

3001-0402190004



CH2MHILL

CH2M HILL
Mound, Inc.
1 Mound Road
P.O. Box 3030
Miamisburg, OH
45343-3030

ER-075/03
May 19, 2003

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

SUBJECT: Contract No. DE-AC24-03OH20152
PRS 269 PACKAGE, FINAL

REFERENCE: Statement of Work Requirement 039 - PRS Documents

Dear Mr. Provencher:

Paul Lucas from your office has approved the release of the following document:

- PRS 269 Package, Final

No comments were received during the public review period that ended 9 May 2003. This package is therefore submitted as the final administrative record for this NFA PRS. If you have any questions regarding the document, please contact Dave Rakel at Extension 4203.

Sincerely,

Monte A. Williams
Deputy Project Manager, Environmental Restoration

MAW/KMA/jdg

Enclosure

Approved: Paul Lucas 5/19/03
Paul Lucas Date
CERCLA Program Manager

cc: David Seely, USEPA, (1) w/attachments
Brian Nickel, OEPA, (1) w/attachments
Ruth Vandegrift, ODH, (1) w/attachments
Randy Tormey, DOE/OH, (1) attachments
Terrance Tracy, DOE/HQ, (1) w/attachments
Dann Bird, MMCIC, (3) w/attachment
J. D. Bonfiglio, MESH, (1) w/attachment
Monte Williams, CH2M HILL, (1) w/attachments
John Fulton, CH2M HILL, (1) w/o attachments
Gene Valett, CH2M HILL, (1) w/o attachments

Dave Rakel, CH2M HILL, (1) w/o attachments
Public Reading Room, (4) w/attachments
Admin Records, (2) w/attachment
DCC, (1) w/attachments

MOUND



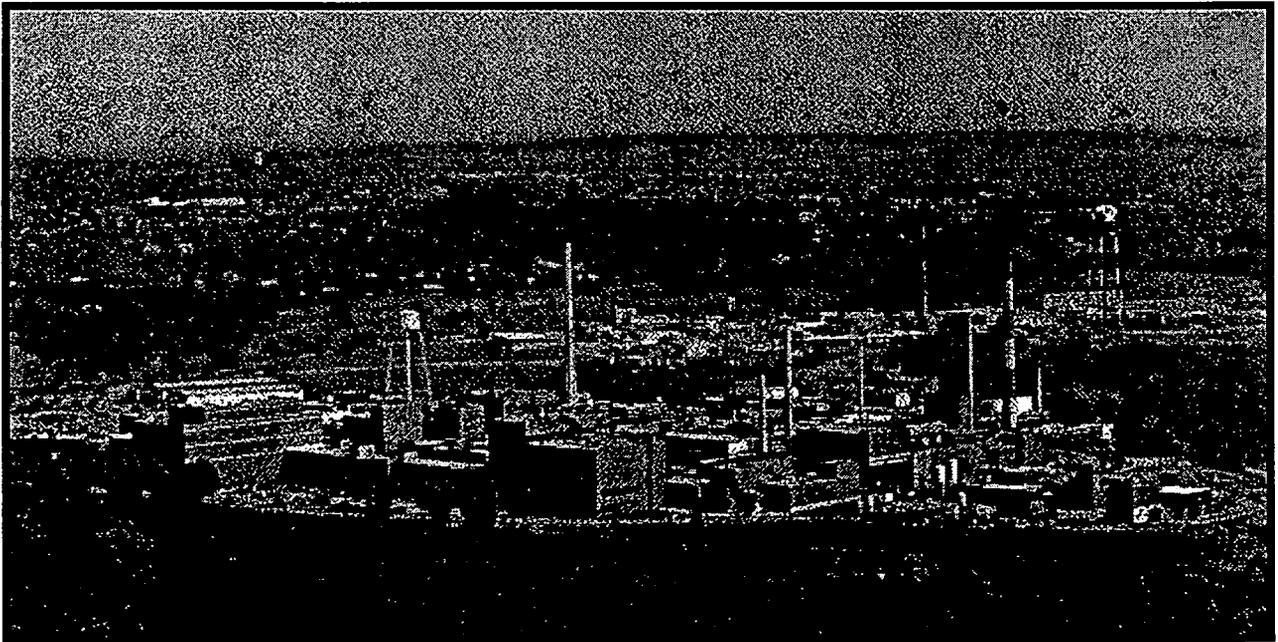
Environmental
Restoration
Program



Miamisburg Closure Project Potential Release Site Package

PRS 269

Final
May 2003





Environmental
Restoration
Program

**MIAMISBURG CLOSURE PROJECT
POTENTIAL RELEASE
SITE PACKAGE**

Notice of Public Review Period



The following Potential Release Site (PRS) package is available for public review in the CERCLA Public Reading Room, 305 E. Central Ave., Miamisburg, Ohio. Public comment on this document will be accepted 09 April 2003 through 09 May 2003.

PRS 269: Building 36 Historic Gasoline Tanks

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

PRS 269 Package Tracking Sheet

| REVISION | DESCRIPTION | DATE |
|-----------------------------|--|-----------------------|
| Regulator Release A | <p>ADDED:</p> <ul style="list-style-type: none"> • Narrative modified concerning Rad. Data (placed on hold for soil gas data). • Soil gas confirmation sampling results. <p>CHANGED:</p> <ul style="list-style-type: none"> • Photograph correction concerning location • Binned Further Assessment, December 18, 1996. • Core team wants a magnetic survey to be conducted to try and locate the tank. If found, then sampling will be required. Sample results distributed and appropriate action in accordance with BUSTR abandon remove regulations will be enacted. If tank not present, the PRS will be revised and rebinned. | Sept. 23, 1996 |
| Draft Proposed Final | Addendum 1 submitted to CT. No USEPA comments. OEPA comments resulted in adding GPR explanatory information as Appendix A to Addendum 1. PRS binned NFA on 19 March 2003. Added Addendum 1 to original package and submitted as Public Review Draft. | February 2003 |
| Public Review Draft | Public review period: 09 April to 09 May 2003. | April 2003 |
| Final | No comments received. | May 2003 |

ADDENDUM 1

SUPPORTING NFA RECOMMENDATION

MOUND

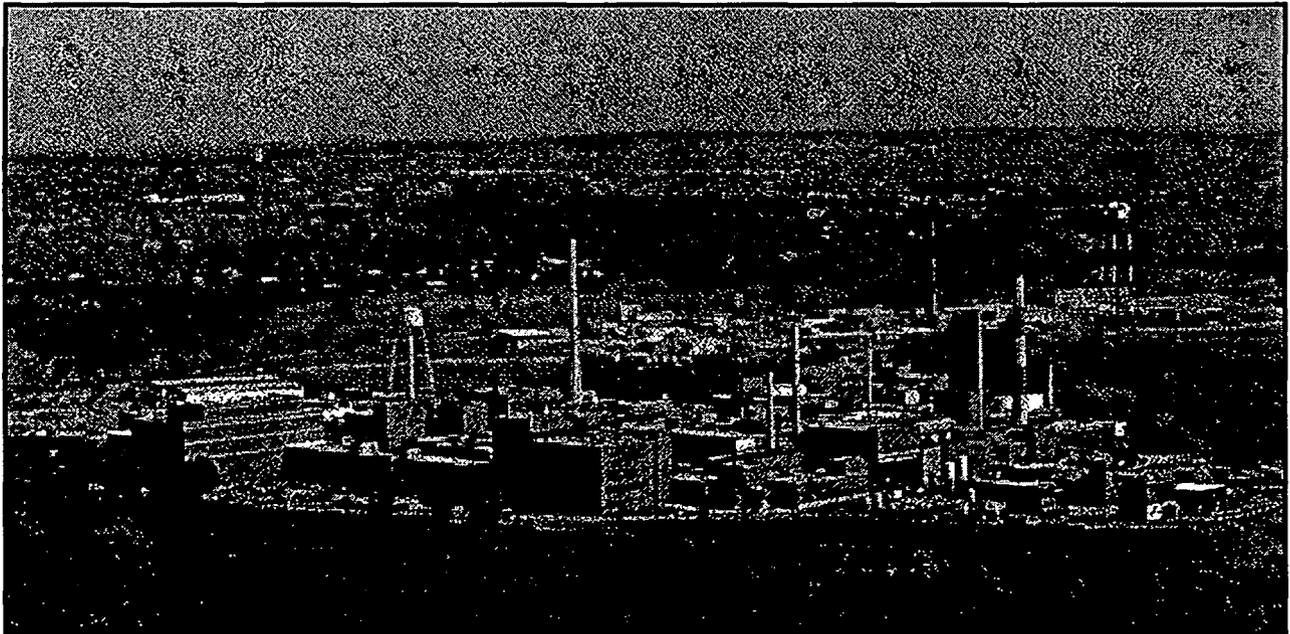


**Environmental
Restoration
Program**



**Miamisburg Closure Project
Potential Release Site Package
PRS 269
Addendum 1**

Final
May 2003



PRS HISTORY:

Potential Release Site (PRS) 269 is an area of land where two underground fuel storage tanks were shown to be located in support of original plant construction in a 1948 construction drawing that indicated a fueling facility existed near the northwest corner of Building 50. ^(1,2) The drawing shows four pumps supplied by two underground tanks. No documentation of the tanks having been removed has been found, although it is believed that they were removed as part of construction demobilization. Figure 1 shows the location of PRS 269. PRS 269 was binned Further Assessment (FA) by the Core Team in December 1996 based on the suspected presence of the tanks. FA included an assessment to locate the tanks, and if the tanks were found to be present, sampling should be conducted. If the tanks were determined to be no longer present, the PRS would be re-binned.

FURTHER ASSESSMENT ACTIVITY:

FA was successfully completed in July 2000 by means of a ground penetrating radar (GPR) survey ⁽³⁾. An explanation of GPR technology and its application to detecting underground tanks is included as Appendix A to this document. The GPR survey report is included as Appendix A in the FA Data Report. ⁽⁴⁾ A magnetic survey of the area was not possible due to interferences from metal fencing and the underground utility duct bank that traverses PRS 269 in the north/south direction. The GPR survey results did not identify any underground tanks at PRS 269.

FIGURES:

Figure 1: Location of PRS 269

APPENDICES:

Appendix A: Ground Penetrating Radar Explanatory Information

REFERENCES:

- 1) Maxon Construction Company, Inc., Drawing No. MCC-11/1, "General Plot Plan – Temporary Electric and Telephone", 1948 (included as p. 29 of PRS 269 original package)
- 2) Monsanto Research Corporation, Drawing No. FSD-852240, "Control Monuments with Plant Overlay", 1985 (included as p. 30 of PRS 269 original package)
- 3) Ground Penetrating Radar Survey, PRS 269, Xenon Geosciences, Inc. July 2000
- 4) PRS 269 FA Data Report, Rev. 0, February 2003

PREPARED BY:

Gary Miller, CH2MHill, ER Technical Staff
Karen M. Arthur, CH2MHill, ER QA

**MIAMISBURG CLOSURE PROJECT
PRS 269**

RECOMMENDATION:

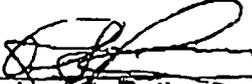
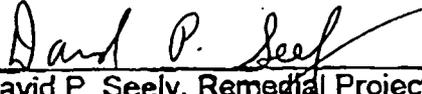
Potential Release Site (PRS) 269 is an area of land where two underground fuel storage tanks were shown to be located in support of original plant construction in a 1948 construction drawing that indicated a fueling facility existed near the northwest corner of Building 50. No documentation of the tanks having been removed has been found, although it is believed that they were removed as part of construction demobilization. PRS 269 was binned Further Assessment (FA) by the Core Team in December 1996 based on the suspected presence of the tanks. FA included an assessment to locate the tanks, and if the tanks were found to be present, sampling should be conducted. If the tanks were determined to be no longer present, PRS 269 would be re-binned.

FA has been successfully completed by means of a ground penetrating radar (GPR) survey that did not identify any underground tanks at PRS 269.

Therefore, the Core Team recommends No Further Assessment for PRS 269.

