3001-0007070002

**BWX Technologies, Inc.**
a McDermott company

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

ESC-101/00
July 7, 2000

00-TC/07-07

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

ATTENTION: Dewain Eckman

SUBJECT: Contract No. DE-AC24-97OH20044
**POTENTIAL RELEASE SITE (PRS) 420 DATA PACKAGE - FINAL**

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

Dear Mr. Provencher:

Attached is the Final Potential Release site (PRS) 420 Data Package. The release of this document to USEPA, OEPA, ODH, and the public reading room has been authorized by Art Kleinrath of MEMP.

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

Sincerely,

JSStapleton

Jeffrey S. Stapleton
Manager, Environmental Safeguards & Compliance

JSS/nmg

Enclosures as stated

cc: Tim Fischer, USEPA, (1) w/attachment
Brian Nickel, OEPA, (1) w/attachment
Ruth Vandegrift, ODH, (1) w/attachment
Art Kleinrath, MEMP, (2) w/attachment
Terrence Tracy, DOE/HQ, (1) w/attachment
Dann Bird, MMCIC, (2) w/attachment
John Price, BWXT of Ohio, (2) w/attachment
Public Reading Room, (5) w/attachment
Administrative Record, (2) w/attachment
DCC

3001 – 0007070002

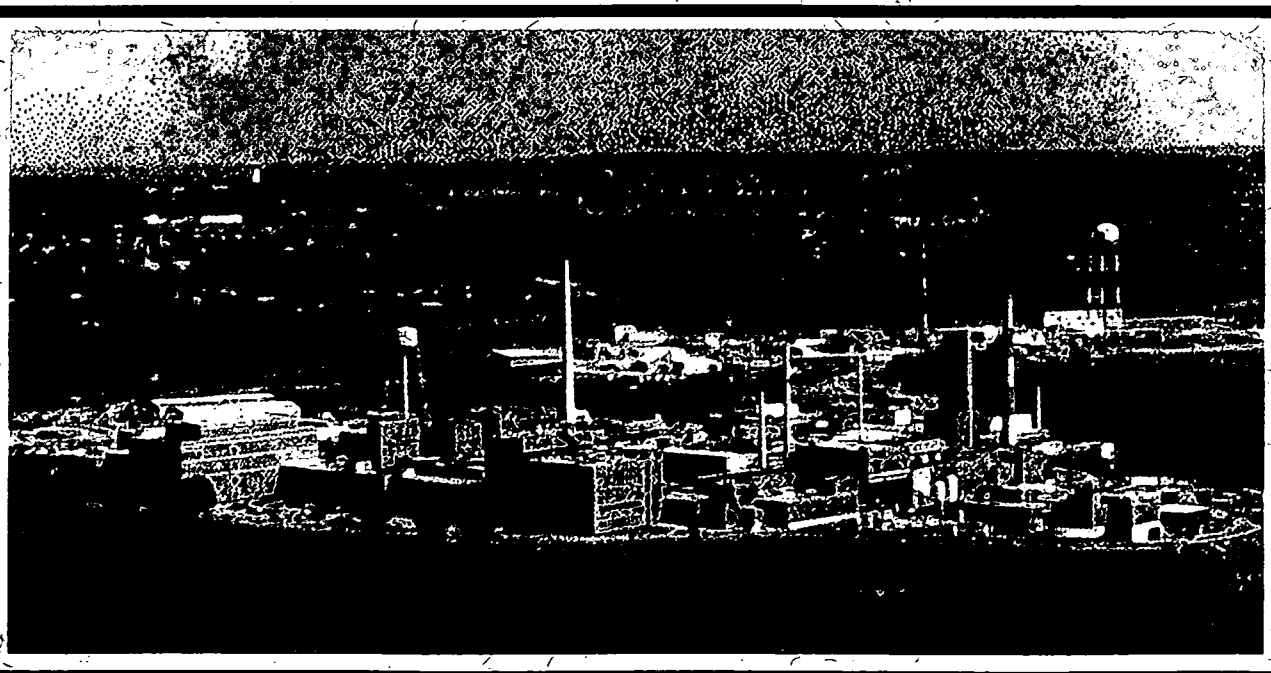
MOUND

Environmental
Restoration
Program

# MOUND PLANT

## Potential Release Site Package

## PRS #420



MOUND

Environmental Restoration Program

# MOUND PLANT POTENTIAL RELEASE SITE PACKAGE

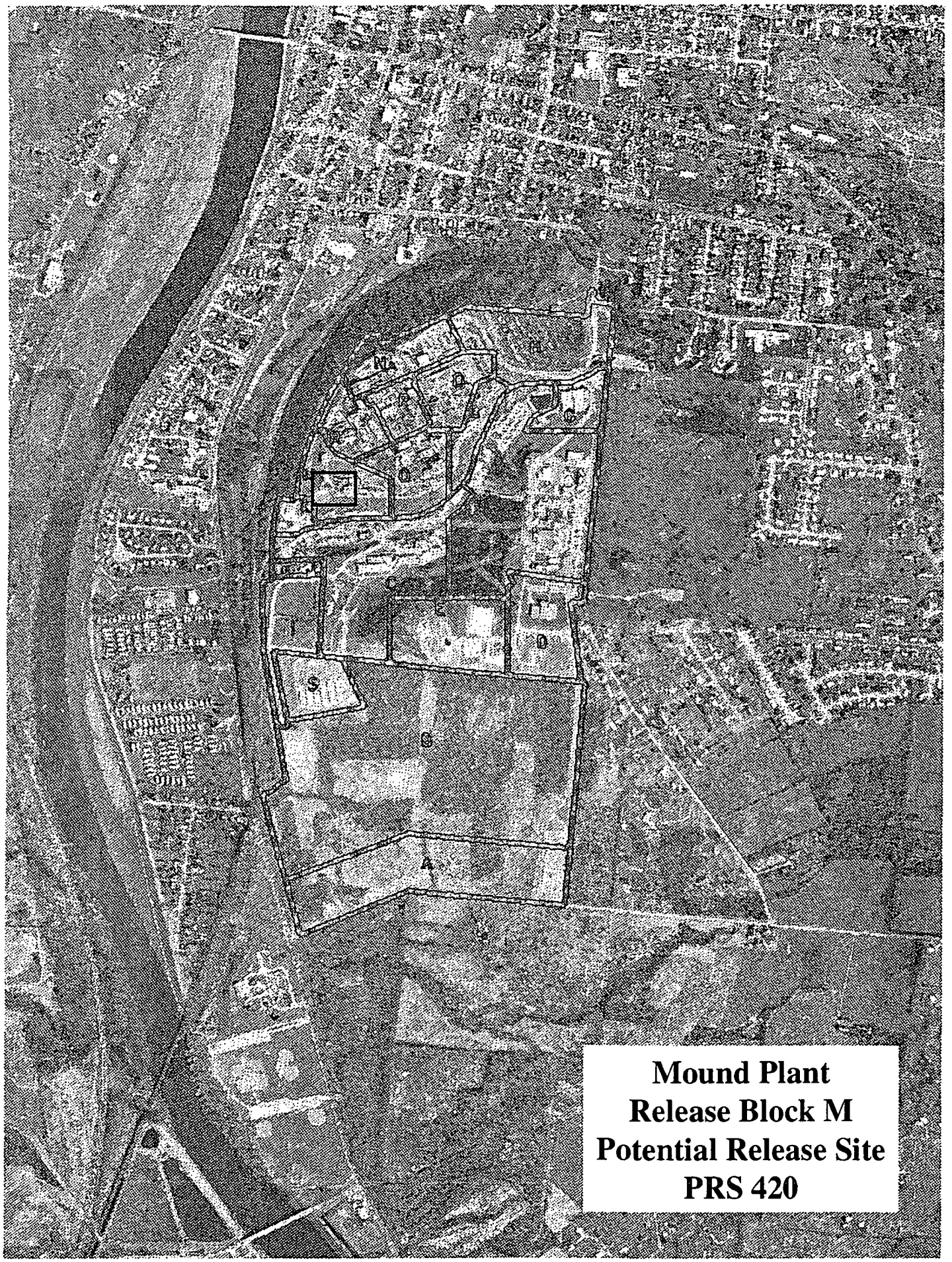
## *Notice of Public Review Period*

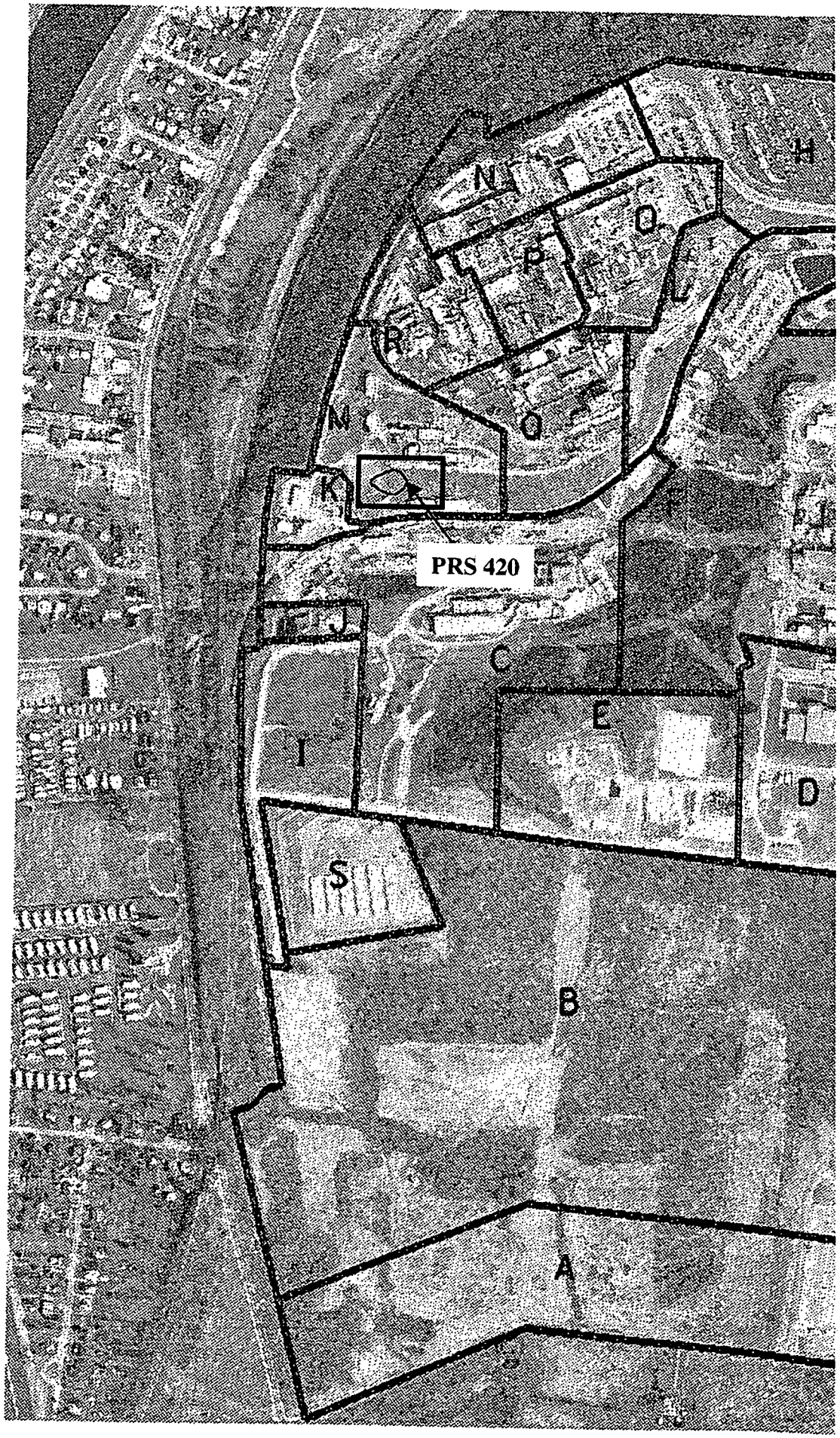
The following Potential Release Site (PRS) Data Packages are available for public review in the CERCLA Public Reading Room, 305 E. Central Ave., Miamisburg, Ohio. Public comment on these documents will be accepted March 15, 2000 through April 15, 2000.

