	180	8.67	b					
			1582	04-83	198	0.72	b					
			1583	04-83	216	4.10	b					
			1584	04-83	234	9.93	3.02					
	3075	2600	10515	08-85	18	0.83	b					
(Two sets of results were given for the 18-inch depth at these coordinates; however, the dates are different [04-83 and 08-85].)												
C0158[c]	3000	2620	8285	10-84	36	1.95	b					
			8286	10-84	72	25.00	b					
C0159[c]	3100	2620	8283	10-84	108	18.90	b					
			8284	10-84	198	6.91	b					
S0633	3025	2645	2923	10-83	0	47.45	b	6.84				

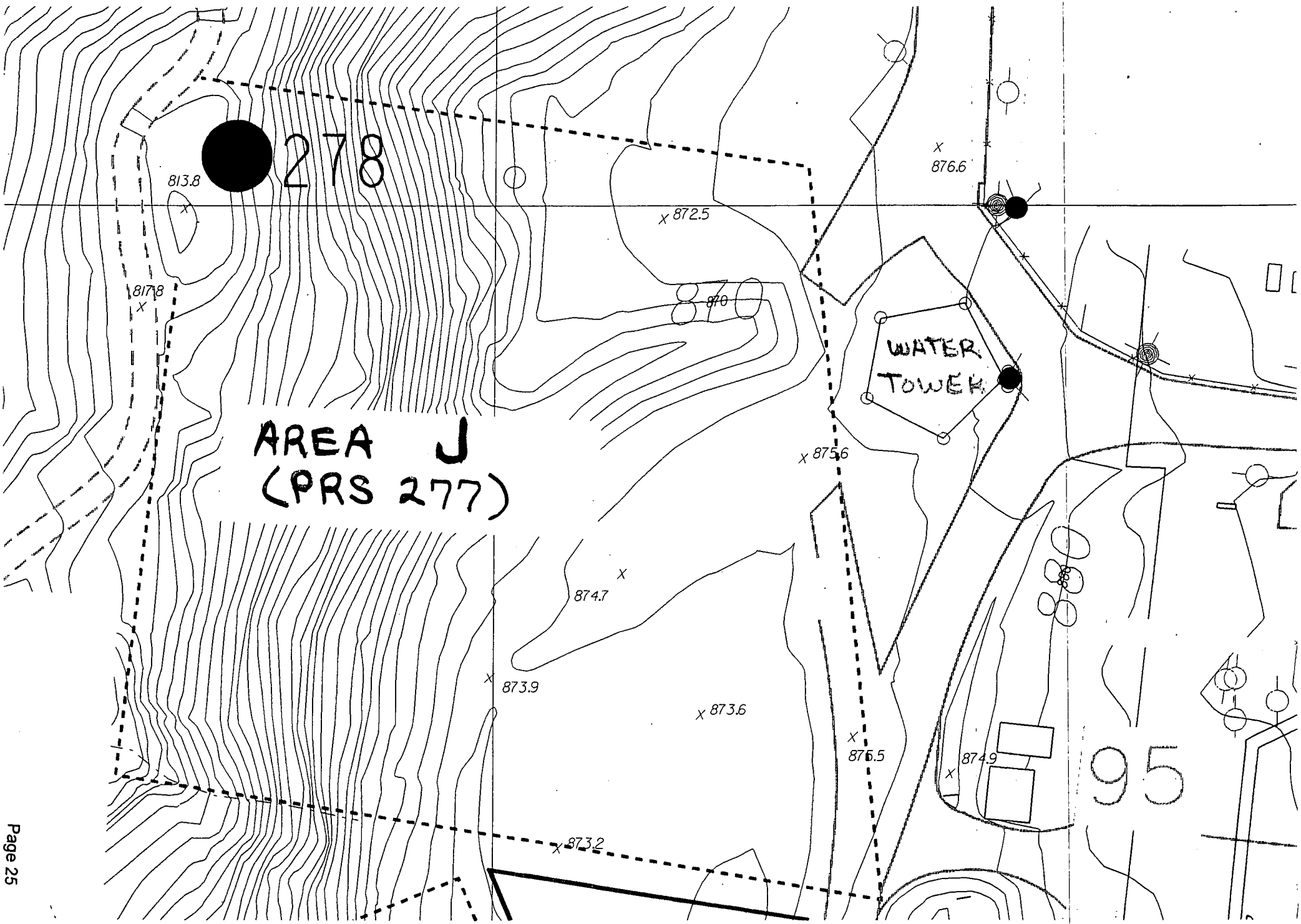
Table X.2. (page 3 of 3)

Plate 1 Location[a]	Coordinates South	Coordinates West	MRC ID No.	Mo-Yr	Depth (inch)	Plutonium-238 (pCi/g)	Thorium[b] (pCi/g)	Tritium (pCi/mL)	Cobalt-60 (pCi/g)	Cesium-137 (pCi/g)	Radium-226 (pCi/g)	Americium-241 (pCi/g)
S0622	3025	2590	4126	10-83	0	17.40	b					
C0160	3180	2745	2441	08-83	18	0.80	b					
			2442	08-83	36	2.60	b		LDL	LDL	0.94	LDL
			2443	08-83	108	0.53	b					
			2444	08-83	126	0.62	b					
			2446	08-83	162	0.66	30.42		LDL	LDL	1	LDL
			2447	08-83	180	3.09	14.58		LDL	LDL	0.9	LDL
			2448	08-83	198	2.60	10.32		LDL	LDL	0.7	LDL
			2449	08-83	216	2.42	b					
			2450	08-83	234	1.70	5.07					
S0621	2950	2645	4113	10-83	0	3.35	b					
S0634	3050	2845	8667	12-84	0	0.31	b					
S0635	3075	2870	8669	12-84	0	0.34	b					
S0636	3100	2820	8666	12-84	0	1.84	b					
S0637	3125	2670	6791	08-84	0	1.45	b					
S0638	3125	2720	6792	08-84	0	0.28	b					
S0639	3125	2820	2924	10-83	0	3.00	b	3.09				

Gamma Spectroscopy

Radiochemical Analysis

Topographical Drawing of Area J and PRS 278


278
813.8
817.8
872.5
870
876.6
WATER TOWER
AREA J
(PRS 277)
875.6
874.7
873.9
873.6
876.5
874.9
880
95
873.2