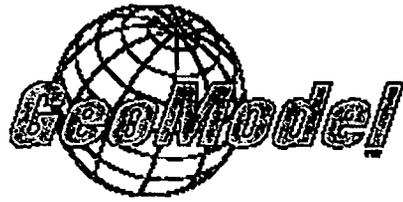
A PRS Package with an NFA recommendation signed by the Core Team will be placed in the Public Reading Room for a 30-day review period. Upon closure of the public review comments, if any, the PRS Package will be issued as a final document and made available in the Public Reading Room.

CONCURRENCE:

| | | |
|----------|--|-------------------|
| DOE/MCP: |  Robert S. Rothman, Remedial Project Manager | 3/19/03 (date) |
| USEPA: |  David P. Seely, Remedial Project Manager | 3/26/03 (date) |
| OEPA: |  Brian K. Nickel, Project Manager | 3/19/03 (date) |

APPENDIX A

GROUND PENETRATING RADAR EXPLANATORY INFORMATION

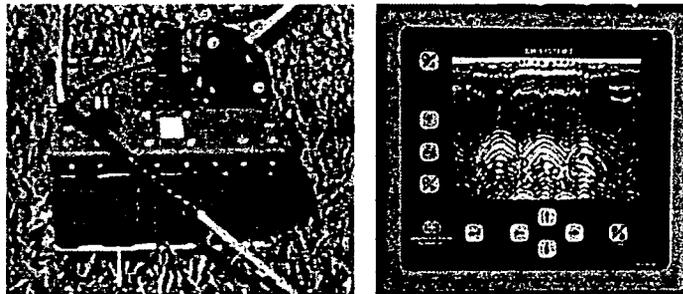


Ground Penetrating Radar

Basic Operating Principles

Ground penetrating radar is a nondestructive geophysical method that produces a continuous cross-sectional profile or record of subsurface features, without drilling, probing, or digging. Ground penetrating radar (GPR) profiles are used for evaluating the location and depth of buried objects and to investigate the presence and continuity of natural subsurface conditions and features.

Ground penetrating radar operates by transmitting pulses of ultra high frequency radio waves (microwave electromagnetic energy) down into the ground through a transducer or antenna. The transmitted energy is reflected from various buried objects or distinct contacts between different earth materials. The antenna then receives the reflected waves and stores them in the digital control unit.



*Equipment pictured
is not identical to
that used for Mound
surveys.*

*GDM
3/27/03*

400 MHz Antenna and SIR-2 Digital Control Unit

The ground penetrating radar antenna (transducer) is pulled along the ground by hand or behind a vehicle.



*Photos do not depict
survey activities
on the Mound Site*

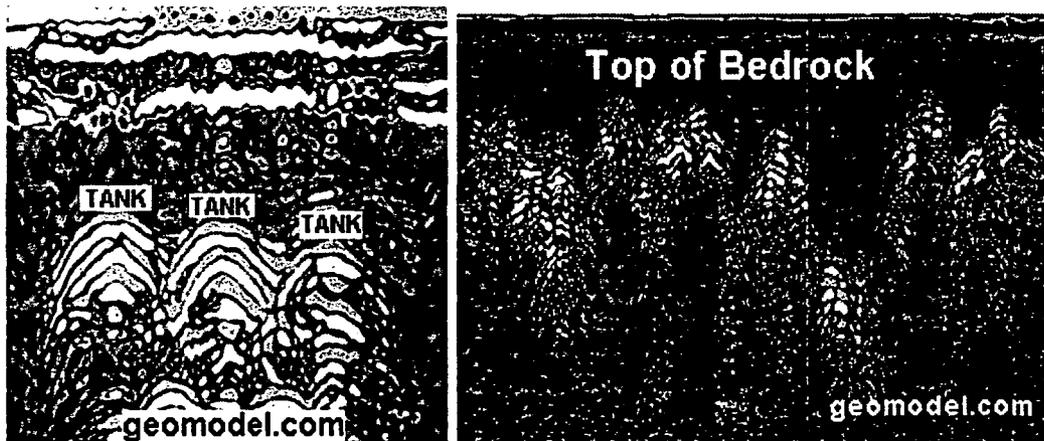
*GDM
3/27/03*

Hand-towed GPR Survey and Vehicle-towed GPR survey

When the transmitted signal enters the ground, it contacts objects or subsurface strata with different electrical conductivities and dielectric constants. Part of the ground penetrating radar waves reflect off of the object or interface; while the rest of the waves pass through to the next interface.

The reflected signals return to the antenna, pass through the antenna, and are received by the digital control unit. The control unit registers the reflections against two-way travel time in nanoseconds and then amplifies the signals. The output signal voltage peaks are plotted on the ground penetrating radar profile as different color bands by the digital control unit.

For each reflected wave, the radar signal changes polarity twice. These polarity changes produce three bands on the radar profile for each interface contacted by the radar wave.



Survey results
shown here are
not from the
Mound PRS 269
survey.
GDM
3/27/03

Three Buried Tanks and Irregular Bedrock Topography

Ground penetrating radar waves can reach depths up to 100 feet (30 meters) in low conductivity materials such as dry sand or granite. Clays, shale, and other high conductivity materials, may attenuate or absorb GPR signals, greatly decreasing the depth of penetration to 3 feet (1 meter) or less.

The depth of penetration is also determined by the GPR antenna used. Antennas with low frequencies of from 25 to 200 MHz obtain subsurface reflections from deeper depths (about 30 to 100 feet or more), but have low resolution. These low frequency antennas are used for investigating the geology of a site, such as for locating sinkholes or fractures, and to locate large, deep buried objects.

Antennas with higher frequencies of from 300 to 1,000 MHz obtain reflections from shallow depths (0 to about 30 feet), and have high resolution. These high frequency antennas are used to investigate surface soils and to locate small or large, shallow buried objects and rebar in

ORIGINAL DOCUMENT

SUPPORTING FA RECOMMENDATION

MOUND



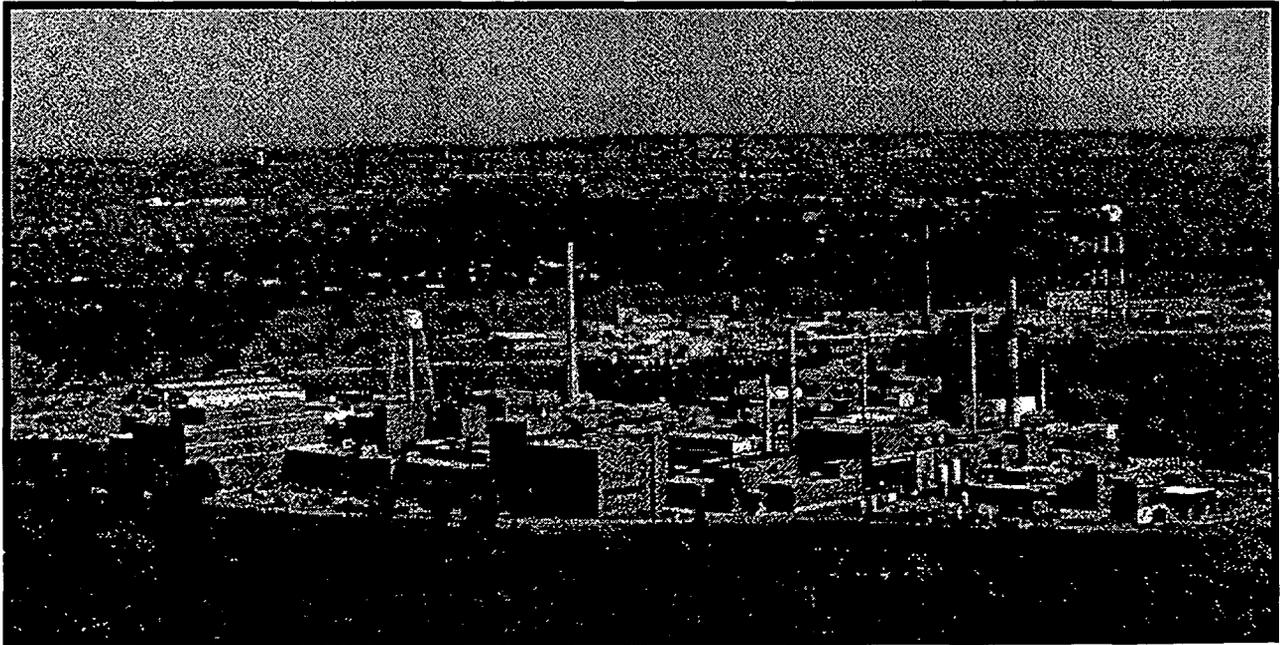
**Environmental
Restoration
Program**



OhioEPA

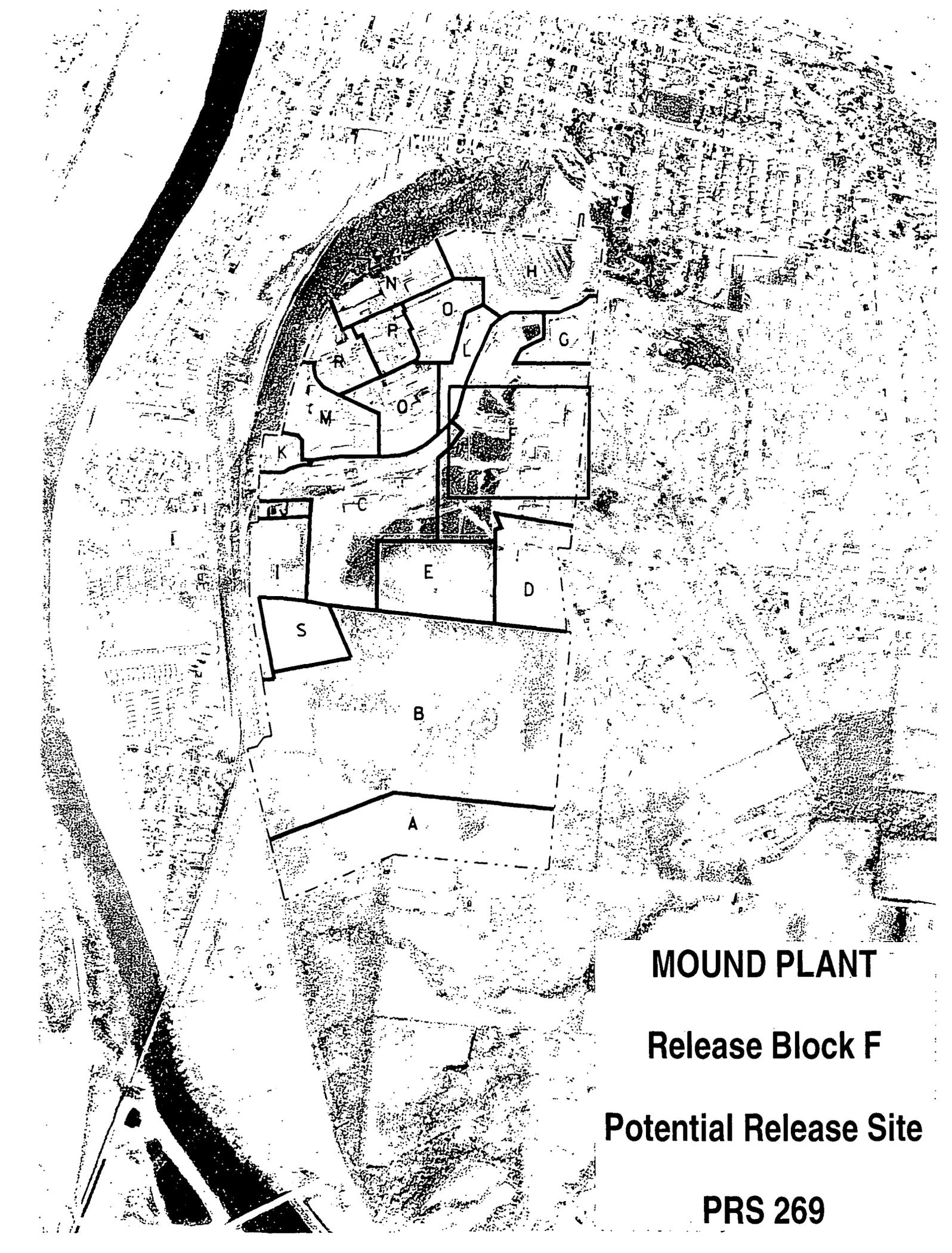
ENVIRONMENTAL PROTECTION AGENCY

MOUND PLANT
Potential Release Site Package
PRS 269



PRS 269 (FILE)