**Potential Release Site 66: Area 7, Thorium and Polonium Wastes**
**Potential Release Site 420: Wetlands**

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

| REV | DESCRIPTION | DATE |
|---|---|---|
| **WORKING DRAFT** | | **April 7, 1999** |
| **DRAFT** | Binned NFA 4/14/99. Additional information to be incorporated. Recommendation signed. | **April 8, 1999** |
| **DRAFT PROPOSED FINAL** | Addendum 1 presented at Core Team Meeting 2/17/00. Addendum 1 incorporated. | **April 26, 1999** |
| **PUBLIC REVIEW DRAFT** | | **March 14, 2000** |
| **FINAL** | No comments. | July 6, 2000 |


Mound Plant
Release Block M
Potential Release Site
PRS 420


N
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PRS 420
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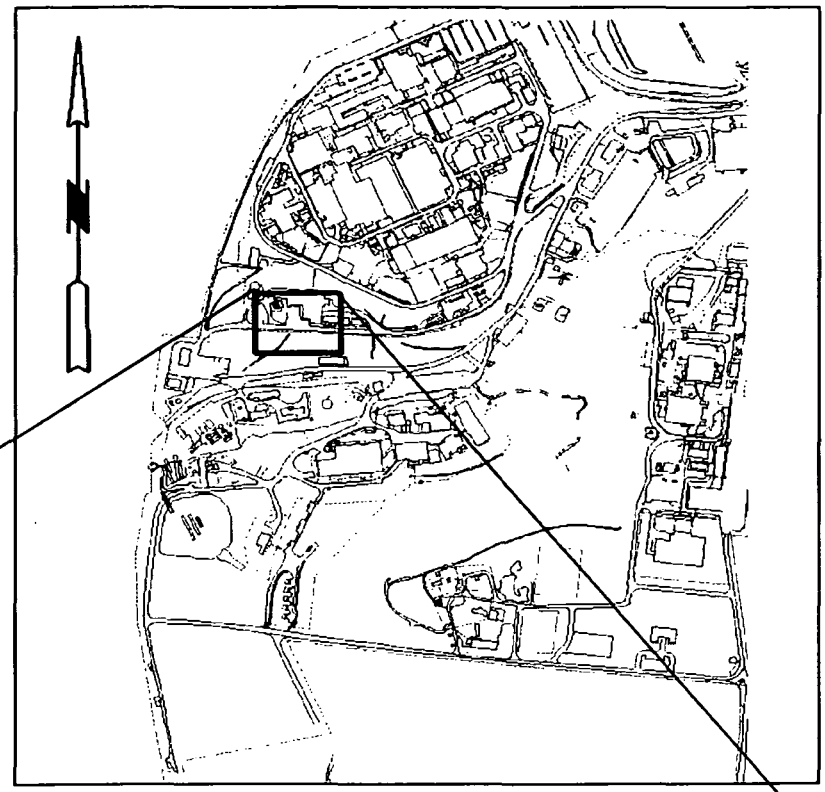
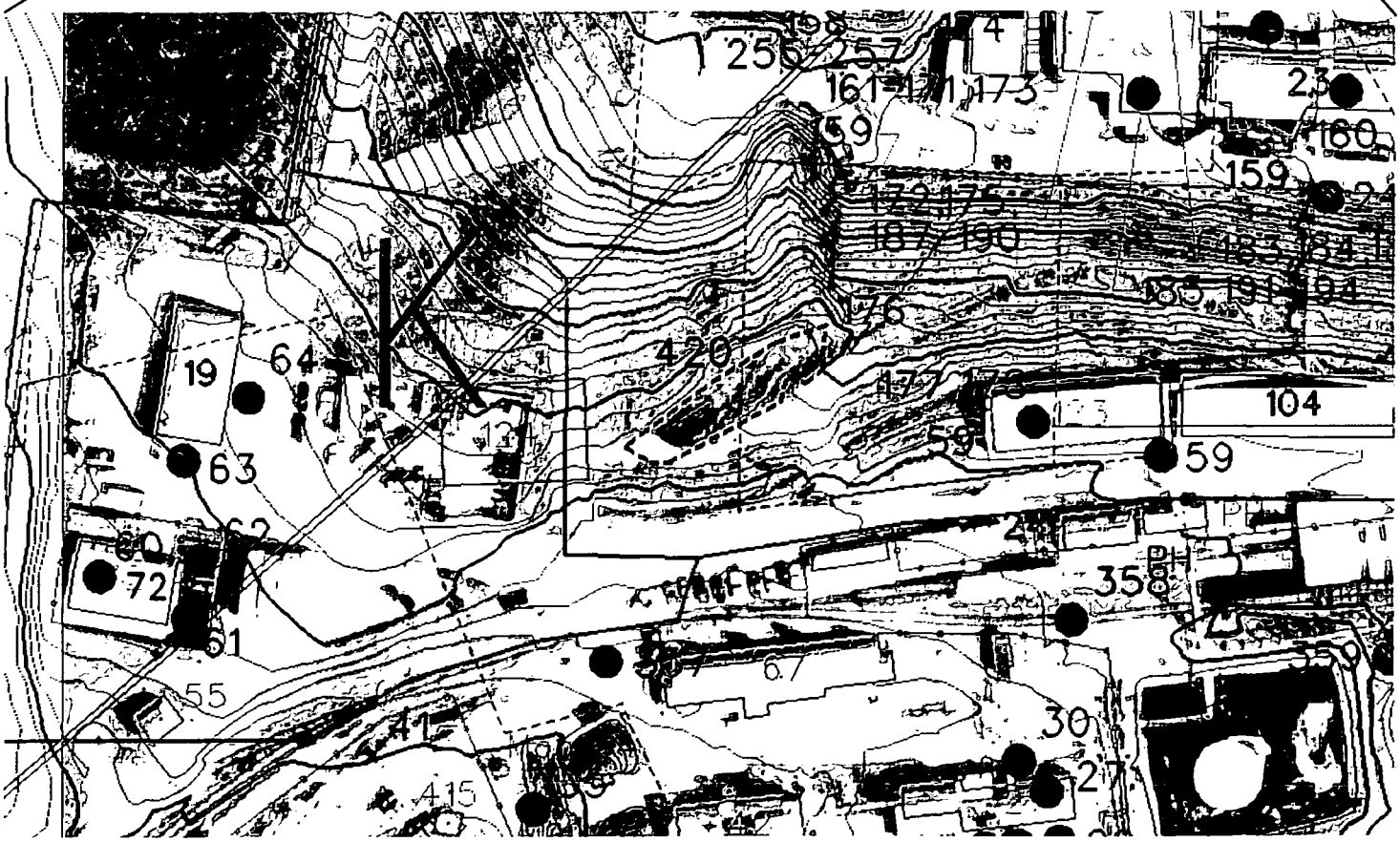
A

# Mound Plant
## PRS 420
## Wetlands

On the map below:
- Building number and location shown in tan
- PRS number and location shown in black
- Fencing shown in red
- Elevation contours shown in brown





# PRS 420
# Man-Made Wetland Area

## PRS HISTORY:

Potential Release Site (PRS) 420 is the isolated man-made wetland area located between Buildings 123 and 124. This wetland resides in a depression that ranges from approximately three feet to eight feet lower than the surrounding ground surface. It is oblong in shape and approximately 0.06 acres in size[1]. It was identified as a PRS because of the presence of previously identified contaminants, including plutonium-238 ($Pu^{238}$), that likely were present as a result of a historical breach in a nearby waste transfer line - PRS 176. Recent sampling data documents the success of remedial efforts.

## PROCESS DESCRIPTION:

The depressed area is used to control excess storm water runoff to the Miami-Erie Canal. Specifically, the area retains runoff and settles sediment. Runoff from the adjacent hill and discharge from at least one underground pipe accumulate in the depressed area.

## CONTAMINATION:

Numerous remedial and sampling efforts for areas that overlap or include the PRS 420 area have been conducted since 1969. A list of documents referencing remedial and/or sampling efforts that include all or part of the PRS 420 area is presented below. Included in the documents are sample data documenting successful remediations as well as continued elevated levels of $Pu^{238}$ in the PRS 420 and surrounding hillside area.

- Final Report: Waste Transfer Systems Decommissioning Project (ADS ALMD-1176), (90% Draft), January 28, 1993, Revised April 27, 1993
- Reconnaissance Sampling Report, Decontamination and Decommissioning Areas, Operable Unit 6, Mound Plant, Miamisburg, Ohio, May 1992, Final
- Operable Unit 6, Area 19 and Area 14 Verification Report, Mound Plant, Miamisburg, Ohio, October 1994, Final (Rev 0)
- Operable Unit 6, Decontamination and Decommissioning, Proposed Area 14 Fuel Oil Storage System Verification Report, Mound Plant, Miamisburg, Ohio, October 1992
- Operable Unit 9, Site Scoping Report, Volume 3, Radiological Site Survey, Mound Plant, Miamisburg, Ohio, March 1993
- Confirmatory Soil Data for Area Between Building 41 and WD Building

The $10^{-5}$ risk based guideline value for $Pu^{238}$ is 55 picoCuries/gram (pCi/g).[2] Current sample results for the PRS 420 area are represented below in Table 1[3,4,5] and associated sample locations are presented in Figure 1.

## Table 1. Confirmation Results for the PRS 420 Area
### Contaminants of Concern

| Sample ID | Figure 1 ID | Sample Date | $Pu^{238}$ Level[a] (pCi/g) | Guideline Criterion (pCi/g) soil/sediment, construction[2] |
|---|---|---|---|---|
| MND11-0080 | 80 | 1991 | 14/19 | 55 |
| MND11-0081 | 81 | 1991 | 5 | 55 |
| MND11-0082 | 82 | 1991 | 12 | 55 |
| MND11-0083 | 83 | 1991 | 38 | 55 |
| MND11-0084 | 84 | 1991 | 0 | 55 |
| MND11-0085 | 85 | 1991 | 0 | 55 |
| MND11-0086 | 86 | 1991 | 25 | 55 |
| MND11-0087 | 87 | 1991 | 18 | 55 |
| MND11-0088 | 88 | 1991 | 16 | 55 |
| MND11-0089 | 89 | 1991 | 18 | 55 |
| MND11-0090 | 90 | 1991 | 4 | 55 |
| MND11-0091 | 91 | 1991 | 7 | 55 |
| MND11-0092 | 92 | 1991 | 14 | 55 |
| MND11-0093 | 93 | 1991 | 23 | 55 |
| MND11-0094 | 94 | 1991 | 11 | 55 |
| MND11-0095 | 95 | 1991 | 15 | 55 |
| MND11-0096 | 96 | 1991 | 12 | 55 |
| MND11-0097 | 97 | 1991 | 10 | 55 |
| MND11-0098 | 98 | 1991 | 4 | 55 |
| MND11-0099 | 99 | 1991 | 17 | 55 |
| MND11-0100 | 100 | 1991 | 15 | 55 |
| MND11-0101 | 101 | 1991 | 15 | 55 |
| MND11-0102 | 102 | 1991 | 9 | 55 |
| MND11-0103 | 103 | 1991 | 11 | 55 |
| 19-2C | 19-2C | 1993 | 10.67/0.23/1.35 | 55 |
| 19-2D | 19-2D | 1993 | 2.67/16.86 | 55 |

## Table 1. Confirmation Results for the PRS 420 Area
### Contaminants of Concern
### (continued)

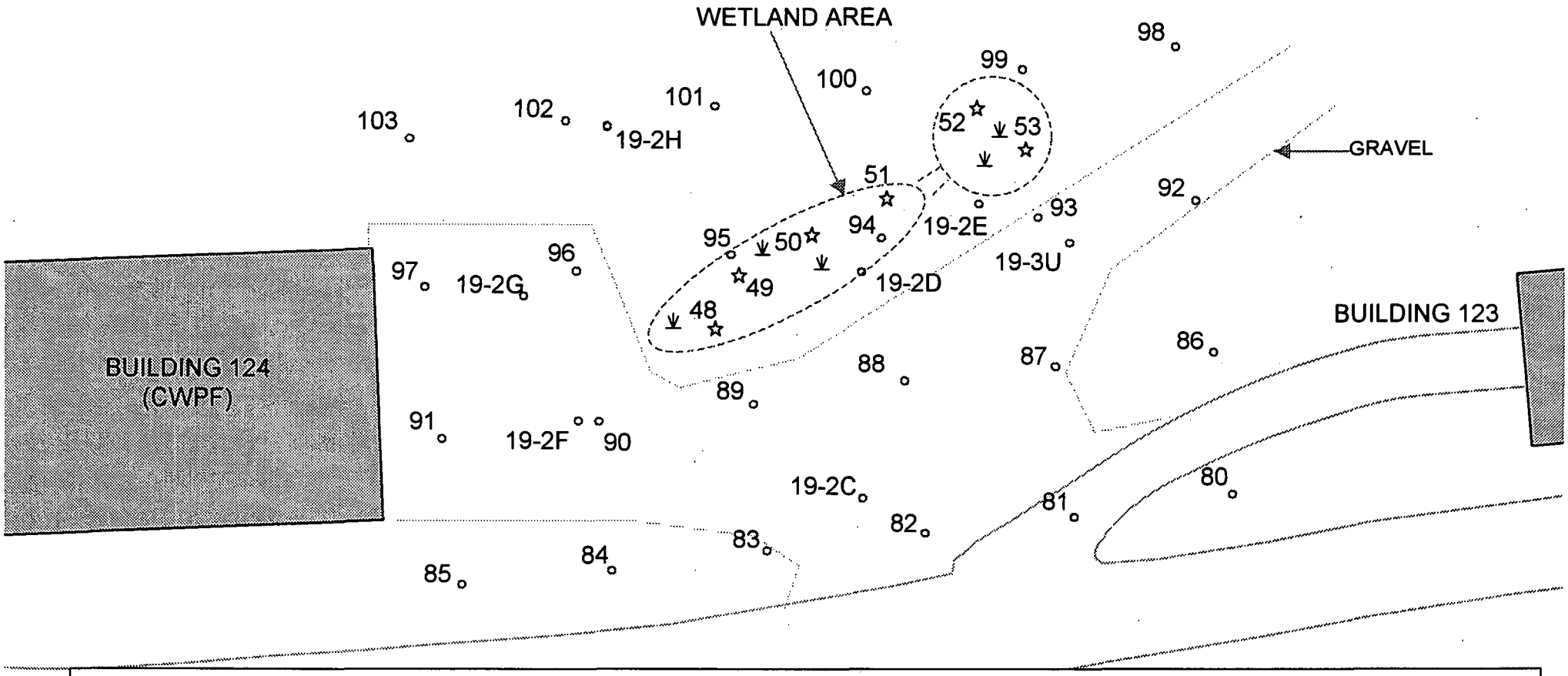
| Sample ID | Figure 1 ID | Sample Date | $Pu^{238}$ Level[a] (pCi/g) | Guideline Criterion (pCi/g) soil/sediment, construction[2] |
|---|---|---|---|---|
| 19-2E | 19-2E | 1993 | 21 | 55 |
| 19-2F | 19-2F | 1993 | 0.23/0.23 | 55 |
| 19-2G | 19-2G | 1993 | 1.53/3.83 | 55 |
| 19-2H | 19-2H | 1993 | 0.51/0.35/1.22 | 55 |
| 19-3U | 19-3U | 1993 | 46.22/4.97 | 55 |
| NA800306/004448 | 48 | 1999 | 23.3* | 55 |
| NA800307/004449 | 49 | 1999 | 15.9* | 55 |
| NA800308/004450 | 50 | 1999 | 23.7* | 55 |
| NA800309/004451 | 51 | 1999 | 22.2* | 55 |
| NA800310/004452 | 52 | 1999 | 16.9* | 55 |
| NA800311/004453 | 53 | 1999 | 19.7* | 55 |

| Sample ID | Figure 1 ID | Sample Date | $Th^{228}$ Level[a] (pCi/g) | Guideline Criterion (pCi/g) soil/sediment, construction[2] |
|---|---|---|---|---|
| 19-2D | 19-2D | 1993 | 1.27 | 3.0 |
| 19-2E | 19-2E | 1993 | 2.64 | 3.0 |
| 19-3C | 19-3C | 1993 | 1.36 | 3.0 |

* Value presented is the Minimum Detectable Activity (MDA)

[a] Multiple results indicate the collection of samples at more than one interval or a duplicate sample was collected.