| REV | DESCRIPTION | DATE |
|--------------------------------------|---|-----------------------|
| DRAFT | | |
| REGULATOR RELEASE A | <p>ADDED:</p> <ul style="list-style-type: none"> - Narrative modified concerning Rad. data (placed on hold for soil gas data). - Soil Gas Confirmation Sampling results. <p>CHANGED:</p> <ul style="list-style-type: none"> - Photograph correction concerning location. - Binned Further Assessment, Dec. 18, 1996. - CORE team wants a magnetic survey to be conducted to try and locate the tank. If found, then sampling will be required. Sample results distributed and appropriate action in accordance with BSTR abandon/remove regulations will enacted. If tank not present, the PRS will be revised and rebinned. | Sept. 23, 1996 |
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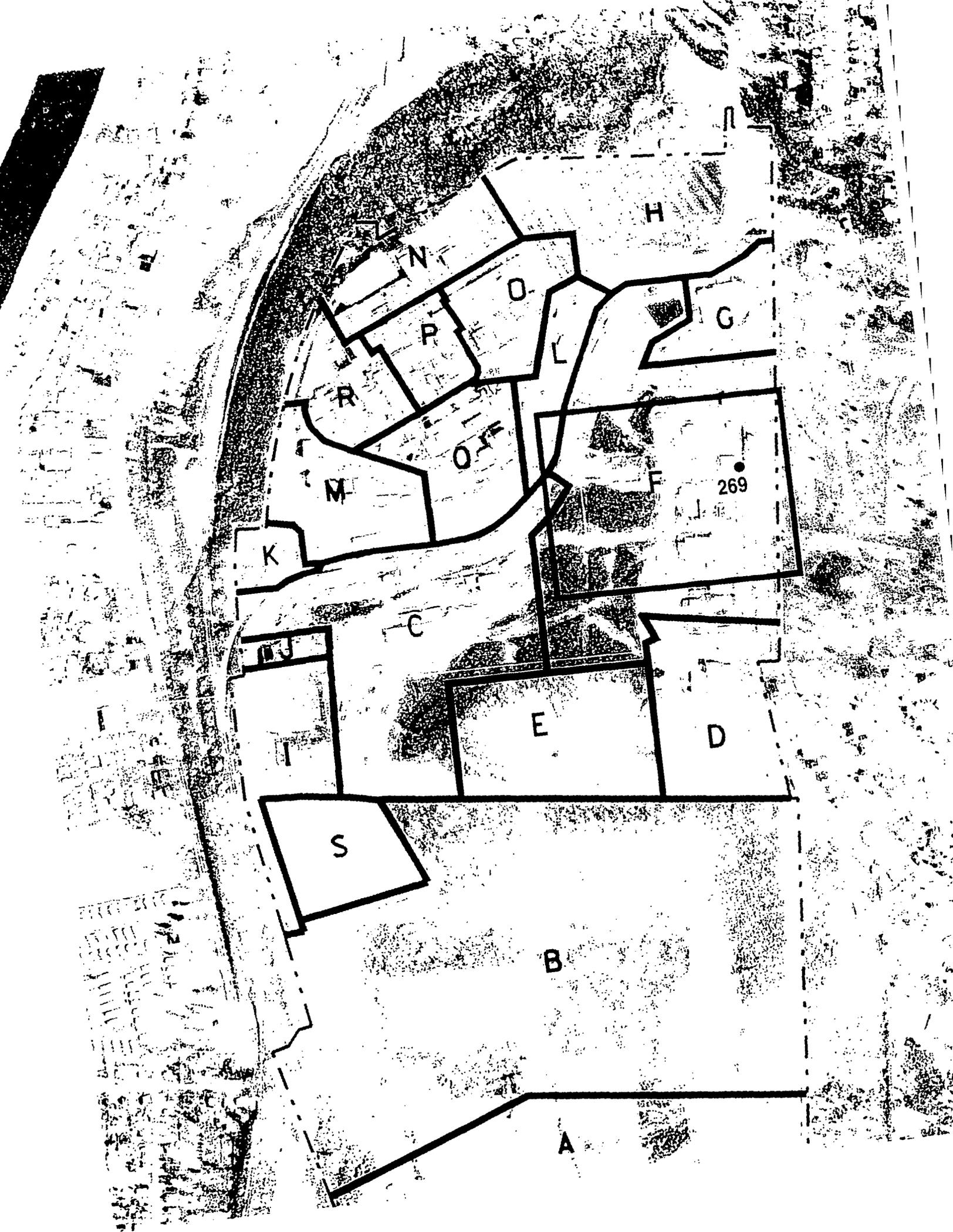


MOUND PLANT

Release Block F

Potential Release Site

PRS 269



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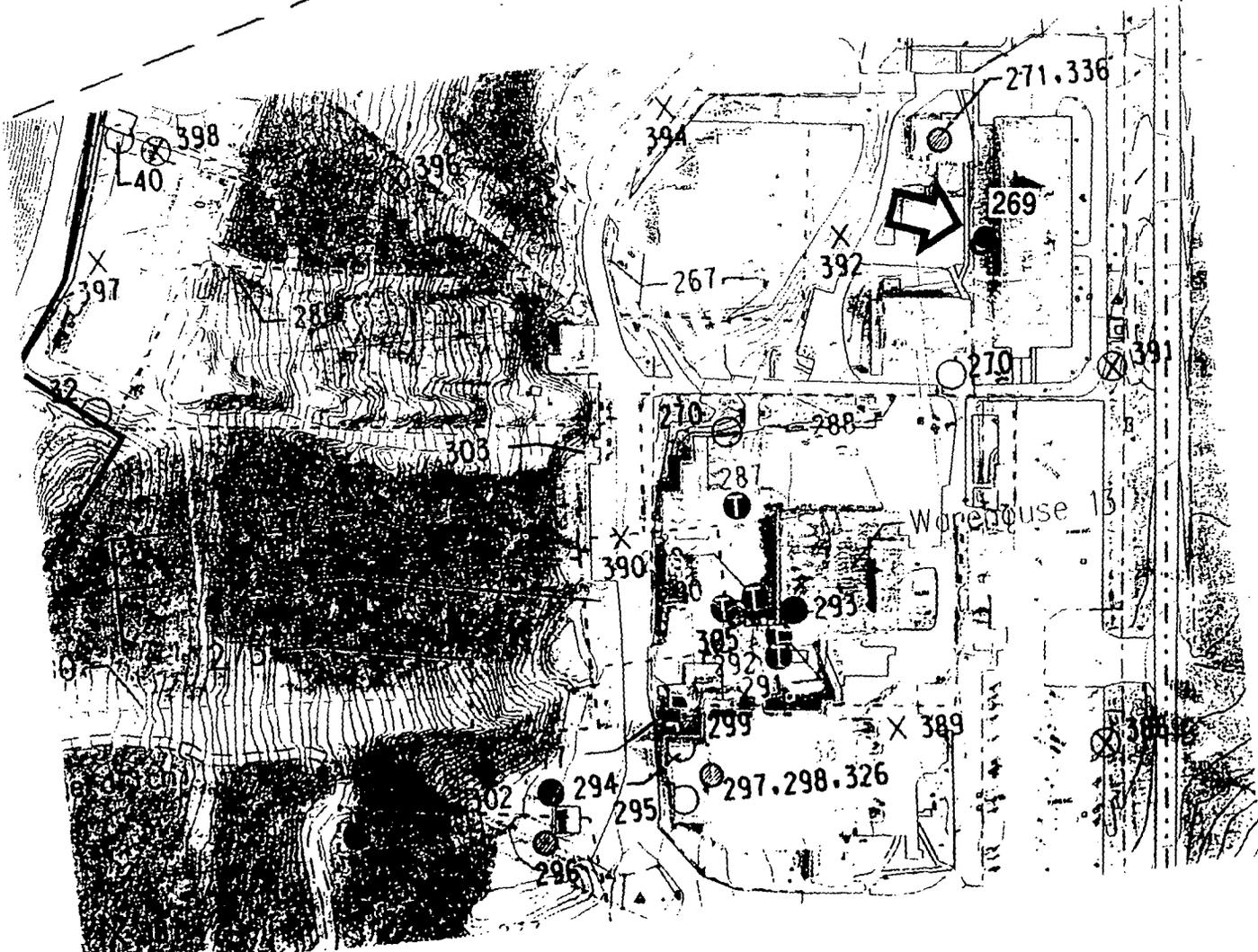
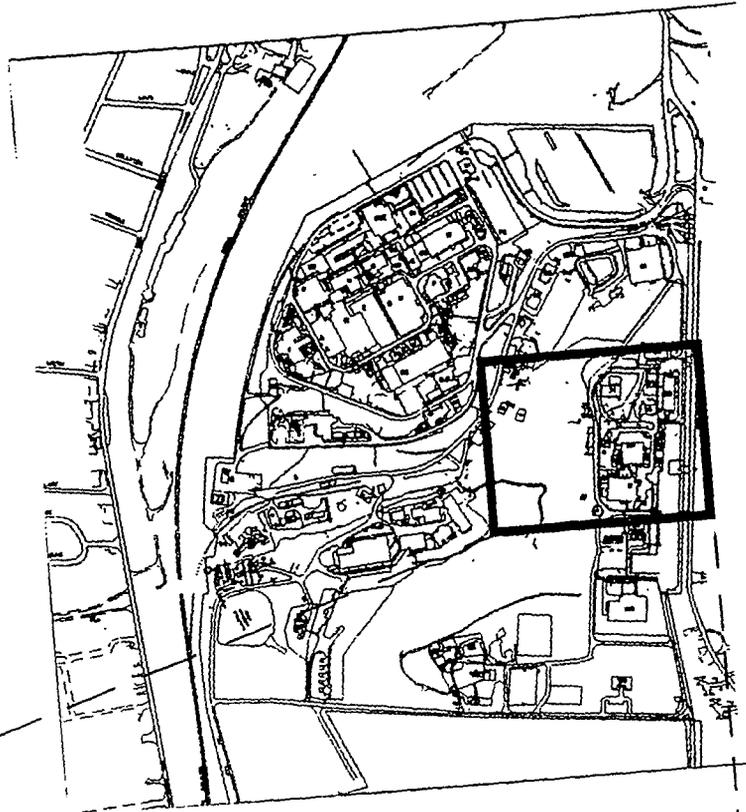
I

S

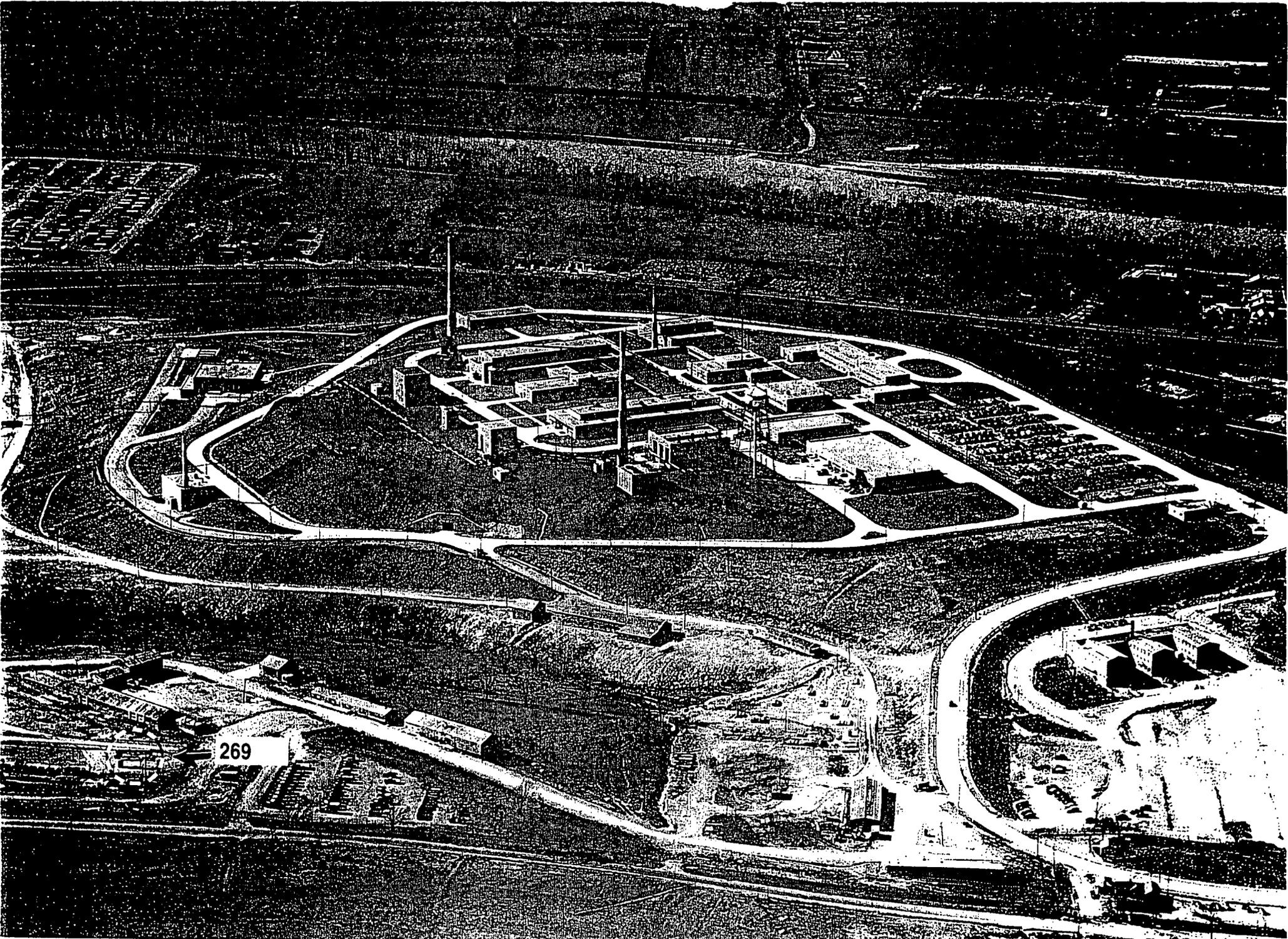
B

A

MOUND PLANT
Release Block F
Potential Release Site
PRS 269







269

PRS 269

PRS HISTORY:

Potential Release Site (PRS) 269 is an area of land where two underground fuel tanks were shown to be located to support the original plant construction.^{1,2} A 1948 construction drawing⁵ indicates that a fueling facility existed at a location near the northwest corner of Building 50.^{5,6} The drawing shows four pumps supplied by two underground storage tanks.⁵ The volume and construction of these tanks have not been determined, nor has documentation concerning closure of the tanks been found, although it is believed that the tanks were probably removed as part of construction demobilization. The site of these tanks is near the northwest corner of Building 50.^{5,6} This site was identified during the Mound Plant Underground Storage Tank Program and Regulatory Status Review as a result of a review of historic construction drawings.

CONTAMINATION:

Radiological data from the OU5, Non-AOC Field Report indicated no plutonium or thorium concentrations above Mound action levels in the area.³

A passive soil gas survey, in 1994, indicated that PRS 269 is on the margin of an area that exhibits relatively high total aromatic hydrocarbons (1,013,033 ion counts) and total petroleum hydrocarbons (2,927,024 ion counts); low semivolatile hydrocarbons (3942 ion counts). No halogenated hydrocarbons were detected.³

In February 1996, the *Soil Gas Confirmation Investigation* sampled the soil at 100 locations on the Mound Plant site. Each sample was collected over a depth of 1 to 3 feet and analyzed for volatiles, semivolatiles, PCBs, pesticides, metals, radionuclides, and explosives. The investigation did not sample the location of PRS 269, however two soil gas confirmation samples were taken in the same area of elevated readings from the passive soil gas survey. Sample 000005 was located about 200 feet southeast and sample 000030 about 300 feet southwest of PRS 269.⁴

Results showed that all samples in the vicinity of PRS 269 contained contaminant concentrations less than the acceptable 10^{-6} risk based regulatory or ALARA guideline criteria.^{4,7}

READING ROOM REFERENCES:

- 1) OU9, Site Scoping Report: Volume 12 - Site Summary Report, December 1994. (pages 5-7)
- 2) Mound Plant Underground Storage Tank Program Plan and Regulatory Status Review, November 1992. (pages 8-9)
- 3) OU5, Operational Area Phase I Investigation, Non-AOC Field Report, June 1995. (pages 10-17)
- 4) Further Assessment: Soil Gas Confirmation Sampling, May 1996. (pages 18-28)
- 7) Risk Based Guideline Values, December 1995.

OTHER REFERENCES:

- 5) Maxon Construction Company, Inc., Drawing No. MCC-11/1, "General Plot Plan - Temporary Electric & Telephone", 1948. (page 29)
- 6) Monsanto Research Corporation, Drawing No. FSD-852240, "Control Monuments with Plant Overlay", 1985. (page 30)

PREPARED BY:

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

REFERENCE MATERIAL
PRS 269

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* | Results | Ref |
| 264 | Explosive Waste Storage Bunker (Magazine 53) | I-7 | In service | Classified, non-explosive wastes Explosion residuals (primarily aluminum residuals) Contaminants listed under Explosive Waste Storage Bunker (Magazine 53) Detonators, Detonating cord, Thermite, Pyrotechnic powders, Primary explosives High explosive powder, PETN, PBX, RDX, HMX, HNS, CP HNS (hexanitrostilbene) | 4, 5, 18 | None Suspected | | | No Data | | |
| 265 | Biodegradation Unit | I-7 | Inactive | Soapy wastewater containing explosives constituents | 4, 5, 18 | Suspected | S | 7, 18 | See Pyrotechnic Waste Shed | | 4 |
| 266 | Area 8, Thorium-Contaminated Soils from Areas 1 and 9 | F-9 | Grounds | Thorium-232, Plutonium-238 | 1, 4, 5, 18 | Thorium | S | 4, 6 | 14, 15, 16 | Table B.1 (Table V.3 in Ref. 6) | 6 |
| 267 | Area 9, Thorium Storage and Redrumming Area | F-9 G-9 | Grounds | Plutonium-238, Thorium Thorium sludge constituents (c) | 1, 4, 5, 18 | Thorium | S | 4, 6 | 14 | Table B.1 (Table V.4 in Ref. 6) | 6 |
| 268 | Building 31, Contaminated Material Storage Building | F-9 | In service | Plutonium-238 Thorium Tritium | 4 3 | None Suspected | | | See Area 9 | Table B.9 | 6 |
| 269 | Building 36* Historic Gasoline Tanks (Tanks 239 and 240) | G-10 | Historical | Gasoline | 3 | No information on when tanks were removed | | | No Data | | |
| 270 | Underground Sanitary Sewer Lines G6 & G7 | G-10 | In Service | Organic solvents, plating solutions, laboratory chemicals, nitric acid, hydrochloric acid, methylene chloride, strong acids and bases | 4 | Suspected VOCs | S | 4 | 3, 4, 5, 6, 9, 10, 11, 12, 13, 16 | Tables B.6, B.7, B.8, and B.9 | 7 |
| 271 | Building 37 Sanitary Waste Tank (Tank 100) | F-10 | In service | Sanitary wastes | 3, 4 | None Suspected | | | No Data | | |

* ACTUAL LOCATION IS NEAR BUILDING 50. REFER TO DISCUSSION REFERENCES 3 & 4.

- 1 - Soil Gas Survey - Freon 11, Freon 113, Trans-1,2-Dichloroethylene, Cis-1,2-Dichloroethylene, 1,1,1-Trichloroethane, Perchloroethylene, Trichloroethylene, Toluene
- 2 - Gamma Spectroscopy - Thorium-228, -230, Cobalt-60, Cesium-137, Radium-224, -226, -228, Americium-241, Actinium-227, Bismuth-207, Bismuth-210m, Potassium-40
- 3 - Target Analyte List
- 4 - Target Compound List (VOC)
- 5 - Target Compound List (SVOC)
- 6 - Target Compound List (Pesticides/Polychlorinated Biphenyl)
- 7 - Dioxins/Furans
- 8 - Extractable Petroleum Hydrocarbons (EPH)/Total Petroleum Hydrocarbons (TPH)
- 9 - Lithium
- 10 - Nitrate/Nitrite
- 11 - Chloride
- 12 - Explosives
- 13 - Plutonium-238
- 14 - Plutonium-238, Thorium-232
- 15 - Cobalt-60, Cesium-137, Radium-226, Americium-241
- 16 - Tritium

Reference List

1. DOE 1986 "Phase I: Installation Assessment Mound [DRAFT]."
2. DOE 1992a "Remedial Investigation/Feasibility Study, Operable Unit 9, Site-Wide Work Plan (Final)."
3. DOE 1992c "Mound Plant Underground Storage Tank Program Plan & Regulatory Status Review (Final)."
4. DOE 1993a "Site Scoping Report: Vol. 7 - Waste Management (FINAL)."
5. EPA 1988a "Preliminary Review/Visual Site Inspection for RCRA Facility Assessment of Mound Plant"
6. DOE 1993d "Operable Unit 9, Site Scoping Report: Vol. 3 - Radiological Site Survey (FINAL)."
7. DOE 1993c "Operable Unit 3, Misc. Sites Limited Field Investigation Report."
8. DOE 1992d "Reconnaissance Sampling Report Decontamination & Decommissioning Areas, OU6, (FINAL)."
9. Fentiman 1990 "Characterization of Mound's Hazardous, Radioactive and Mixed Wastes."
10. DOE 1992f "Operable Unit 9, Site Scoping Report: Vol. 9 - Spills and Response Actions (FINAL)."
11. Styron and Meyer 1981 "Potable Water Standards Project: Final Report."
12. DOE 1993b "Reconnaissance Sampling Report - Soil Gas Survey & Geophysical Investigations, Mound Plant Main Hill and SM/PP Hill (FINAL)."
13. DOE 1993d "Operable Unit 9, Site Scoping Report: Vol. 3 - Radiological Site Survey (FINAL)."
14. DOE 1991b "Main Hill Seeps, Operable Unit 2, On-Scene Coordinator Report for CERCLA Section 104 Remedial Action, West Powerhouse PCB Site."
15. Halford 1990 "Results of South Pond Sampling."
16. DOE 1993e "Operable Unit 4, Special Canal Sampling Report, Miami Erie Canal."
17. DOE 1990 "Preliminary Results of Reconnaissance Magnetic Survey of Mound Plant Areas 2, 6, 7, and C."
18. DOE 1992a "Remedial Investigation/Feasibility Study, Operable Unit 9, Site-Wide Work Plan (FINAL)."
19. Rogers 1975 "Mound Laboratory Environmental Plutonium Study, 1974."
20. DOE 1992h "Ground Water and Seep Water Quality Data Report Through First Quarter, FY92."
21. Dames and Moore 1976a, b "Potable Water Standards Project Mound Laboratory" and "Evaluation of the Buried Valley Aquifer Adjacent to Mound Laboratory."
22. DOE 1992i "Closure Report, Building 34 - Aviation Fuel Storage Tank."
23. DOE 1992j "Closure Report, Building 51 - Waste Storage Tank."
24. DOE 1994 "Operable Unit 1, Remedial Investigation Report."
25. EG&G 1994 "Active Underground Storage Tank Plan."

Environmental Restoration Program

**MOUND PLANT UNDERGROUND
STORAGE TANK PROGRAM PLAN
AND REGULATORY STATUS REVIEW**

**MOUND PLANT
MIAMISBURG, OHIO**

November 1992

**FINAL
(Revision 0)**

**Department of Energy
Albuquerque Field Office**

**Environmental Restoration Program
EG&G Mound Applied Technologies**



~~2.3.26. Building 19, Historic Gasoline Tank (Tank 238)~~

~~Built during the initial construction of Mound Plant in the 1940s, Building 19 is reported to have served as a vehicle service and maintenance facility for the Plant construction contractor (Kabot, 1992c). Two gasoline pumps at the facility are visible in a historical drawing, and are believed to have been supplied by a UST. The number, volume, and construction of the tank(s) have not been determined, nor has documentation concerning closure of the tank(s) been found, although it is believed that the tank(s) has been removed.~~

~~Because the historic gasoline tank(s) at Building 19 is thought to have been closed by removal, the existence of the tank(s) and any evidence of a release is subject to investigation by the ER Program (FFA) in Operable Unit 5.~~

2.3.27 Building 36*, Historic Gasoline Tanks (Tanks 239 and 240)

A very old construction drawing (circa 1948) indicates that a fueling facility existed at the location of what is now Building 36*. The drawing shows four pumps supplied by two USTs. The volume and construction of these tanks have not been determined, nor has documentation concerning closure of the tanks been found, although it is believed that the tanks have been removed.