[b] PRS 304 Action Memorandum of September 1998.




o Sample Location (1991 & 1993)

☆ Sample Location (1999)

Marsh

North

Approx. Scale

0 10m 20m

**FIGURE 1. PRS 420 SAMPLE LOCATIONS**

**REFERENCES:**


1) *Wetlands Assessment for the Installation of the Consolidated Waste Processing Facility Accessway*, 18 June 1998.
2) *Risk-Based Guideline Values, Mound Plant, Miamisburg, Ohio*, March 1997, Final (Revision 4), Appendix B, Tables 4A and 4B.
3) *Operable Unit 6, Area 19 and Area 14 Verification Report, Mound Plant, Miamisburg, Ohio*, October 1994, Final (Rev 0).
4) *Operable Unit 6, Decontamination and Decommissioning, Proposed Area 14 Fuel Oil Storage System Verification Report, Mound Plant, Miamisburg, Ohio*, October 1992.
5) Analytical data for PRS 420 sediment samples collected 24 March 1999.


**PREPARED BY:**


Karen M. Arthur, Member of Babcock & Wilcox of Ohio Technical Staff
Joseph C. Geneczko, Member of Babcock &Wilcox of Ohio Technical Staff

# MOUND PLANT
# PRS 420
# Man-Made Wetland Area

**RECOMMENDATION:**

Potential Release Site (PRS) 420 is the isolated man-made wetland area located between Buildings 123 and 124. It is oblong in shape and approximately 0.06 acres in size. It was identified as a PRS because of the presence of previously identified contaminants, including plutonium-238 ($Pu^{238}$), that likely were present as a result of a historical breach in a nearby waste transfer line - PRS 176. Removal Actions for plutonium have been conducted several times in this area. Recent sampling confirms that all levels of plutonium are below the $10^{-5}$ guideline value of 55 pCi/g and all thorium results are below the Mound cleanup criteria of 3 pCi/g.

Therefore NO FURTHER ASSESSMENT is recommended for PRS 420.

**CONCURRENCE:**

DOE/MEMP: Arthur W. Kleinrath, Remedial Project Manager 4/14/99 (date)

USEPA: Timothy J. Fischer, Remedial Project Manager 4/14/99 (date)

OEPA: Brian K. Nickel, Project Manager 4/14/99 (date)

**SUMMARY OF COMMENTS AND RESPONSES:**

Comment period from 3/15/2000 to 4/15/2000

☒ No comments were received during the comment period.

☐ Comment responses can be found on page _____ of this package.

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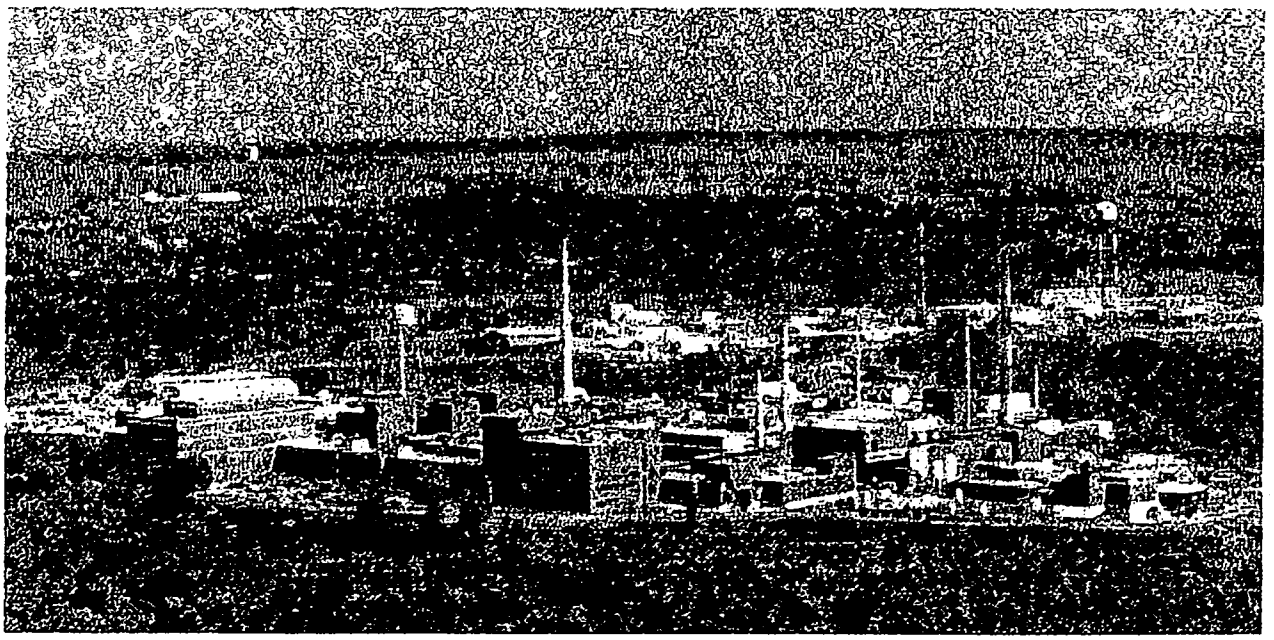
# MOUND PLANT
## Potential Release Site Package
## PRS #420 (Addendum 1)



This addendum was prepared to address comments made during the binning cycle for PRS 420.

Specifically, five comments were made as listed below followed by numbered sections that correspond to the comments:

- ❑ 1. add background concentrations to Table 1 of the PRS 420 Package
- ❑ 2. explain the roadway construction and why samples were collected
- ❑ 3. add the data associated with construction of the roadway
- ❑ 4. clarify in Figure 1 that the wetland was man made
- ❑ 5. make a note in Figure 1 explaining that numbers associated with sample locations correspond to data presented in Table 1

**1.** The table presented below is a modification of PRS 420 Package Table 1 to reflect the addition of the background concentrations.

**2.** The construction of an access road between the two buildings shown on Figure 1 was planned for 1999. Since the PRS area had received runoff from the WD hillside for six years following the most recent sample collection within the PRS, additional sample collection was deemed prudent to confirm that recontamination had not occurred. Six samples were collected from the undisturbed accumulated sediment within the PRS area and analyzed for $Pu^{238}$.

**3.** In order to afford the distinction between sampling that occurred in conjunction with the construction of the roadway versus everything else leading up to that point, Table 1 of the PRS 420 Package is presented herein as "historic", and the 1999 data was relocated into its own table (Table 2 herein). All of the undisturbed sediment sample results reported in Table 2 are below the guideline criteria for $Pu^{238}$.

The initial phase of access road construction included removing the sediment from the construction area because it does not have the geotechnical qualities required for a road subbase. The sediment was excavated from the PRS area and placed into two spoil locations on the hillside where it could dry out and remain.

Following completion of the removal of the sediment from the construction area, additional surveying and sampling occurred. Fourteen swipes were collected from the excavator bucket and tracks as depicted on sketches attached. All direct and swipe readings from the tracks and bucket were below the applicable release criteria. Radiological survey sheets and sample results are included herein for reference. Four samples were collected from the base of the excavation and one sample was collected from each of the two spoil areas. One sample was collected from the accumulated runoff within the excavation. Results for all of the soil and the runoff samples are below applicable criteria as presented in Table 3 herein.

**4.** The title to Figure 1was modified to show that samples presented are both within and exterior to the PRS 420 boundary. The label on the figure was also changed to represent that it was man made rather than naturally occurring.

**5.** A note was added to Figure 1 clarifying the association between numbers on the figure and data in Table 1.

**PREPARED BY:**

Karen M. Arthur, Member of BWXT of Ohio Technical Staff
Joseph C. Geneczko, Member of BWXT of OhioTechnical Staff

**Table 1: Historic PRS 420 Area Sample Results**

| Sample ID | Figure 1 ID | Sample Date | $Pu^{238}$ Level[a] (pCi/g) | Guideline Criterion (pCi/g) soil/sediment, construction[2] | Background Concentration (pCi/g) |
|---|---|---|---|---|---|
| MND11-0080 | 80 | 1991 | 14/19 | 55 | 0.13 |
| MND11-0081 | 81 | 1991 | 5 | 55 | 0.13 |
| MND11-0082 | 82 | 1991 | 12 | 55 | 0.13 |
| MND11-0083 | 83 | 1991 | 38 | 55 | 0.13 |
| MND11-0084 | 84 | 1991 | 0 | 55 | 0.13 |
| MND11-0085 | 85 | 1991 | 0 | 55 | 0.13 |
| MND11-0086 | 86 | 1991 | 25 | 55 | 0.13 |
| MND11-0087 | 87 | 1991 | 18 | 55 | 0.13 |
| MND11-0088 | 88 | 1991 | 16 | 55 | 0.13 |
| MND11-0089 | 89 | 1991 | 18 | 55 | 0.13 |
| MND11-0090 | 90 | 1991 | 4 | 55 | 0.13 |
| MND11-0091 | 91 | 1991 | 7 | 55 | 0.13 |
| MND11-0092 | 92 | 1991 | 14 | 55 | 0.13 |
| MND11-0093 | 93 | 1991 | 23 | 55 | 0.13 |
| MND11-0094 | 94 | 1991 | 11 | 55 | 0.13 |
| MND11-0095 | 95 | 1991 | 15 | 55 | 0.13 |
| MND11-0096 | 96 | 1991 | 12 | 55 | 0.13 |
| MND11-0097 | 97 | 1991 | 10 | 55 | 0.13 |
| MND11-0098 | 98 | 1991 | 4 | 55 | 0.13 |
| MND11-0099 | 99 | 1991 | 17 | 55 | 0.13 |
| MND11-0100 | 100 | 1991 | 15 | 55 | 0.13 |
| MND11-0101 | 101 | 1991 | 15 | 55 | 0.13 |
| MND11-0102 | 102 | 1991 | 9 | 55 | 0.13 |
| MND11-0103 | 103 | 1991 | 11 | 55 | 0.13 |

**Table 1: Historic PRS 420 Area Sample Results**

| Sample ID | Figure 1 ID | Sample Date | $Pu^{238}$ Level[a] (pCi/g) | Guideline Criterion (pCi/g) soil/sediment, construction[2] | Background Concentration (pCi/g) |
|---|---|---|---|---|---|
| 19-2C | 19-2C | 1993 | 10.67/0.23/1.35 | 55 | 0.13 |
| 19-2D | 19-2D | 1993 | 2.67/16.86 | 55 | 0.13 |
| 19-2E | 19-2E | 1993 | 21 | 55 | 0.13 |
| 19-2F | 19-2F | 1993 | 0.23/0.23 | 55 | 0.13 |
| 19-2G | 19-2G | 1993 | 1.53/3.83 | 55 | 0.13 |
| 19-2H | 19-2H | 1993 | 0.51/0.35/1.22 | 55 | 0.13 |
| 19-3U | 19-3U | 1993 | 46.22/4.97 | 55 | 0.13 |

* Value presented is the Minimum Detectable Activity (MDA)

[a] Multiple results indicate the collection of samples at more than one interval or a duplicate sample was collected.

**Table 2: Undisturbed Sediment Results**

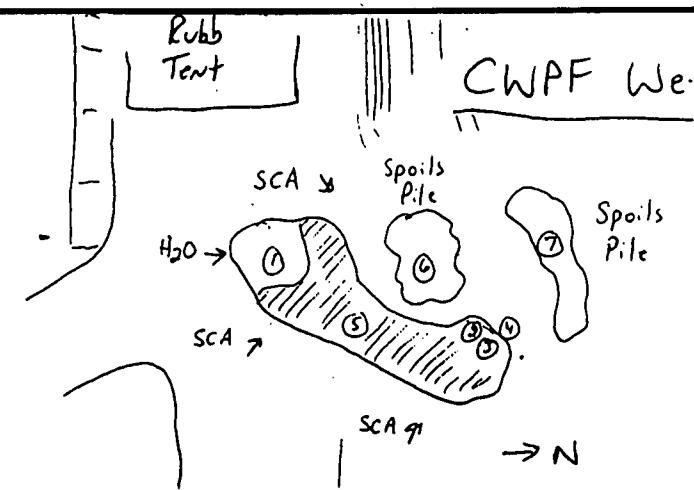
| Sample ID | Figure 1 ID | Sample Date | $Pu^{238}$ Level[a] (pCi/g) | Guideline Criterion (pCi/g) soil/sediment, construction[2] | Background Concentration (pCi/g) |
|---|---|---|---|---|---|
| NA800306/ 004448 | 48 | 1999 | 23.3* | 55 | 0.13 |
| NA800307/ 004449 | 49 | 1999 | 15.9* | 55 | 0.13 |
| NA800308/ 004450 | 50 | 1999 | 23.7* | 55 | 0.13 |
| NA800309/ 004451 | 51 | 1999 | 22.2* | 55 | 0.13 |
| NA800310/ 004452 | 52 | 1999 | 16.9* | 55 | 0.13 |
| NA800311/ 004453 | 53 | 1999 | 19.7* | 55 | 0.13 |