Because the historic gasoline tanks at Building 19 are thought to have been closed by removal, the existence of the tanks and any evidence of a release is subject to investigation by the ER Program (FFA) in Operable Unit 5.

~~2.3.28 SM Building, Historic Septic Tank (Tank 241)~~

~~Historically, a sanitary septic tank located southeast of Building 30 served the SM Building. This tank is believed to have been constructed as a concrete vault, about 15 feet by 8 feet, and of unknown volume, that served the SM leach field downslope of the tank. Discharges to the tank took place from 1960 when it was built to 1964 when it was taken out of service and when the sanitary sewer connected to the sewage disposal facility. Overflow of the alpha wastewater system in room SM-1, may have contributed plutonium contamination to the tank and leach field. The D&D of the SM leach field originally included the removal of the tank, but the tank could not be located when excavation started. The tank may have been removed during an earlier construction project in the area (DOE, 1992c).~~

* ACTUAL LOCATION IS NEAR
BUILDING 50. REFER TO
DISCUSSION REFERENCES 3 & 4.

Environmental Restoration Program

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

**MOUND PLANT
MIAMISBURG, OHIO**

VOLUME II - APPENDICES A-G

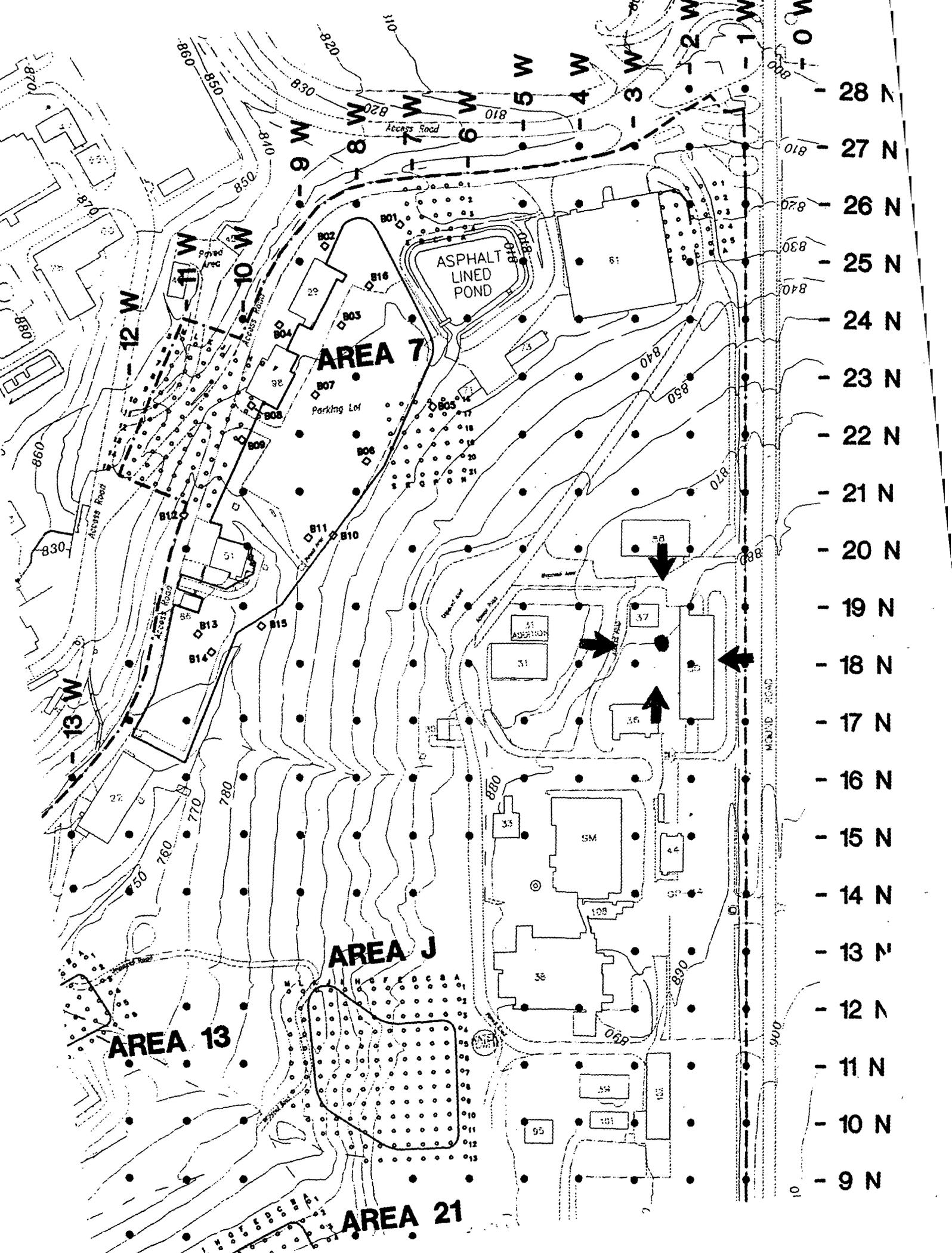
June 1995

Final (Revision 0)

**U.S. Department of Energy
Ohio Field Office**



EG&G Mound Applied Technologies



FIDLER Data

Mound Soil
Screen Data

APPENDIX D

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

| SMPID | FIDLER SURVEY DATA | | | | | MOUND SOIL SCREENING FACILITY DATA | | | |
|------------------|-------------------------------|------------------------|-------------------------------|------------------------|-----------------------------------|------------------------------------|--------------|-----------------|--------------|
| | Contamination Criteria CH1 | FIDLER Readings CH1 | Contamination Criteria CH2 | FIDLER Readings CH2 | FIDLER Readings Out Channel | Plutonium - 238 | | Thorium - 232 | |
| | Units: CPM | Units: CPM | Units: KCPM | Units: KCPM | Units: KCPM | Units: pCi/g | | Units: pCi/g | |
| | RESULTS | RESULTS | RESULTS | RESULTS | RESULTS | RESULTS | Note: | RESULTS | Note: |
| 17N06 | 130 | 100 | 6.5 | 5.0 | NC | 0 | a | 0.9 | a |
| 17N07 | 170.3 | 130 | 9.72 | 6.5 | NC | 21 | a | 1.2 | a |
| 17N08 | 170.3 | 130 | 9.72 | 8.0 | NC | 19 | a | 1.2 | a |
| 17N09 | 170.3 | 80 | 9.72 | 5.5 | NC | NC | | NC | |
| 17N10 | 170.3 | 100 | 9.72 | 6.0 | NC | NC | | NC | |
| 17N11 | 170.3 | 90 | 9.72 | 7.0 | NC | NC | | NC | |
| 17N12 | 152.1 | 40 | 8.45 | 4.5 | NC | 6 | a | 0.6 | a |
| 18N01 | 253.5 | 185 | 12.48 | 9.0 | NC | 16 | a | 1.1 | a |
| 18N02 | 130 | 80 | 6.5 | 4.0 | NC | WIPE | c | WIPE | c |
| 18N03 | 130 | 75 | 6.5 | 5.0 | NC | WIPE | c | WIPE | c |
| 18N04 | 130 | 60 | 6.5 | 4.5 | NC | 6 | a | 0.8 | a |
| 18N06 | 130 | 90 | 6.5 | 6.5 | NC | WIPE | c | WIPE | c |
| 18N07 | 170.3 | 100 | 9.72 | 7.0 | NC | 13 | a | 0.7 | a |
| 18N08 | 170.3 | 170 | 9.72 | 11.0 | NC | 22 | a | 1.1 | a |
| 18N09 | 170.3 | 150 | 9.72 | 10.5 | NC | NR | | NR | |
| 18N10 | 152.1 | 100 | 8.45 | 6.5 | NC | 0 | a | 0.3 | a |
| 18N11 | 253.5 | 155 | 12.48 | 9.5 | NC | 3 | a | 0.6 | a |
| 18N12 | 130 | 85 | 6.5 | 4.0 | NC | NC | | NC | |
| 18N13 | 130 | 70 | 6.5 | 5.0 | NC | 4 | a | 0.8 | a |
| 18N14 | 130 | 60 | 6.5 | 4.0 | NC | WIPE | c | WIPE | c |
| 18N15 | 130 | 65 | 6.5 | 4.0 | NC | WIPE | c | WIPE | c |
| 18N16 | 130 | 60 | 6.5 | 5.0 | NC | WIPE | c | WIPE | c |
| 18N17 | 176.8 | 325 | 8.97 | 20.0 | 45 | 56 | b | 15.9 | b |
| 18N18 | 176.8 | 125 | 8.97 | 7 | NC | 25 | b | 2.4 | b |
| 18N19 | 176.8 | 170 | 8.97 | 9.5 | NC | 39 | b | 0.9 | a |
| 18N20 | 176.8 | 170 | 8.97 | 9.5 | NC | 10 | a | 1.1 | a |
| 19N01 | 176.8 | 70 | 8.97 | 3.5 | NC | 3 | a | 0.2 | a |
| 20N01 | 253.5 | 95 | 12.48 | 5.0 | NC | 16 | a | 0.6 | a |
| 20N02 | 130 | 105 | 6.5 | 6.5 | NC | 8 | a | 0.7 | a |

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APPENDIX D

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

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

NR - Not recorded

NC - No sample/reading taken

NA - Reading not taken; contamination criteria not exceeded.

a - Mound Soil Screening Facility detection level not exceeded.

b - Concentration at or above the Mound Soil Screening Facility detection level.

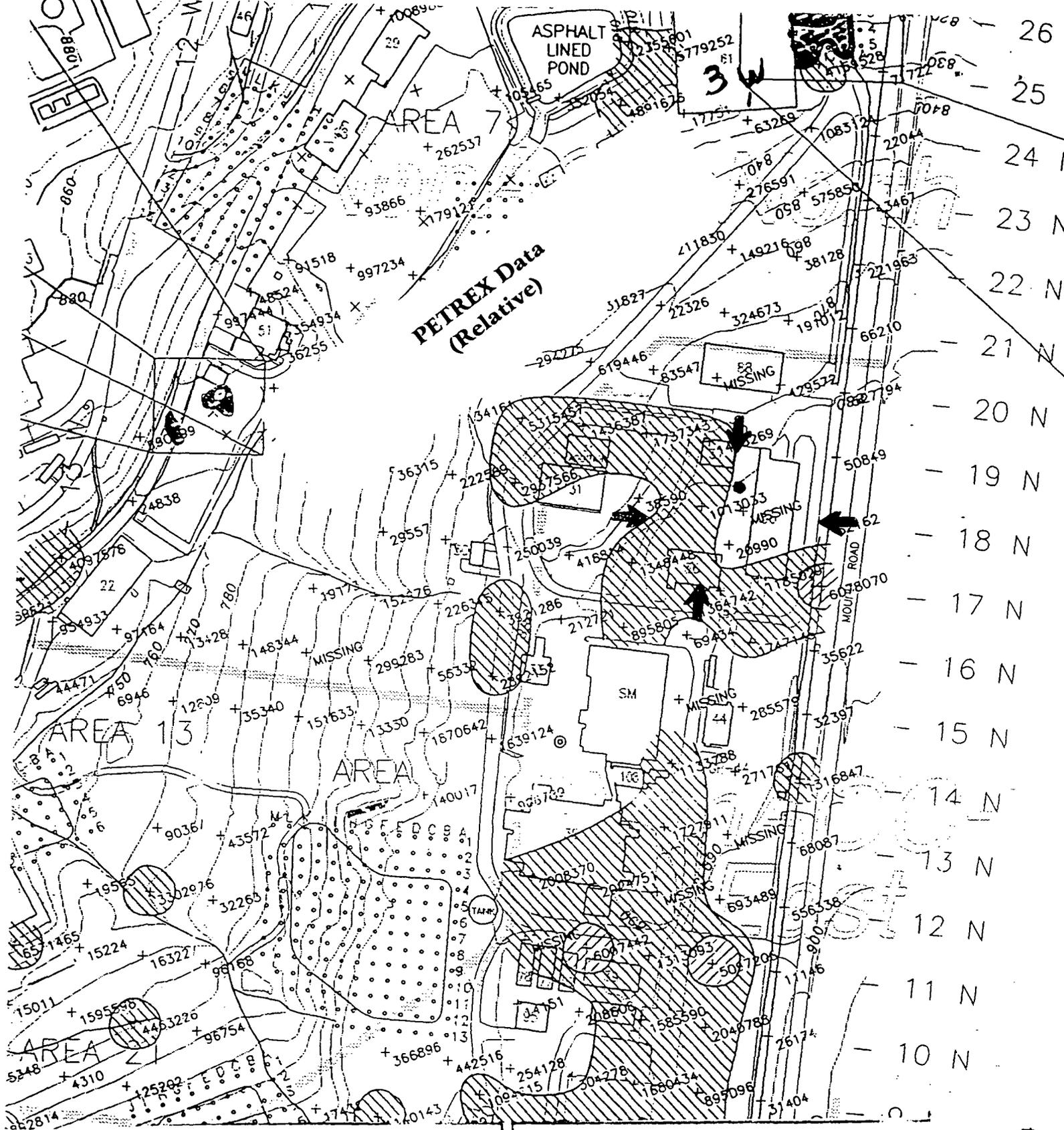
c - Results of the wipe sample were less than 20 disintegrations per minute.

~~CPM - Counts per minute~~

KCPM - Counts per minute x 1000

pCi/g - Picocuries per gram





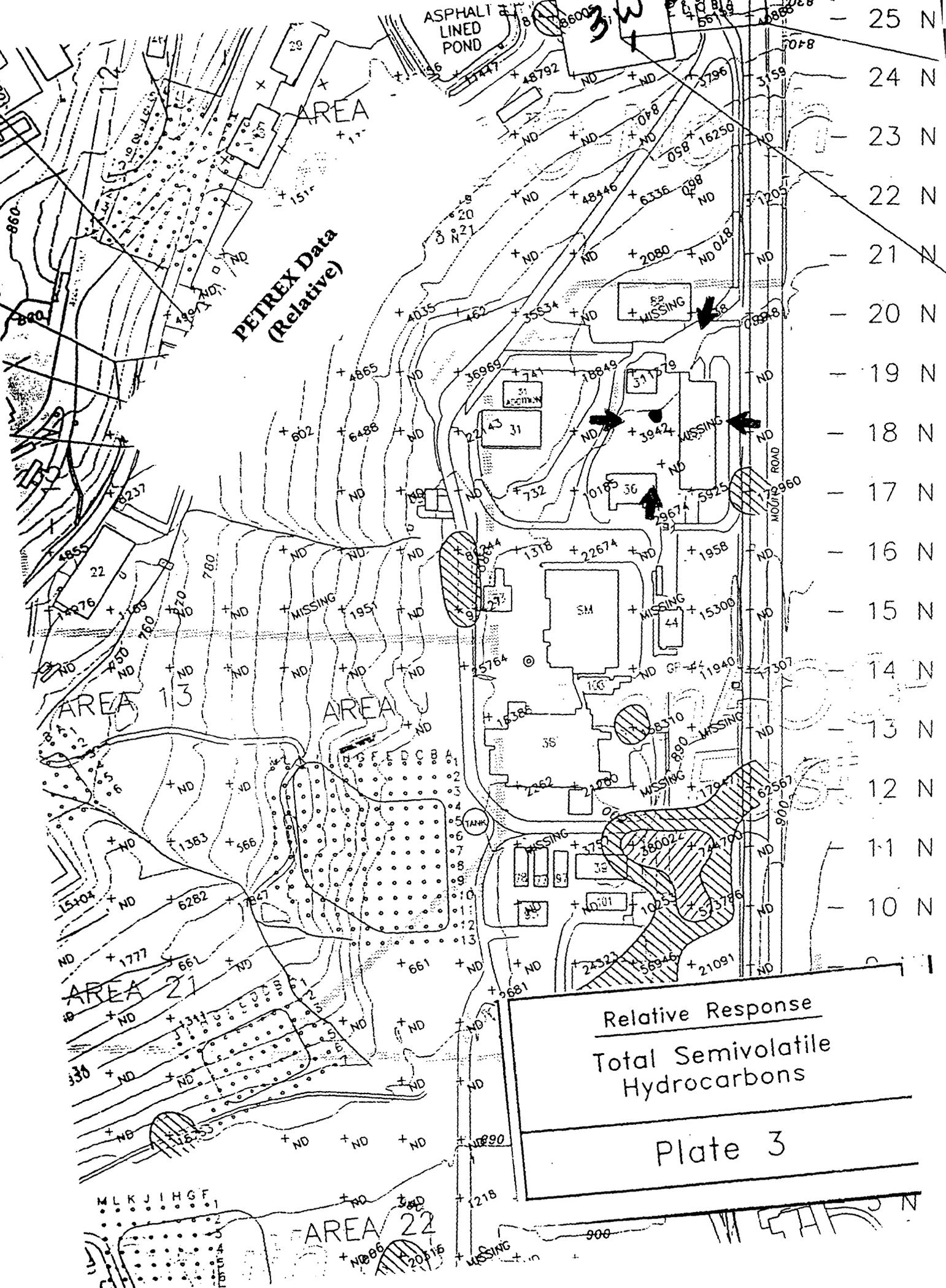
Features:

- + PETREX Sample Location
- ND Not Detected
- T Denotes interference by terpenes; see text.

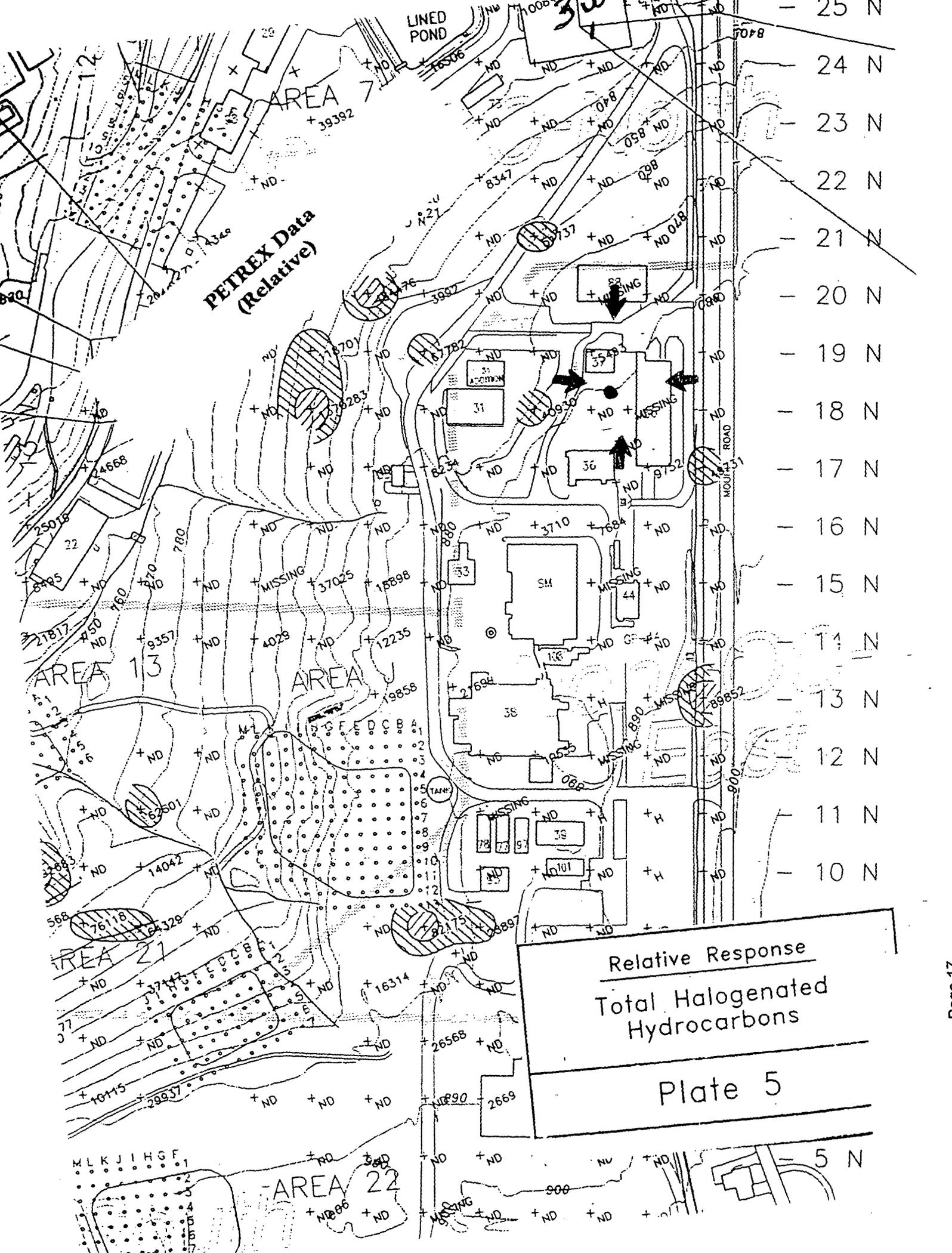
Relative Response

Total Aromatic Hydrocarbons

Plate 2



Relative Response
 Total Semivolatile
 Hydrocarbons
 Plate 3



**PETREX Data
(Relative)**

Relative Response
Total Halogenated
Hydrocarbons

Plate 5

- 25 N
- 24 N
- 23 N
- 22 N
- 21 N
- 20 N
- 19 N
- 18 N
- 17 N
- 16 N
- 15 N
- 14 N
- 13 N
- 12 N
- 11 N
- 10 N

AREA 22

AREA 13

AREA 21

AREA 27

AREA 7

LINED POND

MOUTH ROAD

MLKJIHGF

000017

MOUND



**Environmental
Restoration
Program**

Further Assessment

Soil Gas Confirmation Sampling

**Mound Plant
Miamisburg, Ohio**

May 1996

Revision 0

Department of Energy

EG&G Mound Applied Technologies

Table A.1. Soil Gas Confirmation Detected Volatile Organic Compounds

| ANALYTE | SGC NAC 000002 | SGC NAC 000003 | SGC NAC 000004 | SGC NAC 000005 | SGC NAC 000006 | SGC NAC 000007 | Background | 10 ⁶ Construction Worker Guidelines |
|----------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|------------|---|
| VOLATILES (µg/Kg) | | | | | | | | |
| Acetone | 36 | | | | | | NA | 105000000 |
| 1,2-Dichloroethene (total) | | | | | | | NA | 21500000 |
| 2-Butanone | 12 | | | | | | NA | 46500000 |
| Benzene | 1 J | | | | | | NA | 8900 |
| Carbon Disulfide | | | | | | | NA | 1400000 |
| Chloroform | | | 67 | | | | NA | NA |
| Chloromethane | | | | | | | NA | NA |
| Ethylbenzene | | | | | | | NA | 480 |
| Methylene Chloride | 6 | | | 7 | 8 | | NA | NA |
| Tetrachloroethene | | | | | | | NA | 10500000 |
| Toluene | 1 J | 1 J | | | | | NA | 1250000 |
| Trichloroethene | | | | | | 7 | NA | 41000 |
| Xylene (total) | | | | | | | NA | 2150000000 |

Table A.1. Soil Gas Confirmation Detected Volatile Organic Compounds (cont.)