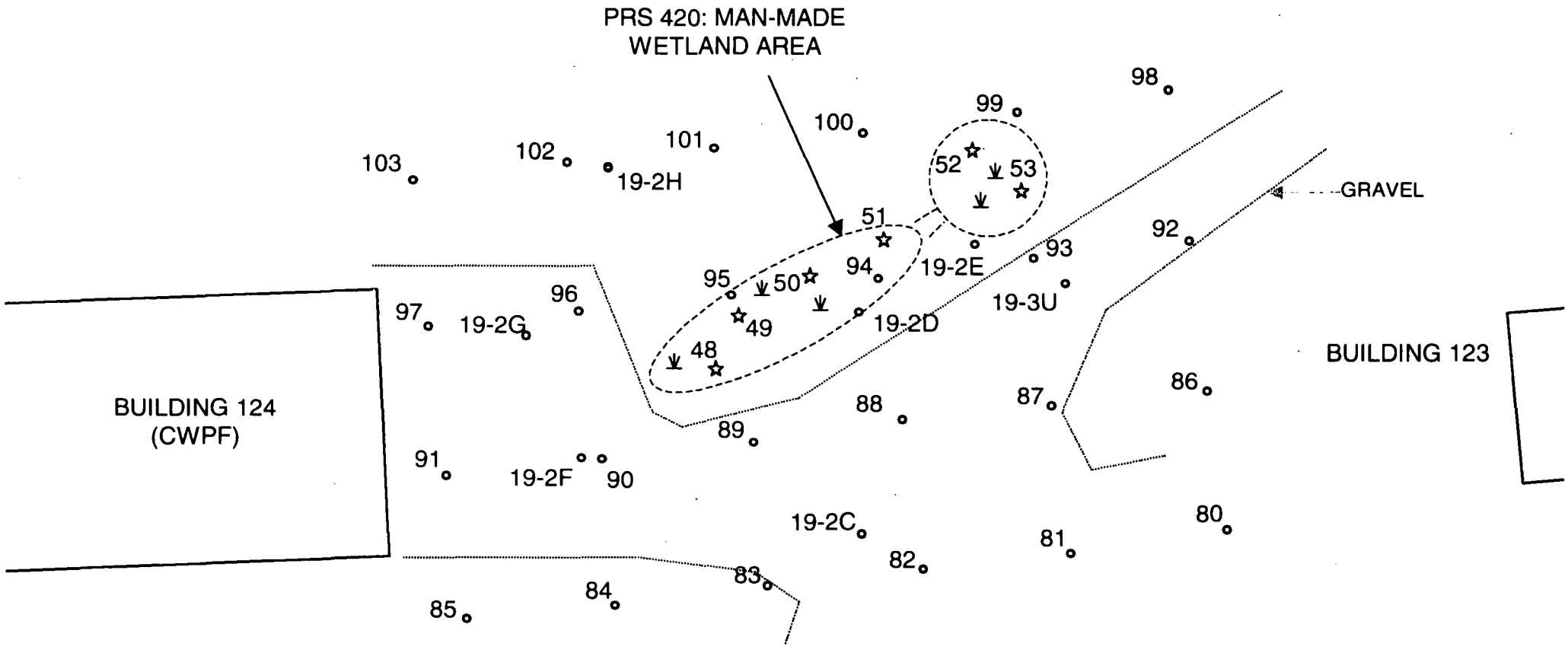
## Table 3: Pre-Construction Verification Sample Results*

(following removal of hydric soils)

| Sample Number | Radionuclide Activity/MDA (pCi/g) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | $Co^{60}$ $10^{-6}$ GV=0.1 | $Cs^{137}$ $10^{-6}$ GV=0.46 | $Pb^{210}$ ** | $Ra^{226}$ $10^{-6}$ GV=0.14 bkgd=2.0 | $Ac^{227}$(D) $10^{-6}$ GV=1.0 | $Th^{230}$ $10^{-6}$ GV=44 | $Th^{232}$(D) ALARA=3.0 | $Pu^{238}$ $10^{-5}$ GV=1.0 | $Am^{241}$ $10^{-6}$ GV=4.95 |
| 2 | 0/0.02 | 0/0.01 | 1.91/0.31 | 1.11/0.16 | 0.09/0.08 | 0/2.82 | 0.94/0.06 | 0/21.04 | 0.05/0.03 |
| 3 | 0.03/0.03 | 0.02/0.02 | 1.03/0.35 | 1.04/0.16 | 0.11/0.09 | 3.17/3.17 | 1.22/0.06 | 0/19.46 | 0.03/0.03 |
| 4 | 0.01/0.02 | 0.01/0.01 | 0.9/0.31 | 1.11/0.15 | 0.04/0.08 | 0/2.93 | 1.2/0.05 | 0/21.8 | 0/0.03 |
| 5 | 0/0.02 | 0.03/0.01 | 0/0.41 | 0.61/0.22 | 0.09/0.12 | 0/3.22 | 0.55/0.04 | 0/17.58 | 0.06/0.04 |
| 6 | 0/0.02 | 0.02/0.01 | 1/0.26 | 0.94/0.2 | 0.04/0.09 | 2.72/2.52 | 0.47/0.05 | 0/15.01 | 0.01/0.03 |
| 7 | 0/0.02 | 0.01/0.01 | 0.42/0.27 | 0.54/0.13 | 0/0.07 | 1.04/2.35 | 0.5/0.04 | 0/16.2 | 0.2/0.03 |
| 1 | Accumulated runoff in excavation: alpha = <LDL, tritium ($H_3$)= 3.38 nCi/l | | | | | | | | |

*samples collected 7 April 1999
**GV not developed for Pb210 but results are below site-specif GVs for other radionuclides with similar HEAST slope factors
MDA – Minimum Detectable Activity
LDL – lower detection limit
(D) – identification by daughter emissions, sample assumed to be in specular equilibrium.






o **Sample Location (1991 & 1993)**
☆ **Sample Location (1999)**
**North**

**Approx. Scale**
**0 10m 20m**

**Marsh** ⩔

**Note:** numbers associated with sample locations correspond to data presented on Table 1

**FIGURE 1. SAMPLE LOCATIONS IN & AROUND PRS 420**

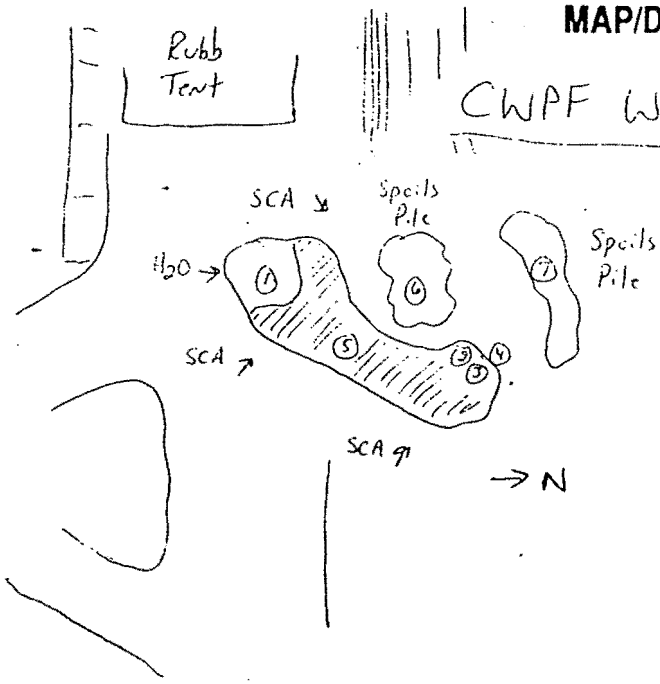
# RADIOLOGICAL SURVEY DATA SHEET



TS 4/8/99

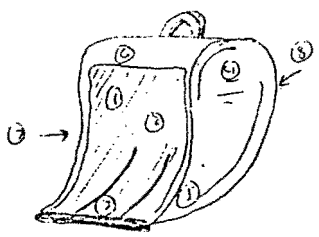
| | |
|---|---|
| LOCATION: (BLDG./AREA/ROOM) CWPF Wetlands | SURVEY NO. 99-LS-067 |
| PURPOSE: CWPF Wetlands Survey. | RWP NO. LS-001-99 |
| | DATE: 4/8/99 |
| | TIME: 1400 |

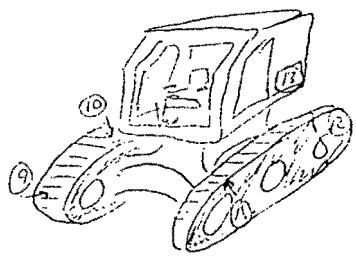
## MAP/DRAWING




* Bicron Fid not calibrated only used as indicator.
All readings ≤ Background Ch. 1 & Out.
- See Sample Results

Bucket Used





Excavator.

* Tracks not affected by soil *

Directs

(< 100 dpm/100cm²)

(< 5000 dpm/100cm² B/β)

LEGEND: # = mrem/hr (γ) whole body
# = mrem/hr (β/γ) extremity/skin dose
# = mrem/hr neutron
# = air sample number
(#) = swipe number
(#/α) or (#/β) = direct cont. measurement in dpm/100cm²

INSTRUMENTS USED

| Instrument | Serial Number | Cal. Due Date |
|---|---|---|
| Alpha | 5905/5906 | 9/17/99 |
| Bicron Fid | 7383/7384 | n/a |
| | A | |
| | | |

| | | |
|---|---|---|
| Prepared by: (Signature) [redacted] | HPJ 8234 | Date: |
| Print Name: [redacted] | | |
| Control by: (Signature) [redacted] | HPJ 823 | Date: |
| Print Name: [redacted] | | |
| [redacted] | HPJ 5[illegible] | [illegible] |
| Reviewed/Approved by: (Print Name) [redacted] | | |

ML-9620 (2-98)

# RADIOLOGICAL SURVEY DATA SHEET (cont.)

| Removable Contamination | | | | |
|---|---|---|---|---|
| Swipes (dpm/100cm²) | | | | [redacted] |
| Sample # | β/γ | Alpha | Tritium | Comments |
| 1-8 | <1000* | <20 | ~1A | Bucket |
| 9-14 | <1000 | <20 | ~1A | Excavator |
| | | N | A | |

| Removable Contamination | | | | |
|---|---|---|---|---|
| Swipes (dpm/100cm²) | | | | [redacted] |
| Sample # | β/γ | Alpha | Tritium | Comments |
| | | | | |
| | N | A | | |

COMMENTS: All Direct and Removable values in Table 2.2 w/ NE Electra [illegible] Bicron FID only used as indicator not calibrated. All values ≤ Background Ch 1 + 2σ

NOTES:

1. See [illegible] 10002 for [illegible] and skin dose rates.
2. To remove RO Count Room [illegible] leave not applicable blank. If a column N/A, if not [illegible] comments [illegible] and, write "see attached" [illegible]
3. [illegible] special sample-by, [illegible], soil, water), special id modifiers or otherwise in Comments. If not needed, mark N/A.

# EG&G MOUND APPLIED TECHNOLOGIES

p3 of 15
RIM

DMOLL

## ENVIRONMENTAL MONITORING LABORATORY
## REQUEST FOR ANALYSIS

| DATE: | SAMPLE MATRIX: | COST CENTER: |
|---|---|---|
| 4-7-99 | $H_2O$ | |

| NUMBER OF SAMPLES: | CHARGE NUMBER: | SAMPLE LOCATION: |
|---|---|---|
| 1 | | |

| REQUESTED BY: | VOLUME: |
|---|---|
| Kit McMahon | 300 |

| SEND DATA TO: | DEPT: | MAIL STOP: |
|---|---|---|
| TODD SMITH | 3462 | |

ANALYSES REQUESTED (check):

☑ $^3H$ ☑ Gross α ☐ Pu ☐ U ☐ Th

Other Analysis: _____

| LAB I.D. NUMBER | SAMPLE IDENTIFICATION | $^3H$ RESULT | α = |
|---|---|---|---|
| 9903074 | CWIPF-Wet Land | 3.38 nCi/l | <LDL |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

COMMENTS: _____

| ANALYZED BY: | DATE: |
|---|---|
| Ruth Schudel | 4-7-99 |

ML-5222 (2-96)

CF-3 , 5890 , 621.000 , CWPF #2 HPG03422 Rec. 4/7/99

99-LS-067

p4 of 15

Sample Filename: C3_01590.S3
Sample Identification: NA800339
Title: CWPF #2 HPG03422 Rec. 4/7/99
Begin Collection Time & Date: 2:02:50PM Apr/7/1999
Detector Identification: CF-3
User Identification: 5890
Sample Quantity: 621.000 grams

| Isotope | Energy (keV) | Concentration (pCi/gram) | MDA (pCi/gram) | Flag |
|---|---|---|---|---|
| Pu-238 | 15-20 | 0.000000 | 21.0434 | Use MDA value |

Density: 1.30737
Efficiency: 0.00355000
Concentration: 0.000000

99-LS-067
p5 of 15
RLR

# SOIL ANALYSIS REPORT

FIELD SAMPLE ID:
LAB SAMPLE ID: HPG03422
FILE ID: GEA00664.S0
PRIORITY

COPY

**Description\Location:**
CWPF #2
EPA Dish

**Collector:** 8234

**Date Received:** 4/7/99 **Date Collected:**

| Radionuclide | | Activity (pCi/g) | MDA | MD-10438 Limit (pCi/g) |
|---|---|---|---|---|
| Co-60 | * | 0.00 | 0.02 ✓ | 45,000 |
| Cs-137 | * | 0.00 | 0.01 ✓ | 45,000 |
| Pb-210 | | 1.91 | 0.31 ✓ | 45,000 |
| Ra-226 | | 1.11 | 0.16 ✓ | 800 |
| Ac-227 (D) | | 0.09 | 0.08 ✓ | 40 |
| Th-230 | * | 0.00 | 2.82 ✓ | 800 |
| Th-232 (D) | | 0.94 | 0.06 ✓ | 130 |
| ~~Pu-238~~ | | ~~42.48~~ | ~~32.62~~ | ~~500~~ |
| Am-241 | | 0.05 | 0.03 ✓ | 500 |

**Other Nuclides:**

| Radionuclide | Activity (pCi/g) | MDA | MD-10438 Limit (pCi/g) |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

Σ DOT 0.05 nCi/g

Σ Respirator 0.10

Σ Respirator < 1 indicates soil levels below limit.
Values > or = 1 indicate soil levels exceed limit. Limits based on MD-10438 table 4.

Σ DOT 2 nCi/g limit, total activity.

(D) Denotes identification by daughter emissions.
Sample is assumed to be in secular equilibrium.

* Indicates activity < MDA. MDA used in limits calculation.

Instrument type: High Purity Germanium

Comments:

Reviewed By: [illegible] Analyst [illegible] [redacted]

NA800340 , 0.000000 , 19.4565 , 2:04:22PM Apr/7/1999 , 99-25-0
CF-4 , 5890 , 584.000 , CWPF #3 HPG03423 Rec. 4/7/99 PG OF 15

---

RM

Sample Filename: C4_00080.S0
Sample Identification: NA800340
Title: CWPF #3 HPG03423 Rec. 4/7/99
Begin Collection Time & Date: 2:04:22PM Apr/7/1999
Detector Identification: CF-4
User Identification: 5890
Sample Quantity: 584.000 grams

COPY

| Isotope | Energy (keV) | Concentration (pCi/gram) | MDA (pCi/gram) | Flag |
|---|---|---|---|---|
| Pu-238 | 15-20 | 0.000000 ✓ | 19.4565✓ | Use MDA value |

Density: 1.22947
Efficiency: 0.00370700
Concentration: 0.000000

99-LS-067
p7 of 15
RIC

# SOIL ANALYSIS REPORT

**FIELD SAMPLE ID:**
**LAB SAMPLE ID:** HPG03423
**FILE ID:** GEA00668.S0
**PRIORITY:**

**Description\Location:**
CWPF #3
EPA Dish

**Collector:** 8234
**Date Received:** 4/7/99
**Date Collected:**

COPY

| Radionuclide | | Activity (pCi/g) | MDA | MD-10438 Limit (pCi/g) |
|---|---|---|---|---|
| Co-60 | * | 0.03 | 0.03 ✓ | 45,000 |
| Cs-137 | * | 0.02 | 0.02 ✓ | 45,000 |
| Pb-210 | | 1.03 | 0.35 ✓ | 45,000 |
| Ra-226 | | 1.04 | 0.16 ✓ | 800 |
| Ac-227 (D) | | 0.11 | 0.09 ✓ | 40 |
| Th-230 | * | 3.17 | 3.17 ✓ | 800 |
| Th-232 (D) | | 1.22 | 0.06 ✓ | 130 |
| ~~Pu-238~~ | * | ~~38.65~~ | ~~38.65~~ | ~~500~~ |
| Am-241 | * | 0.03 | 0.03 ✓ | 500 |

**Other Nuclides:**

| Radionuclide | Activity (pCi/g) | MDA | MD-10438 Limit (pCi/g) |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

Σ DOT 0.05 nCi/g

Σ Respirator 0.09

Σ Respirator <1 indicates soil levels below limit.
Values > or = 1 indicate soil levels exceed limit. Limits based on MD-10438 table 4.

Σ DOT 2 nCi/g limit, total activity.

(D) Denotes identification by daughter emissions.
Sample is assumed to be in secular equilibrium.

* Indicates activity < MDA. MDA used in limits calculation.

Instrument type: High Purity Germanium

Comments:

Date: [illegible] Counted by: [illegible] Verified by: [illegible] INITIALS [illegible]

Sample Filename: C5_01395.S0
Sample Identification: NA800341
Title: CWPF #4 HPG03424 Rec. 4/7/99
Begin Collection Time & Date: 2:05:35PM Apr/7/1999
Detector Identification: CF-5
User Identification: 5890
Sample Quantity: 569.000 grams

COPY

| Isotope | Energy (keV) | Concentration (pCi/gram) | MDA (pCi/gram) | Flag |
|---|---|---|---|---|
| Pu-238 | 15-20 | 0.000000 | 21.7982 | Use MDA value |

Density: 1.19789
Efficiency: 0.00358000
Concentration: 0.000000

# SOIL ANALYSIS REPORT

**FIELD SAMPLE ID:**
**LAB SAMPLE ID:** HPG03424
**FILE ID:** GEA00669.S0
**PRIORITY:**

**Description\Location:**
CWPF #4
EPA Dish

**Collector:** 8234

**Date Received:** 4/7/99

**Date Collected:**

COPY

| Radionuclide | | Activity (pCi/g) | MDA | MD-10438 Limit (pCi/g) |
|---|---|---|---|---|
| Co-60 | * | 0.01 | 0.02 ✓ | 45,000 |
| Cs-137 | * | 0.01 | 0.01 ✓ | 45,000 |
| Pb-210 | | 0.90 | 0.31 ✓ | 45,000 |
| Ra-226 | | 1.11 | 0.15 ✓ | 800 |
| Ac-227 (D) | * | 0.04 | 0.08 ✓ | 40 |
| Th-230 | * | 0.00 | 2.93 ✓ | 800 |
| Th-232 (D) | | 1.20 | 0.05 ✓ | 130 |
| ~~Pu-238~~ | ~~*~~ | ~~0.00~~ | ~~36.66~~ | ~~500~~ |
| Am-241 | * | 0.00 | 0.03 ✓ | 500 |

**Other Nuclides:**

| Radionuclide | Activity (pCi/g) | MDA | MD-10438 Limit (pCi/g) |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

Σ DOT **0.04** nCi/g

Σ Respirator **0.09**

Σ Respirator <1 indicates soil levels below limit.
Values > or = 1 indicate soil levels exceed limit. Limits based on MD-10438 table 4.

Σ DOT 2 nCi/g limit, total activity.

(D) Denotes identification by daughter emissi[illegible]
Sample is assumed to be in secular equilibrium.

* Indicates activity < MDA. MDA used in [illegible]

Instrument type: High Purity Germanium

Comments:

Date: 4/12/99 Counted By: [illegible] Analyzed By: 5290 INITIALS [redacted]

Sample Filename: C3_01591.S0
Sample Identification: NA800342
Title: CWPF #5 HPG03426 Rec.4/7/99
Begin Collection Time & Date: 2:39:41PM Apr/7/1999
Detector Identification: CF-3
User Identification: 5890
Sample Quantity: 756.000 grams

COPY

| Isotope | Energy (keV) | Concentration (pCi/gram) | MDA (pCi/gram) | Flag |
|---|---|---|---|---|
| Pu-238 | 15-20 | 0.000000 | 17.5833 | Use MDA value |

Density: 1.59158
Efficiency: 0.00355000
Concentration: 0.000000

99-LS-067
p11 of 15
RIM

# SOIL ANALYSIS REPORT

FIELD SAMPLE ID:
LAB SAMPLE ID: HPG03426
FILE ID: F9900006.S0
PRIORITY:

**Description\Location:**
CWPF #5
EPA Dish

**Collector:** 8234

**Date Received:** 4/7/99

**Date Collected:**

COPY

| Radionuclide | | Activity (pCi/g) | MDA | MD-10438 Limit (pCi/g) |
|---|---|---|---|---|
| Co-60 | * | 0.00 | 0.02 ✓ | 45,000 |
| Cs-137 | | 0.03 | 0.01 ✓ | 45,000 |
| Pb-210 | * | 0.00 | 0.41 ✓ | 45,000 |
| Ra-226 | | 0.61 | 0.22 ✓ | 800 |
| Ac-227 (D) | * | 0.09 | 0.12 ✓ | 40 |
| Th-230 | * | 0.00 | 3.22 ✓ | 800 |
| Th-232 (D) | | 0.55 | 0.04 ✓ | 130 |
| ~~Pu-238~~ | ~~*~~ | ~~0.00~~ | ~~39.80~~ | ~~500~~ |
| Am-241 | | 0.06 | 0.04 ✓ | 500 |

**Other Nuclides:**

| Radionuclide | Activity (pCi/g) | MDA | MD-10438 Limit (pCi/g) |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

Σ DOT 0.04 nCi/g

Σ Respirator 0.09

Σ Respirator <1 indicates soil levels below limit.
Values > or = 1 indicate soil levels exceed limit. Limits based on MD-10438 table 4.

Σ DOT 2 nCi/g limit, total activity.

(D) Denotes identification by daughter emissions.
Sample is assumed to be in secular equilibrium.

* Indicates activity < MDA. MDA used in limit calculation.

Instrument type: High Purity Germanium

Comments:

Date: 4/14/99 Counted By: 5390 Analyzed By: 5390 INITIALS [redacted]

Rim

Sample Filename: C4_00081.S0
Sample Identification: NA800343
Title: CWPF #6 HPG03427 Rec. 4/7/99
Begin Collection Time & Date: 2:41:23PM Apr/7/1999
Detector Identification: CF-4
User Identification: 5890
Sample Quantity: 621.000 grams

COPY

| Isotope | Energy (keV) | Concentration (pCi/gram) | MDA (pCi/gram) | Flag |
|---|---|---|---|---|
| Pu-238 | 15-20 | 0.000000 | 15.0129 | Use MDA value |

Density: 1.30737
Efficiency: 0.00370700
Concentration: 0.000000

99-LS-067
p 13 of 15

# SOIL ANALYSIS REPORT

FIELD SAMPLE ID: RIM
LAB SAMPLE ID: HPG03427
FILE ID: GED00194.S0
PRIORITY:

**Description\Location:**
CWPF #6
EPA Dish

Collector: 8234
Date Received: 4/7/99
Date Collected:

COPY

| Radionuclide | | Activity (pCi/g) | MDA | MD-10438 Limit (pCi/g) |
|---|---|---|---|---|
| Co-60 | * | 0.00 | 0.02 | 45,000 |
| Cs-137 | | 0.02 | 0.01 | 45,000 |
| Pb-210 | | 1.00 | 0.26 | 45,000 |
| Ra-226 | | 0.94 | 0.20 | 800 |
| Ac-227 (D) | * | 0.04 | 0.09 | 40 |
| Th-230 | | 2.72 | 2.52 | 800 |
| Th-232 (D) | | 0.47 | 0.05 | 130 |
| ~~Pu-238~~ | ~~*~~ | ~~0.00~~ | ~~30.91~~ | ~~500~~ |
| Am-241 | * | 0.01 | 0.03 | 500 |

**Other Nuclides:**

| Radionuclide | Activity (pCi/g) | MDA | MD-10438 Limit (pCi/g) |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

Σ DOT 0.04 nCi/g

Σ Respirator 0.07

Σ Respirator <1 indicates soil levels below limit.
Values > or = 1 indicate soil levels exceed limit. Limits based on MD-10438 table 4.

Σ DOT 2 nCi/g limit, total activity.

(D) Denotes identification by daughter emissions.
Sample is assumed to be in secular equilibrium.

* Indicates activity < MDA. MDA used in limits calculation.

Instrument type: High Purity Germanium

Comments:

[redacted]

Sample Filename: C5_01396.S0
Sample Identification: NA800344
Title: CWPF #7 HPG03428 Rec. 4/7/99
Begin Collection Time & Date: 2:44:20PM Apr/7/1999
Detector Identification: CF-5
User Identification: 5890
Sample Quantity: 794.000 grams

COPY

| Isotope | Energy (keV) | Concentration (pCi/gram) | MDA (pCi/gram) | Flag |
|---|---|---|---|---|
| Pu-238 | 15-20 | 0.000000 | 16.1997 | ✓ Use MDA value |

Density: 1.67158
Efficiency: 0.00358000
Concentration: 0.000000

p15 of 15

# SOIL ANALYSIS REPORT

FIELD SAMPLE ID:
LAB SAMPLE ID: HPG03428
FILE ID: GEA00671.S0
PRIORITY:

**Description\Location:**
CWPF #7
EPA Dish

**Collector:** 8234

**Date Received:** 4/7/99

**Date Collected:**

COPY

| Radionuclide | | Activity (pCi/g) | MDA | MD-10438 Limit (pCi/g) |
|---|---|---|---|---|
| Co-60 | * | 0.00 | 0.02 | 45,000 |
| Cs-137 | * | 0.01 | 0.01 | 45,000 |
| Pb-210 | | 0.42 | 0.27 | 45,000 |
| Ra-226 | | 0.54 | 0.13 | 800 |
| Ac-227 (D) | * | 0.00 | 0.07 | 40 |
| Th-230 | * | 1.04 | 2.35 | 800 |
| Th-232 (D) | | 0.50 | 0.04 | 130 |
| ~~Pu-238~~ | ~~*~~ | ~~12.95~~ | ~~30.31~~ | ~~500~~ |
| Am-241 | | 0.20 | 0.03 | 500 |

**Other Nuclides:**

| Radionuclide | Activity (pCi/g) | MDA | MD-10438 Limit (pCi/g) |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

Σ DOT 0.03 nCi/g

Σ Respirator 0.07

Σ Respirator <1 indicates soil levels below limit.
Values > or = 1 indicate soil levels exceed limit. Limits based on MD-10438 table 4.

Σ DOT 2 nCi/g limit, total activity.

(D) Denotes identification by daughter emissions.
Sample is assumed to be in secular equilibrium.

* Indicates activity < MDA. MDA used in limits calculation.

Instrument type: High Purity Germanium

Comments:

[redacted]

Reference Material

Reference 1

**WETLANDS ASSESSMENT**
**FOR THE INSTALLATION OF A**
**CONSOLIDATED WASTE PROCESSING FACILITY ACCESSWAY**
**June 18, 1998**

## 1.0 Introduction

The Miamisburg Environmental Management Project (MEMP) is a U. S. Department of Energy owned, contractor-operated facility located in southwestern Ohio. MEMP is located in the community of Miamisburg, Ohio, approximately ten (10) miles southwest of Dayton, Ohio. The subject of this wetlands assessment is the construction of an accessway to the Consolidated Waste Processing Facility (CWPF). The accessway, which is an addition to the existing roadway, would be constructed over an existing, man-made isolated wetland. The area of the wetland that would be impacted is less than one-third (1/3) of an acre (0.06 acre). A previous action in the subject wetland, impacting less than 0.04 acres, was completed in January 1998.

## 2.0 Purpose and Need for the Proposed Action

The primary objective of the CWPF is to support shipment of radioactive waste from the MEMP to approved waste receiver sites. The accessway will enable transportation vehicles to enter the CWPF safely and efficiently.

## 3.0 Alternatives Considered

The alternatives considered for the project were no action, relocation of the facility footprint to avoid the wetland, relocation of the accessway only, and relocation of the entire project.

### 3.1 Alternative 1 -- No action

This alternative would not allow transportation vehicles to safely enter the facility. This alternative would also not allow the increase in waste handling throughput needed to implement the 5.3 year exit plan under which the facility is operating. Therefore, the No Action Alternative was not selected.

### 3.2 Alternative 2 -- Relocation of the facility footprint to avoid the wetland

To relocate the facility footprint would require the dismantlement and relocation of the existing structure and operating equipment, excavation and leveling of terrain on a steep slope and extensive rerouting of utilities. Therefore, this alternative was not selected.