| ANALYTE | SGC NAC 000023 | SGC NAC 000025 | SGC NAC 000030 | SGC NAC 000031 | SGC NAC 000032 | SGC NAC 000034 | Background | 10 ⁶ Construction Worker Guidelines |
|----------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|------------|---|
| VOLATILES (µg/Kg) | | | | | | | | |
| Acetone | | | 39 | | 29 | | NA | 10500000 |
| 1,2-Dichloroethene (total) | | | | | | | NA | 21500000 |
| 2-Butanone | | | 9 J | | 6 J | | NA | 46500000 |
| Benzene | | | | | | | NA | 8900 |
| Carbon Disulfide | | | | | | | NA | 1400000 |
| Chloroform | | | | | | | NA | NA |
| Chloromethane | | | | | | | NA | NA |
| Ethylbenzene | | | | | | | NA | 480 |
| Methylene Chloride | | | 12 | 14 | 10 | | NA | NA |
| Tetrachloroethene | | | | | | | NA | 10500000 |
| Toluene | 4 J | 2 J | | 2 J | 1 J | 2 J | NA | 1250000 |
| Trichloroethene | | | | | | | NA | 41000 |
| Xylene (total) | | | | 2 J | | | NA | 215000000 |

Table A.2. Soil Gas Confirmation Detected Semivolatile Organic Compounds

| ANALYTE | SGC NAC 000001 | SGC NAC 000002 | SGC NAC 000003 | SGC NAC 000004 | SGC NAC 000005 | SGC NAC 000006 | Background | 10 ⁶ Construction Worker Guidelines |
|----------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|------------|---|
| SEMIVOLATILES (µg/Kg) | | | | | | | | |
| Acenaphthene | | 190 J | 63 J | | | | NA | NA |
| Acenaphthylene | | 730 | | | | 42 J | NA | NA |
| Anthracene | | 1300 | 66 J | | 25 J | 55 J | NA | 32000000 |
| Benzo(a)anthracene | | 1500 | 180 J | | 160 J | 350 J | NA | 4100 |
| Benzo(a)pyrene | | 1300 | 180 J | | 200 J | 450 | NA | 410 |
| Benzo(b)fluoranthene | | 1000 | 180 J | | 190 J | 460 | NA | 4100 |
| Benzo(g,h,i)perylene | | 550 | 110 J | | 100 J | 260 J | NA | NA |
| Benzo(k)fluoranthene | | 1000 | 160 J | | 190 J | 440 | NA | 41000 |
| Bis(2-ethylhexyl)phthalate | | | | | | | NA | 215000 |
| Butylbenzylphthalate | | | | | | | NA | 215000000 |
| Carbazole | | 600 | 62 J | | | 34 J | NA | NA |
| Chrysene | | 1500 | 220 J | | 240 J | 490 | NA | 410000 |
| Di-n-butyl phthalate | 120 J | | | 280 J | | | NA | 105000000 |
| Di-n-octyl phthalate | | | | | | | NA | 21500000 |
| Dibenz(a,h)anthracene | | 180 J | 40 J | | 37 J | 87 J | NA | 410 |
| Dibenzofuran | | 1100 | 23 J | | | | NA | NA |
| Diethyl phthalate | | | | | | | NA | NA |
| Fluoranthene | | 3400 D | 480 | | 400 J | 800 | NA | 42500000 |
| Fluorene | | 1500 | 42 J | | | | NA | NA |
| Indeno(1,2,3-cd)pyrene | | 690 | 120 J | | 130 J | 320 J | NA | 4100 |
| 2-Methylnaphthalene | | 970 | | | | | NA | NA |
| Naphthalene | | 4000 D | 24 J | | | | NA | NA |
| Phenanthrene | | 4700 D | 380 | | 150 J | 280 J | NA | NA |
| Phenol | | | | | | | NA | 65000000 |
| Pyrene | 24 J | 2700 D | 440 | | 340 J | 730 | NA | 32000000 |

Table A.4. Soil Gas Confirmation Detected TAL Inorganics

| ANALYTE | SGC NAC 000001 | SGC NAC 000002 | SGC NAC 000003 | SGC NAC 000004 | SGC NAC 000005 | SGC NAC 000006 | Background | 10 ⁶ Construction Worker Guidelines |
|--------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|------------|---|
| INORGANICS (mg/kg) | | | | | | | | |
| Aluminum | 11000 | 4190 | 1910 | 11400 | 7970 | 7780 | 19000 | NA |
| Antimony | | 0.23 B | | 0.24 B | 0.41 B | | NA | 425 |
| Arsenic | 1.5 B | 2.1 B | 2.9 B | 1.4 B | 7 | 7.2 | 8.6 | 320 |
| Barium | 48.6 | 20.7 B | 23.7 B | 47.1 B | 73.6 | 86.4 | 180 | 75000 |
| Beryllium | 0.56 | | 0.12 B | 0.65 | 0.38 | 0.28 | 1.3 | 0.7 |
| Bismuth | | | | | | | NA | NA |
| Cadmium | | 0.25 B | 0.19 B | | 0.36 B | 0.5 B | 2.1 | 1050 |
| Calcium | 162000 | 159000 | 95500 | 152000 | 13600 | 86200 | 310000 | NA |
| Chromium | 13.2 | 6.7 | 3.8 | 15.2 | 13 | 11.6 | 20 | 1050000 |
| Cobalt | 9.8 B | 4.5 B | 2.3 B | 10.1 B | 7.6 B | 7.6 B | 19 | NA |
| Copper | 16.2 | 11.9 | 9.9 | 17.1 | 14.5 | 15.2 | 26 | NA |
| Cyanide | | | | | | | ND | 21400 |
| Iron | 21300 | 10600 | 5680 | 21800 | 17200 | 17700 | 35000 | NA |
| Lead | 6.7 | 5.2 | 11.2 | 8.6 | 30.9 | 25.1 | 48 | NA |
| Lithium | 21 B | 12.5 B | 6.2 B | 23 B | 7.7 B | 10.3 B | 26 | NA |
| Magnesium | 6160 | 57800 | 27900 | 5670 | 5210 | 35600 | 40000 | NA |
| Manganese | 695 | 384 | 270 | 612 | 383 | 589 | 1400 | 135000 |
| Mercury | | | 0.13 | | | | NC | 320 |
| Molybdenum | 0.43 B | 1.2 B | 0.77 B | | 1.7 B | 1.5 B | 27 | NA |
| Nickel | 18.4 | 9.9 | 6.4 B | 20.6 | 11.1 | 16.1 | 32 | 21500 |
| Potassium | 1780 | 742 B | 346 B | 2080 | 574 B | 744 B | 1900 | NA |
| Selenium | | | | | | | NA | NA |
| Silver | | | 0.24 B | | | | 1700 | 5500000 |
| Sodium | 228 B | 888 B | 150 B | 137 B | 411 B | 348 B | 240 | NA |
| Thallium | | | | | | | 460 | NA |
| Tin | 1.1 B | | | 1.4 B | 1 B | | 20 | NA |
| Vanadium | 14.9 | 8.3 | 4.7 | 16.3 | 23.1 | 18.9 | 25 | 7500 |
| Zinc | 53.3 | 29.5 | | 67 | 59 | 69.2 | 140 | 320000 |

Table A.4. Soil Gas Confirmation Detected TAL Inorganics (cont.)

| ANALYTE | SGC NAC 000025 | SGC NAC 000026 | SGC NAC 000027 | SGC NAC 000028 | SGC NAC 000029 | SGC NAC 000030 | Background | 10 ⁶ Construction Worker Guidelines |
|--------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|------------|---|
| INORGANICS (mg/kg) | | | | | | | | |
| Aluminum | 6830 | 7120 | 11500 | 15300 | 10700 | 5550 | 19000 | NA |
| Antimony | | | | | 0.61 B | | NA | 425 |
| Arsenic | 1.9 BJ | 0.61 BJ | 3.6 J | 2.0 BJ | 1.8 BJ | 5.6 | 8.6 | 320 |
| Barium | 49.2 | 34.1 B | 87.6 | 111 | 59.1 | 47.8 | 180 | 75000 |
| Beryllium | 0.40 | 0.11 B | 0.81 | 0.96 | 0.64 | 0.27 | 1.3 | 0.7 |
| Bismuth | | | | | | | NA | NA |
| Cadmium | | 2.9 | | | | | 2.1 | 1050 |
| Calcium | 162000 J | 315000 | 68800 J | 48400 J | 87300 J | 158000 | 310000 | NA |
| Chromium | 18.1 | 8.1 | 16.2 | 20.6 | 14.8 | 9.7 | 20 | 1050000 |
| Cobalt | 8.7 B | 5.4 B | 11.6 B | 11.8 B | 12.0 | 5.6 B | 19 | NA |
| Copper | 30.5 | 8.7 | 19.2 | 16.1 | 15.3 | 11.9 | 26 | NA |
| Cyanide | | | | | | | ND | 21400 |
| Iron | 24200 | 16300 | 30800 | 35200 | 25400 | 13500 | 35000 | NA |
| Lead | 6.9 J | 4.9 | 14.3 J | 5.6 J | 6.2 J | 8.4 | 48 | NA |
| Lithium | 16.3 B | 16.7 B | 17.0 B | 21.4 B | 22.5 B | 13.4 B | 26 | NA |
| Magnesium | 14900 | 4380 | 9760 | 5190 | 5910 | 52600 | 40000 | NA |
| Manganese | 429 J | 417 | 659 J | 593 J | 637 J | 307 | 1400 | 135000 |
| Mercury | | | 0.13 J | | | | NC | 320 |
| Molybdenum | 2.3 B | 0.88 B | 1.9 B | 0.80 B | 0.77 B | 1.3 B | 27 | NA |
| Nickel | 22.2 | 12.2 | 25.9 | 28.2 | 24.6 | 14 | 32 | 21500 |
| Potassium | 443 E | 1200 | 757 B | 1400 | 800 E | 873 E | 1900 | NA |
| Selenium | | | | | | | NA | NA |
| Silver | | | | | | | 1700 | 5500000 |
| Sodium | 157 BJ | 228 B | 126 BJ | 119 BJ | 125 BJ | 626 B | 240 | NA |
| Thallium | | | | | | | 460 | NA |
| Tin | 0.89 B | 1.3 B | 1.1 B | 0.67 B | | | 20 | NA |
| Vanadium | 10.5 | 8.1 | 21.3 | 22.4 | 15.4 | 12.2 | 25 | 7500 |
| Zinc | 64.6 | 32.7 | 109 | 80.8 | 58.4 | 37.4 | 140 | 320000 |

Table A.5. Soil Gas Confirmation Detected Nitrate-Nitrite

| ANALYTE | SGC NAC 000001 | SGC NAC 000002 | SGC NAC 000003 | SGC NAC 000004 | SGC NAC 000005 | SGC NAC 000006 | Background | 10 ⁻⁶ Construction Worker Guidelines |
|---------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|------------|--|
| GENERAL ANALYTES | | | | | | | | |
| % Solids (%) | 83.9 | 93.8 | 88.5 | 83.3 | 78.4 | 75.0 | NA | NA |
| Nitrate/Nitrite (MG-N/KG) | 2.0 | 1.8 | 1.2 | 2.1 | 7.2 | 4.8 | 26 | NA |
| GENERAL ANALYTES | | | | | | | | |
| ANALYTE | SGC NAC 000007 | SGC NAC 000008 | SGC NAC 000009 | SGC NAC 000010 | SGC NAC 000011 | SGC NAC 000012 | Background | 10 ⁻⁶ Construction Worker Guidelines |
| GENERAL ANALYTES | | | | | | | | |
| % Solids (%) | 83.9 | 95.0 | 78.9 | 83.9 | 90.1 | 84.7 | NA | NA |
| Nitrate/Nitrite (MG-N/KG) | 1.6 | 26.5 | 2.2 | 5.9 | 5.3 | 1.8 | 26 | NA |
| GENERAL ANALYTES | | | | | | | | |
| ANALYTE | SGC NAC 000013 | SGC NAC 000014 | SGC NAC 000015 | SGC NAC 000016 | SGC NAC 000017 | SGC SAN 000018 | Background | 10 ⁻⁶ Construction Worker Guidelines |
| GENERAL ANALYTES | | | | | | | | |
| % Solids (%) | 81.7 | 80.9 | 74.0 | 85.3 | 72.8 | 84.2 | NA | NA |
| Nitrate/Nitrite (MG-N/KG) | 2.1 | 4.9 | 3.0 | 2.4 | 6.4 | 13.7 | 26 | NA |
| GENERAL ANALYTES | | | | | | | | |
| ANALYTE | SGC NAC 000019 | SGC NAC 000020 | SGC NAC 000021 | SGC NAC 000022 | SGC NAC 000023 | SGC NAC 000024 | Background | 10 ⁻⁶ Construction Worker Guidelines |
| GENERAL ANALYTES | | | | | | | | |
| % Solids (%) | 85.3 | 87.6 | 77.4 | 78.3 | 77.5 | 89.5 | NA | NA |
| Nitrate/Nitrite (MG-N/KG) | 6.5 | 2.1 | 6.1 | 2.2 | 11.6 | 2.2 | 26 | NA |