### 3.3 Alternative 3 -- Relocation of the Accessway Only

This alternative involves excavation and leveling of terrain on a steep slope and rerouting of utilities. Other accessway relocation options would impact other environmental restoration projects underway at the MEMP. Therefore, this alternative was not selected.

### 3.4 Alternative 4 -- Relocation of the Entire Project

Relocation of the entire project would present the same obstacles described in Sections 3.1 through 3.3 of this assessment. Therefore, this alternative was not selected.

## 4.0 Wetland Effects

The wetland area affected by the accessway was delineated using the *OU9 Hydrogeologic Investigation: Wetlands Determination Report*, January 1994. This report was prepared in accordance with the 1987 COE Wetlands Delineation Manual and has the concurrence of the U.S. Army Corps of Engineers (USCOE). This wetlands assessment has been developed pursuant to 10 CFR Part 1022, *Compliance with Floodplan/Wetlands Environmental Review Requirements.*

The proposed action will result in long-term and direct impacts from the filling of an isolated, man-made wetland of 0.06 acres in size. The affected wetland would be backfilled with gravel during the construction of an accessway which is needed to support a consolidated waste processing facility.

Best management practices will be utilized to avoid or minimize potential harm to or within the surrounding environment.

## 5.0 References

*OU9 Hydrogeologic Investigation: Wetlands Determination Report*, Environmental Restoration Program, EG&G Mound Applied Technologies, Miamisburg, OH, January 1994.

Reference 2

# RISK-BASED GUIDELINE VALUES

## MOUND PLANT
## MIAMISBURG, OHIO

March 1997

Submitted to the
Miamisburg Environmental Management Project
U.S. DEPARTMENT OF ENERGY

Prepared by
HAZARDOUS WASTE REMEDIAL ACTIONS PROGRAM
Environmental Management and Enrichment Facilities
Managed by
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
for the
U.S. DEPARTMENT OF ENERGY
under contract DE-AC05-84OR21400

Revised by EG&G Mound Applied Technologies, Inc.

FINAL
(REVISION 4)

**TABLE 4A**

**Construction/Mound Employee - Soil/Sediment Guideline Values: Chemicals (Units = mg/kg)**

| CHEMICAL | Ingestion | | | | Inhalation | | | | Ingestion + Inhalation | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | GV for TR=$10^{-4}$ | GV for TR=$10^{-5}$ | GV for TR=$10^{-6}$ | GV for HI=1 | GV for TR=$10^{-4}$ | GV for TR=$10^{-5}$ | GV for TR=$10^{-6}$ | GV for HI=1 | GV for TR=$10^{-4}$ | GV for TR=$10^{-5}$ | GV for TR=$10^{-6}$ | GV for HI=1 |
| Tribromomethane | 3.75e+04 | 3.75e+03 | 3.75e+02 | 4.30e+03 | 8.00e+09 | 8.00e+08 | 8.00e+07 | | 3.75e+04 | 3.75e+03 | 3.75e+02 | |
| Trichloroethylene | 2.70e+04 | 2.70e+03 | 2.70e+02 | | 2.20e+03 | 2.20e+03 | 2.25e+02 | | 2.20e+03 | 1.25e+03 | 1.25e+02 | |
| Trichlorofluoromethane | | | | 6.40e+04 | | | | 7.30e+02 | | | | 7.30e+02 |
| Trichloromethane | 4.90e+04 | 4.90e+03 | 4.90e+02 | 2.10e+03 | 1.55e+03 | 1.55e+02 | 1.55e+01 | | 1.55e+03 | 1.55e+02 | 1.55e+01 | |
| Xylene | | | | 4.30e+05 | | | | | | | | |
| bis(2-Ethylhexyl)phthalate | 2.15e+04 | 2.15e+03 | 2.15e+02 | 4.30e+03 | | | | | | | | |
| PAHs | | | | | | | | | | | | |
| Acenaphthylene | | | | | | | | | | | | |
| Anthracene | | | | 6.40e+04 | | | | | | | | |
| Benzo(a)anthracene | 4.10e+02 | 4.10e+01 | 4.10e+00 | | | | | | | | | |
| Benzo(a)pyrene | 4.10e+01 | 4.10e+00 | 4.10e-01 | | | | | | | | | |
| Benzo(b)fluoranthene | 4.10e+02 | 4.10e+01 | 4.10e+00 | | | | | | | | | |
| Benzo(g,h,i)perylene | | | | | | | | | | | | |
| Benzo(k)fluoranthene | 4.10e+03 | 4.10e+02 | 4.10e+01 | | | | | | | | | |
| Dibenz(a,h)anthracene | 4.10e+01 | 4.10e+00 | 4.10e-01 | | | | | | | | | |

**TABLE 4A**

**Construction/Mound Employee - Soil/Sediment Guideline Values: Chemicals (Units = mg/kg)**

| CHEMICAL | Ingestion | | | | Inhalation | | | | Ingestion + Inhalation | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | GV for TR=$10^{-4}$ | GV for TR=$10^{-5}$ | GV for TR=$10^{-6}$ | GV for HI=1 | GV for TR=$10^{-4}$ | GV for TR=$10^{-5}$ | GV for TR=$10^{-6}$ | GV for HI=1 | GV for TR=$10^{-4}$ | GV for TR=$10^{-5}$ | GV for TR=$10^{-6}$ | GV for HI=1 |
| **High Explosives** | | | | | | | | | | | | |
| HMX | | | | 1.10e+04 | | | | | | | | |
| PETN | | | | | | | | | | | | |
| RDX | 2.70e+03 | 2.70e+02 | 2.70e+01 | 6.40e+04 | | | | | | | | |
| **Inorganics** | | | | | | | | | | | | |
| Aluminum | | | | | | | | | | | | |
| Antimony | | | | 8.50e+01 | | | | | | | | |
| Arsenic | | | | 6.40e+01 | 6.00e+05 | 6.00e+04 | 6.00e+03 | | | | | |
| Barium | | | | 1.50e+04 | | | | 3.10e+06 | | | | 1.50e+04 |
| Beryllium | 7.00e+01 | 7.00e+00 | 7.00e-01 | 1.10e+03 | 3.65e+06 | 3.65e+05 | 3.65e+04 | | 7.00e+01 | 7.00e+00 | 7.00e-01 | |
| Cadmium (Diet) | | | | 2.10e+02 | 5.00e+06 | 5.00e+05 | 5.00e+04 | | | | | |
| Chromium III | | | | 2.10e+05 | | | | | | | | |
| Chromium VI | | | | 1.10e+03 | 7.50e+05 | 7.50e+04 | 7.50e+03 | | | | | |
| Cobalt | | | | | | | | | | | | |
| Copper | | | | | | | | | | | | |

TABLE 4B Construction/Mound Employee - Soil/Sediment Guideline Values: Radionuclides (Units = pCi/g)

| RADIONUCLIDE | Ingestion | | | External | | | Inhalation | | | Ingestion + External + Inhalation | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | GV for TR=10-4 | GV for TR=10-5 | GV for TR=10-6 | GV for TR=10-4 | GV for TR=10-5 | GV for TR=10-6 | GV for TR=10-4 | GV for TR=10-5 | GV for TR=10-6 | GV for TR=10-4 | GV for TR=10-5 | GV for TR=10-6 |
| Actinium-227+D | 2.65e+02 | 2.65e+01 | 2.65e+00 | 1.65e+02 | 1.65e+01 | 1.65e+00 | 2.20e+05 | 2.20e+04 | 2.20e+03 | 1.00 e+02 | 1.00 e+01 | 1.00 e+00 |
| Americium-241 | 5.00e+02 | 5.00e+01 | 5.00e+00 | 2.10e+04 | 2.10e+03 | 2.10e+02 | 4.45e+05 | 4.45e+04 | 4.45e+03 | 4.45e+02 | 4.95e+01 | 4.95 e+00 |
| Bismuth-207 | 3.30e+04 | 3.30e+03 | 3.30e+02 | 1.75e+01 | 1.75e+00 | 1.75e-01 | 1.80e+09 | 1.80e+08 | 1.80e+07 | 1.75e+01 | 1.75e+00 | 1.75 e-01 |
| Cesium-137+D | 5.50e+03 | 5.50e+02 | 5.50e+01 | 4.65e+01 | 4.65e+00 | 4.65e-01 | 9.00e+08 | 9.00e+07 | 9.00 e+06 | 4.60e+01 | 4.60e+00 | 4.6 e-01 |
| Cobalt-60 | 9.00e+03 | 9.00 e+02 | 9.00 e+01 | 10.00e+00 | 1.00e+00 | 1.00e-01 | 2.50e+08 | 2.50e+07 | 2.50 e+06 | 1.00 e+01 | 1.00e+00 | 1.00 e-01 |
| Plutonium-238 | 5.50e+02 | 5.50e+01 | 5.50 e+00 | 5.00e+06 | 5.00 e+05 | 5.00 e+04 | 6.50e+05 | 6.50 e+04 | 6.50 e+03 | 5.50e+02 | 5.50 e+01 | 5.50 e+00 |
| Plutonium-239 | 5.50e+02 | 5.50 e+01 | 5.50 e+00 | 7.50e+06 | 7.50 e+05 | 7.50 e+04 | 6.00e+05 | 6.00 e+04 | 6.00 e+03 | 5.50 e+02 | 5.50 e+01 | 5.50 e+00 |
| Plutonium-240 | 5.50e+02 | 5.50 e+01 | 5.50 e+00 | 5.00e+06 | 5.00 e+05 | 5.00 e+04 | 6.00e+05 | 6.00 e+04 | 6.00 e+03 | 5.50 e+02 | 5.50 e+01 | 5.50 e+00 |
| Radium-226+D | 5.50 e+02 | 5.50 e+01 | 5.50 e+00 | 1.45e+01 | 1.45e+00 | 1.45e-01 | 6.00e+06 | 6.00e+05 | 6.00 e+04 | 1.40e+01 | 1.40e+00 | 1.40 e-01 |
| Strontium-90+D | 3.00e+03 | 3.00 e+01 | 3.00 e+00 | | | | 2.45e+08 | 2.45 e+07 | 2.45 e+06 | 3.00 e+02 | 3.00 e+01 | 3.00 e+00 |
| Thorium-228+D | 7.00e+02 | 7.00 e+01 | 7.00 e+00 | 10.00e+01 | 10.00 e+00 | 1.00e+00 | 1.75e+05 | 1.75e+04 | 1.75 e+03 | 8.50e+01 | 8.50 e+00 | 8.50 e-01 |
| Thorium-230 | 4.45e+03 | 4.45e+02 | 4.45e+01 | 2.20e+06 | 2.20 e+05 | 2.20 e+04 | 10.00e+05 | 10.00 e+04 | 10.00 e+03 | 4.40e+03 | 4.40e+02 | 4.40 e+01 |
| Thorium-232 | 5.00e+03 | 5.00 e+02 | 5.00 e+01 | 4.95e+06 | 4.95 e+05 | 4.95 e+04 | 9.00e+05 | 9.00 e+04 | 9.00 e+03 | 5.00e+03 | 5.00 e+02 | 5.00 e+01 |
| Tritium | 2.35e+06 | 2.35 e+05 | 2.35 e+04 | | | | 1.80e+11 | 1.80 e+10 | 1.80 e+09 | 2.35e+06 | 2.35 e+05 | 2.35 e+04 |

Reference 3

REFERENCE USE ONLY

ENVIRONMENTAL RESTORATION PROGRAM

# OPERABLE UNIT 6, AREA 19 AND AREA 14

# VERIFICATION REPORT

MOUND PLANT

MIAMISBURG, OHIO

OCTOBER 1994

DEPARTMENT OF ENERGY

ALBUQUERQUE FIELD OFFICE

ENVIRONMENTAL RESTORATION PROGRAM

EG&G MOUND APPLIED TECHNOLOGIES

FINAL

(REVISION 0)

$Pu^{238}$

Table IV.6 Radiological Analytical Data

| Sample Number | Boring Location | Sample Depth | Units | Am-241 | Q | Pu-238 | Q | Pu 239/240 | Q | Th-228 | Q | Th-230 | Q | Th-232 | Q | Tritium | Q | U-234 | Q | U-235 | Q | U-238 | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 010002 | 19-3A | 1-3' | pCi/g | 0.30 | | 5.04 | | 0.20 | U | 0.84 | | 0.59 | | 0.50 | | 14.00 | U | 0.54 | | 0.07 | UJ | 0.48 | |
| 011002 | 19-3A | 1-3' | pCi/g | 0.26 | U | 132.05 | | 1.92 | | 0.84 | | 0.88 | | 0.71 | | 14 | U | 0.68 | | 0.07 | U | 0.52 | |
| 020003 | 19-3B | 3-4' | pCi/g | 0.31 | | 100.92 | | 0.54 | J | 1.10 | | 0.99 | | 0.98 | | 14 | U | 0.52 | | 0.06 | J | 0.71 | |
| 020006 | 19-3B | 6-7' | pCi/g | 0.30 | U | 16.55 | | 0.30 | | 3.66 | | 0.96 | | 0.15 | | 14 | U | 0.53 | | 0.10 | | 0.53 | |
| 030004 | 19-3C | 4-6' | pCi/g | 0.31 | U | 3.25 | | 0.11 | U | 3.52 | | 0.61 | | 0.23 | | 14 | U | 0.39 | | 0.07 | U | 0.37 | |
| 040007 | 19-3D | 7-9' | pCi/g | 0.31 | U | 0.23 | U | 0.11 | U | 1.16 | | 1.40 | | 0.72 | | 14 | U | 0.75 | | 0.07 | U | 0.74 | |
| 040012 | 19-3D | 12-14' | pCi/g | 0.33 | U | 0.23 | U | 0.11 | U | 0.98 | | 0.84 | | 0.68 | | 14 | U | 0.55 | | 0.10 | | 0.61 | |
| 050004 | 19-3E | 4-6' | pCi/g | 0.27 | U | 0.45 | U | 0.21 | U | 0.47 | U | 0.44 | | 0.38 | | 14.00 | U | 0.49 | | 0.07 | UJ | 0.42 | |
| 050010 | 19-3E | 10-11.5' | pCi/g | 0.40 | U | 0.45 | U | 0.21 | U | 0.48 | | 0.43 | | 0.24 | | 14.00 | U | 0.61 | | 0.10 | J | 0.70 | |
| 060000 | 19-3F | 0-2' | pCi/g | 0.39 | U | 7.54 | | 0.11 | U | 1.78 | | 1.25 | | 0.97 | | 14 | U | 0.67 | | 0.07 | U | 0.59 | |
| 060005 | 19-3F | 5-7' | pCi/g | 0.37 | U | 1.48 | | 0.11 | U | 1.23 | | 1.25 | | 0.80 | | 14 | U | 0.56 | | 0.08 | | 0.55 | |
| 070001 | 19-3G | 1-2' | pCi/g | 0.40 | U | 6.10 | | 0.12 | J | 1.53 | | 0.97 | | 1.10 | | 14 | U | 0.52 | | 0.07 | U | 0.72 | |
| 070012 | 19-3G | 12-12.5' | pCi/g | 0.36 | U | 0.23 | U | 0.11 | UJ | 1.44 | | 1.21 | | 1.31 | | 14 | U | 0.67 | | 0.07 | U | 0.87 | |
| 071001 | 19-3G | 1-2' | pCi/g | 0.34 | U | 10.95 | | 0.11 | UJ | 1.18 | | 1.06 | | 0.95 | | 14 | U | 0.52 | | 0.07 | U | 0.71 | |
| 074000 | 19-3G | BLANK | pCi/L | 89.64 | U | 0.93 | U | 0.44 | U | 2.78 | | 1.50 | | 0.36 | | 700 | | 0.33 | | 0.29 | U | 0.24 | U |
| 080001 | 19-3H | 1-3' | pCi/g | 0.37 | U | 1.10 | | 0.11 | U | 0.84 | | 1.25 | | 0.51 | | 14 | U | 0.78 | J | 0.12 | J | 0.65 | |
| 080009 | 19-3H | 9-11' | pCi/g | 0.26 | U | 0.23 | U | 0.11 | U | 1.55 | | 0.97 | | 0.98 | | 14 | U | 0.77 | J | 0.09 | J | 0.82 | |
| 090002 | 19-3I | 2-4' | pCi/g | 0.33 | U | 0.22 | U | 0.11 | U | 0.44 | | 0.80 | | 0.34 | | 14 | U | 0.58 | | 0.07 | U | 0.58 | |
| 090017 | 19-3I | 17-19' | pCi/g | 0.28 | U | 0.40 | U | 0.19 | U | 0.42 | U | 1.24 | | 0.53 | | 14.00 | U | 0.69 | | 0.07 | UJ | 0.66 | |
| 100011 | 19-3J | 11-13' | pCi/g | 0.32 | U | 0.23 | U | 0.11 | U | 0.64 | | 0.80 | | 0.36 | | 14 | U | 0.73 | | 0.03 | J | 0.71 | |
| 100020 | 19-3J | 20-22' | pCi/g | 0.23 | U | 0.23 | U | 0.11 | U | 1.08 | | 1.00 | | 0.47 | | 14 | U | 0.63 | J | 0.09 | J | 0.77 | |
| 101020 | 19-3J | 20-22' | pCi/g | 0.36 | U | 0.23 | U | 0.11 | U | 0.78 | | 0.92 | | 0.35 | | 14 | U | 0.69 | | 0.06 | J | 0.66 | |
| 104000 | 19-3J | BLANK | pCi/L | 50.30 | U | 0.93 | U | 0.44 | UJ | 0.96 | U | 0.51 | | 0.24 | U | 530 | U | 0.41 | | 0.29 | U | 0.24 | U |
| 110006 | 19-3K | 6-8' | pCi/g | 0.36 | U | 0.45 | U | 0.21 | U | 0.89 | | 0.95 | | 1.27 | | 14.00 | U | 1.18 | | 0.11 | JJ | 1.21 | |
| 110017 | 19-3K | 17-19' | pCi/g | 0.31 | U | 0.45 | | 0.11 | U | 0.74 | | 0.83 | | 0.50 | | 14 | U | 0.71 | | 0.08 | | 0.67 | |
| 120001 | 19-3L | 1-3' | pCi/g | 0.36 | U | 3.01 | J | 0.21 | U | 2.58 | | 1.32 | | 1.90 | | 17.40 | | 0.86 | | 0.10 | J | 0.85 | |
| 120020 | 19-3L | 20-22' | pCi/g | 0.29 | U | 0.22 | U | 0.11 | U | 4.17 | | 0.88 | | 0.44 | | 14 | U | 0.68 | | 0.07 | U | 0.77 | |
| 124000 | 19-3L | BLANK | pCi/L | 81.85 | U | 0.93 | U | 0.44 | U | 0.96 | U | 0.34 | | 0.24 | U | 530.00 | U | 0.36 | | 0.29 | UJ | 0.26 | |
| 130003 | 19-3M | 3-6' | pCi/g | 0.37 | U | 6.82 | | 0.11 | U | 0.69 | | 0.84 | | 0.58 | | 14 | U | 0.72 | | 0.07 | U | 0.74 | |
| 130008 | 19-3M | 8-9' | pCi/g | 0.39 | U | 0.33 | | 0.11 | U | 1.35 | | 1.48 | | 1.46 | | 14 | U | 0.93 | | 0.12 | | 1.12 | |
| 140006 | 19-3N | 7-9' | pCi/g | 0.32 | U | 2.50 | | 0.11 | U | 0.87 | | 1.00 | | 0.58 | | 14 | U | 0.65 | | 0.08 | | 0.72 | |
| 140001 | 19-3N | 0.5-2.5' | pCi/g | 0.36 | U | 20.18 | | 0.20 | | 4.23 | | 0.82 | | 0.57 | | 14 | U | 1.12 | | 0.18 | J | 1.09 | |
| 150001 | 19-3O | 1-3' | pCi/g | 0.43 | | 31.98 | | 0.23 | | 1.05 | | 1.09 | | 0.70 | | 14 | U | 0.91 | | 0.19 | J | 0.73 | |
| 150020 | 19-3O | 20-22' | pCi/g | 0.33 | U | 0.23 | U | 0.11 | U | 0.73 | | 0.70 | | 0.44 | | 14 | U | 0.83 | | 0.16 | J | 0.87 | |
| 160018 | 19-3P | 18-20' | pCi/g | 0.40 | U | 0.46 | U | 0.22 | U | 0.46 | U | 0.49 | | 0.37 | | 14.00 | U | 0.71 | | 0.06 | J | 0.80 | |
| 160010 | 19-3P | 10-12' | pCi/g | 0.36 | U | 0.23 | U | 0.11 | U | 1.51 | | 1.31 | | 1.18 | | 14 | U | 0.71 | J | 0.07 | J | 0.80 | |
| 170007 | 19-3Q | 7-9' | pCi/g | 0.36 | U | 0.23 | U | 0.11 | UJ | 1.07 | | 1.02 | | 1.02 | | 14 | U | 0.65 | | 0.07 | U | 0.68 | |
| 170020 | 19-3Q | 20-22' | pCi/g | 0.34 | U | 0.23 | U | 0.11 | UJ | 1.40 | | 1.26 | | 1.16 | | 14 | U | 0.70 | | 0.13 | J | 0.74 | |
| 171020 | 19-3Q | 20-22' | pCi/g | 0.37 | U | 0.23 | U | 0.11 | UJ | 1.20 | | 0.79 | | 0.96 | | 14 | U | 0.69 | | 0.07 | J | 0.74 | |
| 180012 | 19-3R | 10-12' | pCi/g | 0.22 | U | 0.37 | U | 0.18 | U | 0.39 | | 0.69 | | 0.37 | | 14.00 | U | 0.49 | | 0.07 | UJ | 0.82 | |
| 180020 | 19-3R | 20-22' | pCi/g | 0.30 | U | 0.23 | U | 0.11 | U | 1.06 | | 1.00 | | 0.51 | | 14 | U | 0.72 | J | 0.07 | U | 0.69 | |
| 190007 | 19-3S | 7-9' | pCi/g | 0.37 | U | 0.23 | U | 0.11 | UJ | 0.86 | | 1.06 | | 0.46 | | 18.70 | | 0.70 | | 0.08 | J | 0.68 | |
| 190020 | 19-3S | 20-22' | pCi/g | 0.32 | U | 0.23 | U | 0.11 | UJ | 0.50 | | 0.92 | | 0.40 | | 14 | U | 0.81 | | 0.07 | J | 0.70 | |
| 191020 | 19-3S | 20-22' | pCi/g | 0.24 | U | 0.23 | U | 0.11 | UJ | 0.39 | | 1.17 | | 0.25 | | 17.30 | | 0.82 | | 0.08 | J | 0.76 | |
| 200020 | 19-3T | 20-22' | pCi/g | 0.22 | U | 0.41 | U | 0.20 | U | 0.43 | U | 0.86 | | 0.46 | | 14.00 | U | 0.78 | | 0.10 | J | 0.77 | |
| 200009 | 19-3T | 9-11.5' | pCi/g | 0.29 | U | [illegible] | U | 0.11 | U | 0.64 | | 1.01 | | 0.36 | | 14 | U | 0.89 | J | 0.12 | J | 0.77 | |
| 210006 | 19-3U | 5-7' | pCi/g | 0.34 | | 46.22 | | 0.20 | | 1.11 | | 1.08 | | 0.82 | | 14 | U | 1.16 | J | 0.22 | J | 0.75 | |
| 210012 | 19-3U | 12-14' | pCi/g | 0.33 | U | 4.87 | | 0.11 | U | 1.36 | | 0.68 | | 0.82 | | 14 | U | 1.19 | J | 0.08 | J | 0.88 | |
| 220005 | 19-3V | 5-7' | pCi/g | 0.31 | U | [illegible] | U | 0.19 | U | 1.09 | | 1.15 | | 1.46 | | 14.00 | U | 0.77 | | 0.07 | UJ | 0.65 | |
| 220010 | 19-3V | 10-11.5' | pCi/g | 0.32 | U | 0.45 | U | 0.21 | U | 0.47 | U | 0.91 | | 0.58 | | 14.00 | U | 0.61 | | 0.06 | UJ | 0.64 | |
| 230005 | 19-3W | 5-7' | pCi/g | 0.39 | U | 1.11 | | 0.11 | U | 0.71 | | 0.55 | | 0.54 | | 14 | U | 0.44 | | 0.07 | U | 0.53 | |
| 230014 | 19-3W | 15.15.5' | pCi/g | 0.36 | U | 0.22 | U | 0.11 | U | 0.65 | | 0.79 | | 0.85 | | 14 | U | 0.78 | | 0.07 | | 0.81 | |
| 240004 | 19-3X | 4-6' | pCi/g | 0.37 | U | 0.23 | U | 0.11 | UJ | 1.39 | | 1.07 | | 1.22 | | 14 | U | 1.19 | | 0.07 | U | 0.74 | |
| 240011 | 19-3X | 11-12.5' | pCi/g | 0.36 | U | 17.57 | | 0.12 | J | 1.20 | | 0.95 | | 0.97 | | 14 | U | 0.77 | | 0.07 | U | 0.81 | |
| 250009 | 19-3Y | 9-11.5' | pCi/g | 0.28 | U | 0.74 | | 0.11 | U | 1.24 | | 1.10 | | 1.09 | | 14 | U | 0.82 | | 0.08 | | 0.85 | |
| 250016 | 19-3Y | 16-17.5' | pCi/g | 0.28 | U | 0.23 | U | 0.11 | UJ | 1.04 | | 0.78 | | 0.93 | | 14 | U | 0.65 | | 0.09 | J | 0.84 | |
| 260002 | 19-4A | 1-3' | pCi/g | 0.66 | | 68.84 | | 0.91 | | 1.23 | | 1.01 | | 0.47 | | 14 | U | 0.60 | J | 0.07 | U | 0.59 | |
| 260010 | 19-4A | 9-11' | pCi/g | 0.30 | U | 0.23 | U | 0.11 | U | 0.86 | | 1.23 | | 0.39 | | 14 | U | 0.69 | J | 0.07 | J | 0.70 | |
| 260020 | 19-4A | 20-22' | pCi/g | 0.34 | U | 0.23 | U | 0.11 | U | 0.81 | | 0.70 | | 0.44 | | 14 | U | 0.80 | J | 0.08 | J | 0.88 | |
| 270000 | 19-2A | 0-2' | pCi/g | 0.30 | U | 0.44 | U | 0.21 | U | 1.76 | | 2.59 | | 2.39 | | 14.00 | U | 0.61 | | 0.07 | UJ | 0.64 | |
| 270006 | 19-2A | 6-8' | pCi/g | 0.31 | U | 0.23 | U | 0.11 | UJ | 0.80 | | 0.97 | | 0.36 | | 14 | U | 0.81 | | 0.07 | U | 0.74 | |
| 270013 | 19-2A | 13-15' | pCi/g | 0.38 | U | 0.23 | U | 0.11 | UJ | 0.43 | | 1.06 | | 0.36 | | 14 | U | 0.70 | | 0.07 | U | 0.78 | |
| 270020 | 19-2A | 20-22' | pCi/g | 0.29 | U | 0.23 | U | 0.11 | UJ | 0.66 | | 0.83 | | 0.35 | | 14 | U | 0.73 | | 0.07 | U | 0.87 | |
| 274000 | 19-2A | BLANK | pCi/L | 79.54 | U | 0.93 | U | 0.44 | UJ | 0.96 | U | 0.30 | | 0.24 | U | 556.7 | | 0.29 | U | 0.29 | U | 0.24 | U |
| 280006 | 19-2B | 6-8' | pCi/g | 0.27 | U | 0.44 | U | 0.21 | U | 0.51 | | 0.73 | | 0.21 | | 16.30 | | 0.56 | | 0.07 | UJ | 0.70 | |
| 280013 | 19-2B | 13-15' | pCi/g | 0.30 | U | 0.45 | U | 0.22 | U | 0.45 | | 0.81 | | 0.39 | | 14.00 | U | 0.78 | | 0.16 | J | 0.82 | |
| 280020 | 19-2B | 20-22' | pCi/g | 0.29 | U | 1.68 | | 0.22 | U | 0.52 | | 0.88 | | 0.42 | | 14.00 | U | 0.87 | | 0.07 | UJ | 0.81 | |
| 280000 | 19-2B | 0-2' | pCi/g | 0.18 | U | 0.88 | | 0.11 | U | 0.40 | | 0.07 | | 0.07 | | 14 | U | 0.26 | | 0.07 | U | 0.11 | |
| 281000 | 19-2B | 0-2' | pCi/g | 0.22 | U | 0.23 | U | 0.11 | U | 0.24 | U | 0.56 | | 0.35 | | 14 | U | 0.23 | | 0.07 | U | 0.25 | |
| 294000 | 19-2C | BLANK | pCi/L | 48.74 | U | 0.93 | U | 0.93 | U | 0.96 | U | 0.29 | U | 0.24 | U | 530 | U | 0.29 | U | 0.29 | U | 0.24 | U |
| 290000 | 19-2C | 0-2' | pCi/g | 0.32 | U | 10.87 | | 0.11 | UJ | 0.78 | | 0.94 | | 0.55 | | 14 | U | 0.62 | J | 0.07 | UJ | 0.70 | J |
| 290006 | 19-2C | 6-8' | pCi/g | 0.31 | U | 0.23 | U | 0.11 | U | 0.80 | | 1.06 | | 0.46 | | 14 | U | 0.79 | J | 0.21 | J | 0.97 | |
| 290013 | 19-2C | 13-15' | pCi/g | 0.36 | U | 1.35 | | 0.11 | U | 1.10 | | 0.97 | | 0.89 | | 14 | U | 0.83 | J | 0.07 | U | 0.72 | |
| 300000 | 19-2D | 0-2' | pCi/g | 0.23 | U | 2.67 | | 0.11 | U | 0.50 | | 0.68 | | 0.28 | | 14 | U | 0.44 | | 0.07 | U | 0.42 | |
| 301000 | 19-2D | 0-2' | pCi/g | 0.41 | U | 16.86 | | 0.11 | U | 1.27 | | 1.12 | | 0.82 | | 21.3 | | 1.35 | | 0.07 | U | 0.78 | |
| 310000 | 19-2E | 0-2' | pCi/g | 0.32 | U | 21.51 | | 0.45 | | 2.64 | | 1.29 | | 0.46 | | 34.0 | | 7.45 | | 0.16 | | 0.62 | |
| 320000 | 19-2F | 0-2' | pCi/g | 0.22 | U | 0.23 | U | 0.11 | U | 0.72 | | 0.78 | | 0.43 | | 14 | U | 0.81 | | 0.24 | J | 0.82 | |
| 320006 | 19-2F | 6-8' | pCi/g | 0.33 | U | 0.23 | U | 0.11 | U | 1.10 | | 0.88 | | 0.42 | | 14.9 | | 0.80 | | 0.13 | J | 0.95 | |
| 330006 | 19-2G | 6-8' | pCi/g | 0.43 | U | 1.53 | | 0.22 | U | 0.76 | | 0.65 | | 0.90 | | 22.00 | | 0.69 | | 0.08 | J | 0.69 | |
| 330000 | 19-2G | 0-2' | pCi/g | 0.29 | U | 3.83 | | 0.11 | U | 1.08 | | 1.37 | | 0.72 | | 16 | | 0.79 | | 0.07 | U | 0.65 | |
| 340000 | 19-2H | 0-2' | pCi/g | 0.38 | U | 1.22 | | 0.11 | U | 1.32 | | 0.77 | | 1.07 | | 14 | U | 0.88 | | 0.07 | U | 0.92 | |
| 340006 | 19-2H | 6-8' | pCi/g | 0.38 | U | 0.35 | | 0.11 | U | 1.49 | | 0.98 | | 1.05 | | 14 | U | 1.02 | J | 0.07 | U | 0.97 | |
| 341000 | 19-2H | 0-2' | pCi/g | 0.37 | U | 0.51 | | 0.11 | U | 2.19 | | 1.10 | | 1.20 | | 14 | U | 1.22 | J | 0.09 | J | 0.92 | |
| 350013 | 19-2I | 13-14.5' | pCi/g | 0.39 | U | 0.40 | U | 0.19 | U | 0.81 | | 0.74 | | 0.85 | | 14.00 | U | 0.65 | | 0.07 | UJ | 0.71 | |
| 354000 | 19-2I | BLANK | pCi/L | 47.02 | U | 0.93 | U | 0.44 | U | 0.96 | | 0.29 | U | 0.24 | U | 530.00 | U | 0.29 | U | 0.29 | UJ | 0.24 | U |
| 350000 | 19-2I | 0-2' | pCi/g | 0.33 | U | 0.23 | U | 0.11 | U | 1.39 | | 1.29 | | 0.82 | | 15 | U | 0.76 | | 0.07 | | 0.88 | |
| 350006 | 19-2I | 6-8' | pCi/g | 0.34 | U | 0.23 | U | 0.11 | U | 1.31 | | 1.14 | | 0.94 | | 16.4 | | 0.64 | | 0.16 | | 0.64 | |
| 350020 | 19-2I | 20-22' | pCi/g | 0.31 | U | 1.77 | | 0.11 | U | 1.28 | | 1.22 | | 1.01 | | 14 | U | 0.82 | J | 0.07 | U | 0.73 | |
| 360000 | 19-2J | 0-2' | pCi/g | 0.32 | U | 11.37 | | 0.33 | | 10.69 | | 1.01 | | 0.66 | | 14 | U | 0.97 | | 0.12 | J | 0.93 | |
| 360006 | 19-2J | 6-8' | pCi/g | 0.39 | U | 1.99 | | 0.11 | U | 1.34 | | 1.29 | | 0.62 | | 14 | U | 1.07 | | 0.22 | J | 0.96 | |
| 360013 | 19-2J | 13-15' | pCi/g | 0.34 | U | 0.51 | | 0.11 | U | 1.00 | | 0.74 | | 0.50 | | 14 | U | 0.77 | | 0.09 | J | 0.67 | |
| 360020 | 19-2J | 20-22' | pCi/g | 0.25 | U | 0.25 | | 0.11 | U | 1.34 | | 0.87 | | 0.69 | | 14 | U | 0.78 | | 0.11 | J | 0.82 | |
| 370012 | 19-1A | 12-14' | pCi/g | 0.44 | U | 3.22 | | 0.11 | U | 2.01 | | 0.78 | | 0.85 | | 14 | U | 0.55 | | 0.07 | U | 0.60 | |
| 370006 | 19-1A | 6-8' | pCi/g | 0.43 | U | 16.11 | | 0.27 | | 1.49 | | 0.92 | | 0.95 | | 14 | U | 0.68 | J | 0.12 | J | 0.80 | |
| 380006 | 19-2B | 6-8' | pCi/g | 0.31 | U | 82.57 | | 0.26 | J | 0.70 | | 0.68 | | 0.39 | | 20.30 | | 1.02 | | 0.07 | U | 0.84 | |
| 380012 | 19-2B | 12-14' | pCi/g | 0.34 | U | 2.58 | | 0.11 | U | 0.59 | | 1.11 | | 1.02 | | 14 | U | 1.00 | | 0.06 | | 0.86 | |
| 384000 | 19-2B | BLANK | pCi/L | 78.43 | U | 0.93 | U | 0.93 | U | 0.96 | U | 0.29 | U | 0.24 | U | 530 | U | 0.29 | U | 0.29 | U | 0.24 | U |
| 390011 | 19-2C | 12-14' | pCi/g | 0.45 | U | 0.84 | | 0.11 | U | 1.07 | | 1.07 | | 1.03 | | 14 | U | 0.81 | | 0.07 | U | 0.69 | |
| 391006 | 19-2C | 6-8' | pCi/g | 0.36 | U | 0.23 | U | 0.11 | U | 1.29 | | 0.93 | | 1.20 | | 14 | U | 0.76 | | 0.07 | | 0.89 | |
| 390006 | 19-2C | 6-8' | pCi/g | 0.44 | U | 5.38 | | 0.11 | UJ | 1.12 | | 0.82 | | 1.25 | | 14 | U | 1.04 | | 0.07 | J | 0.88 | |
| 400000 | NONE | SPIKE | pCi/g | 0.86 | | 103.93 | | 1.54 | | 13.35 | | 2.77 | | 1.21 | | 14 | U | 0.94 | | 0.06 | | 0.92 | |
| 410010 | NONE | SPIKE | pCi/g | 0.37 | U | 17.09 | | 0.37 | | 2.64 | | 1.59 | | 0.88 | | 14 | U | 0.77 | | 0.07 | | 0.78 | |
| 420020 | NONE | SPIKE | pCi/g | 0.35 | U | 0.23 | U | 0.11 | U | 1.16 | | 1.55 | | 0.68 | | 14 | U | 0.54 | | 0.08 | | 0.78 | |