Table A.5. Soil Gas Confirmation Detected Nitrate-Nitrite (cont.)

| ANALYTE | SGC NAC 000025 | SGC NAC 000026 | SGC NAC 000027 | SGC NAC 000028 | SGC NAC 000029 | SGC NAC 000030 | Background | 10 ⁶ Construction Worker Guidelines |
|---------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|------------|---|
| GENERAL ANALYTES | | | | | | | | |
| % Solids (%) | 89.3 | 85.7 | 85.3 | 82.0 | 84.8 | 89.8 | NA | NA |
| Nitrate/Nitrite (MG-N/KG) | 2.0 | 3.4 | 2.6 | 3.6 | 3.5 | 3.7 | 26 | NA |
| ANALYTE | SGC NAC 000031 | SGC NAC 000032 | SGC NAC 000033 | SGC NAC 000034 | SGC NAC 000035 | SGC NAC 000036 | Background | 10 ⁶ Construction Worker Guidelines |
| GENERAL ANALYTES | | | | | | | | |
| % Solids (%) | 87.0 | 81.2 | 84.4 | 88.1 | 84.6 | 81.2 | NA | NA |
| Nitrate/Nitrite (MG-N/KG) | 4.8 | 4.2 | 1.1 | 3.7 | 3.5 | 2.2 | 26 | NA |
| ANALYTE | SGC NAC 000037 | SGC NAC 000038 | SGC NAC 000039 | SGC A66 000040 | SGC A66 000041 | SGC A61 000042 | Background | 10 ⁶ Construction Worker Guidelines |
| GENERAL ANALYTES | | | | | | | | |
| % Solids (%) | 75.3 | 84.6 | 81.8 | 84.4 | 89.4 | 83.6 | NA | NA |
| Nitrate/Nitrite (MG-N/KG) | 1.7 | 2.4 | 1.4 | 3.9 | 2.0 | 1.4 | 26 | NA |
| ANALYTE | SGC A61 000043 | SGC A61 000044 | SGC A61 000045 | SGC A61 000046 | SGC A61 000047 | SGC A61 000048 | Background | 10 ⁶ Construction Worker Guidelines |
| GENERAL ANALYTES | | | | | | | | |
| % Solids (%) | 94.8 | 96.2 | 93.0 | 81.8 | 85.6 | 94.8 | NA | NA |
| Nitrate/Nitrite (MG-N/KG) | 0.84 | 0.58 | 2.1 | 1.6 | 7.9 | 1.6 | 26 | NA |

Table A.6. Soil Gas Confirmation Detected Radionuclides

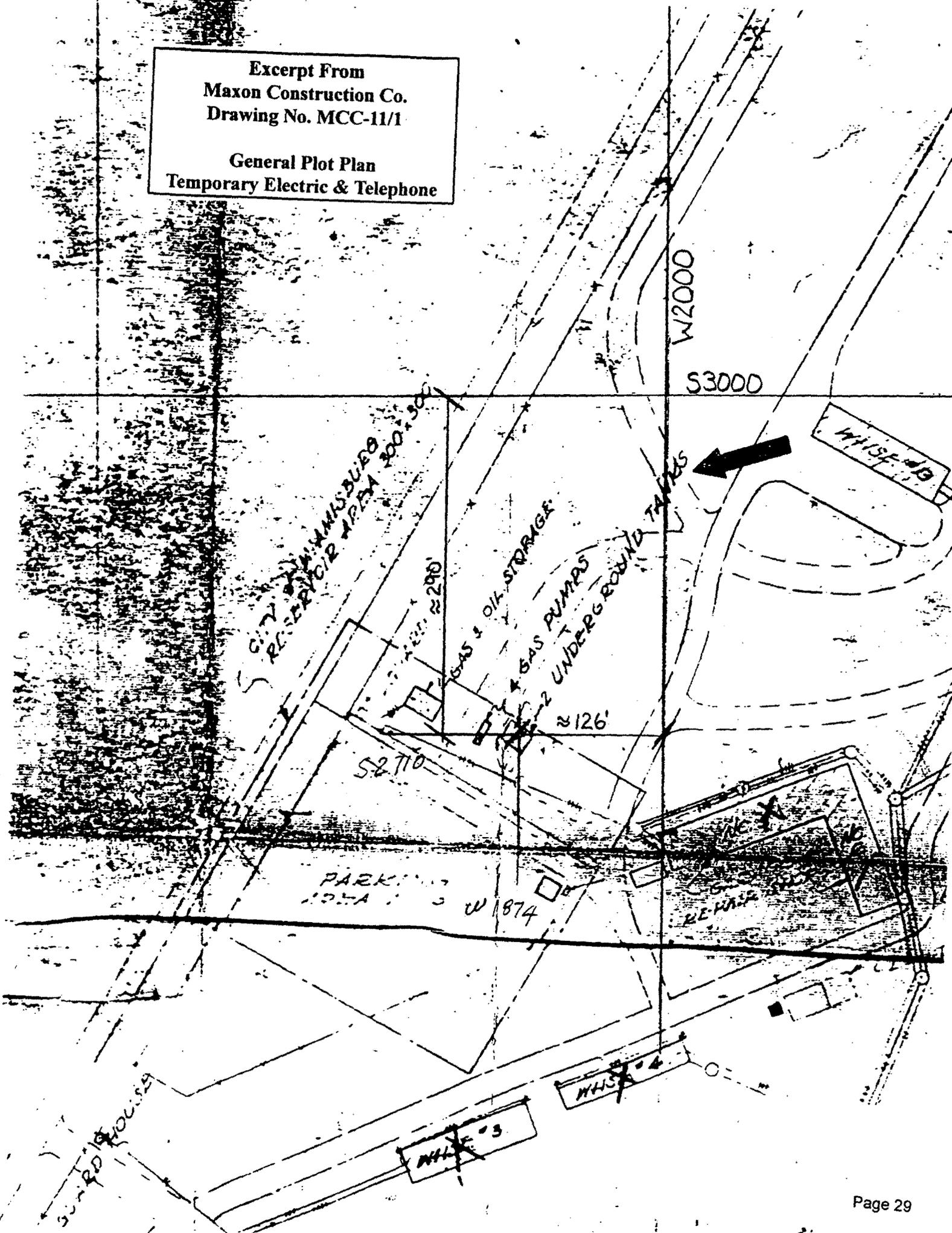
| ANALYTE | SGC NAC 000001 | SGC NAC 000002 | SGC NAC 000003 | SGC NAC 000004 | SGC NAC 000005 | SGC NAC 000006 | SGC NAC 000007 | Background | 10 ⁶ Construction Worker Guidelines |
|-----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|------------|---|
| RADIONUCLIDES (pCi/g) | | | | | | | | | |
| Americium-241 | | | | | | | | ND | 4.95 |
| Bismuth-207 | | | | | | | | ND | 0.175 |
| Bismuth-210 | | | | | | | | ND | NA |
| Cesium-137 | | | | | | 0.861 | | 0.42 | 0.46 |
| Cobalt-60 | | | | | | | | NC | 0.1 |
| Plutonium-238 | 1.42 | 0.0690 | 0.833 | 0.0870 | 0.543 | 4.32 | 0.537 | 0.13 | 5.5 |
| Plutonium-239/240 | | | 0.0252 | | | | | 0.18 | 5.5 |
| Potassium-40 | 21.7 | 2.95 | 6.53 | 27.4 | 15.1 | 14.3 | 10.8 | 37 | NA |
| Radium-226 | 1.03 | 0.478 | 0.508 | 1.16 | 1.22 | 0.870 | 0.537 | 2 | 0.14 |
| Thorium-228 | 1.52 | 0.277 | 0.370 | 1.24 | 1.05 | 1.06 | 0.431 | 1.5 | 0.85 |
| Thorium-230 | 0.814 | 0.374 | 0.621 | 0.980 | 1.19 | 1.18 | 0.582 | 1.9 | 44 |
| Thorium-232 | 1.30 | 0.184 | 0.315 | 1.17 | 0.950 | 1.18 | 0.328 | 1.4 | 50 |
| Uranium-234 | 2.19 | 0.401 | 0.419 | 0.934 | 0.874 | 0.761 | 0.551 | 1.1 | 37.5 |
| Uranium-235 | 0.0974 | | 0.0400 | 0.0349 | 0.0328 | | | 0.11 | 3.35 |
| Uranium-238 | 2.35 | 0.392 | 0.512 | 0.918 | 0.913 | 0.815 | 0.574 | 1.2 | 11 |

Table A.6. Soil Gas Confirmation Detected Radionuclides (cont.)

| ANALYTE | SGC NAC 000029 | SGC NAC 000030 | SGC NAC 000031 | SGC NAC 000032 | SGC NAC 000033 | SGC NAC 000034 | SGC NAC 000035 | Background | 10 ⁶ Construction Worker Guidelines |
|-----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|------------|---|
| RADIONUCLIDES (pCi/g) | | | | | | | | | |
| Americium-241 | | | | | | 0.00933 | | ND | 4.95 |
| Bismuth-207 | | | | | | 0.0191 | | ND | 0.175 |
| Bismuth-210 | | | | | | 0.0168 | | ND | NA |
| Cesium-137 | 0.493 | | 0.393 | | 0.602 | -0.00785 | | 0.42 | 0.46 |
| Cobalt-60 | | | | | | -0.0628 | | NC | 0.1 |
| Plutonium-238 | 0.151 | 1.38 | 0.586 | 29.1 | 0.109 | 0.574 | 0.0569 | 0.13 | 5.5 |
| Plutonium-239/240 | 0.0107 | | 0.00822 | 0.0744 | 0.0143 | 0.00369 | | 0.18 | 5.5 |
| Potassium-40 | 29.1 | 3.23 | 12.2 | 21.3 | 31.4 | 16.5 | 24.8 | 37 | NA |
| Radium-226 | 0.932 | | 1.35 | 0.901 | 1.30 | 0.872 | 0.800 | 2 | 0.14 |
| Thorium-228 | 1.31 | 0.0928 | 0.792 | 0.977 | 1.11 | 0.884 | 1.07 | 1.5 | 0.85 |
| Thorium-230 | 0.843 | 0.140 | 1.48 | 0.848 | 0.907 | 1.34 | 0.881 | 1.9 | 44 |
| Thorium-232 | 1.11 | 0.110 | 0.823 | 1.08 | 0.963 | 0.963 | 1.03 | 1.4 | 50 |
| Uranium-234 | 0.774 | 0.171 | 0.811 | 0.738 | 0.796 | 0.977 | 0.827 | 1.1 | 37.5 |
| Uranium-235 | 0.0418 | | 0.0340 | | 0.0550 | 0.0563 | 0.0267 | 0.11 | 3.35 |
| Uranium-238 | 0.968 | 0.0922 | 0.936 | 0.851 | 0.938 | 0.978 | 0.768 | 1.2 | 11 |

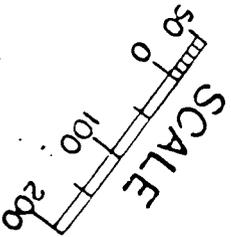
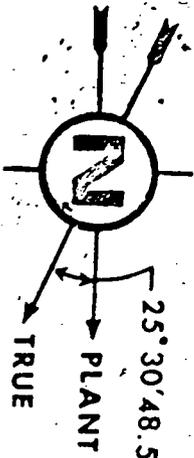
Excerpt From
Maxon Construction Co.
Drawing No. MCC-11/1

General Plot Plan
Temporary Electric & Telephone



Excerpt From
Monsanto Research Corp.
Drawing No. FSD-852240

Control Monuments
With Plant Overlay



DENOTES CONCRETE MONUMENT

95 ORIGINAL ISSUE
ADD. B.M. NO. 30 & 31
26-87