Reference 4

ENVIRONMENTAL RESTORATION PROGRAM

# OPERABLE UNIT 6, DECONTAMINATION AND DECOMMISSIONING PROPOSED AREA 14 FUEL OIL STORAGE SYSTEM VERIFICATION REPORT

## MOUND PLANT
## MIAMISBURG, OHIO

October 1992

DEPARTMENT OF ENERGY
ALBUQUERQUE FIELD OFFICE

ENVIRONMENTAL RESTORATION PROGRAM
TECHNICAL SUPPORT OFFICE
LOS ALAMOS NATIONAL LABORATORY

FINAL
(REVISION 0)

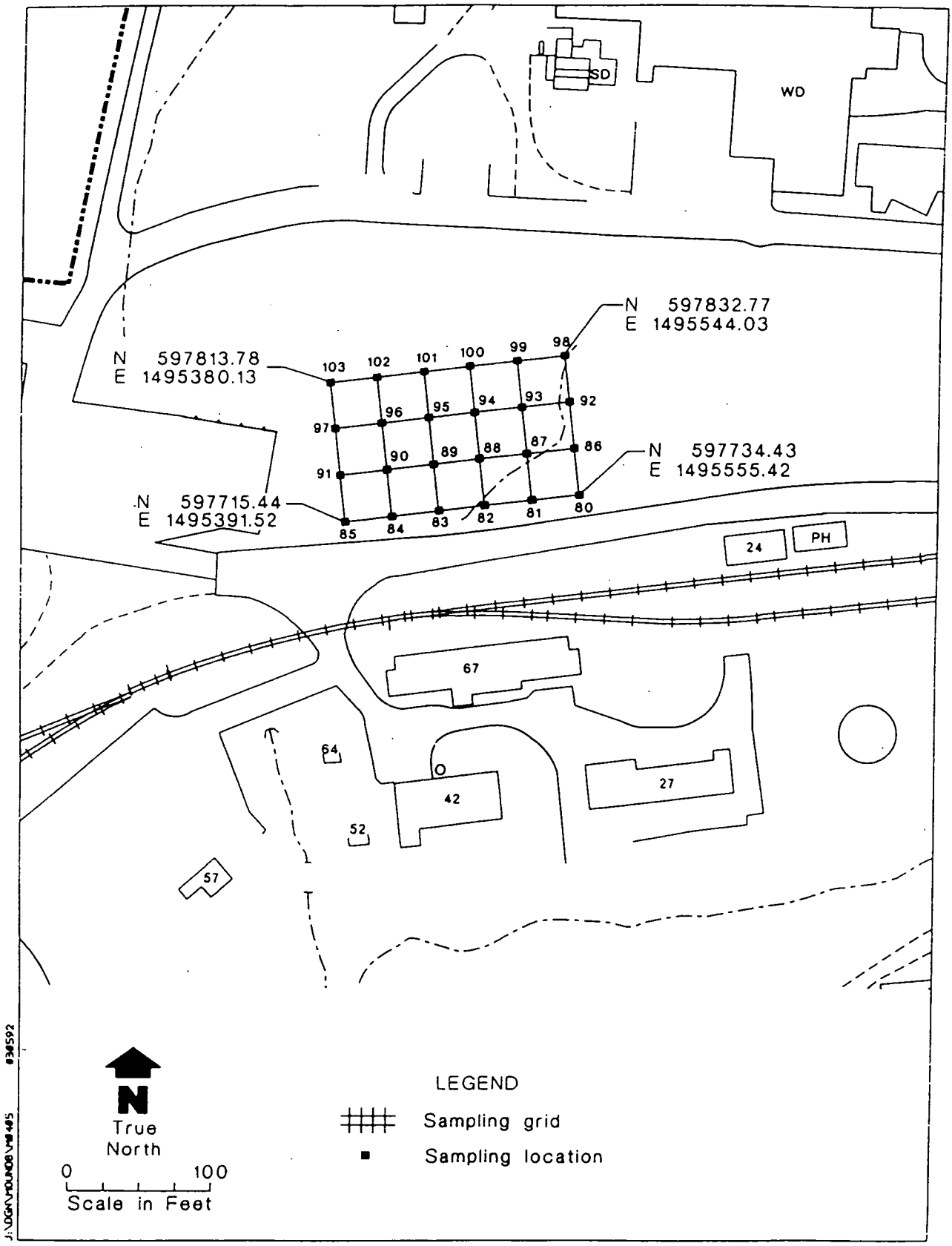



Figure 2.1. Sampling locations in Area 14.

Table II.5. Sample Identifications and Soil Screening Data for Area 14 Samples

| WESTON Field Sample Number | WESTON Analytics[a] Sample Number | Field[b] Location | Soil Screening Facility[c] | | Notes |
|---|---|---|---|---|---|
| | | | Plutonium-238 (pCi/g) | Thorium-232 (pCi/g) | |
| MND11-0080-2000 | 108020 | NA | NA | NA | Trip blank (water) |
| MND11-0080-0001 | 108001 | 80 | 14 | 1.4 | (Soil) |
| MND11-0080-1001 | 108011 | 80 | 19 | 2.7 | Field duplicate sample (soil) |
| MND11-0081-0001 | 108101 | 81 | 5 | 1.1 | (Soil) |
| MND11-0082-0001 | 108201 | 82 | 12 | 1.1 | (Soil) |
| MND11-0083-0001 | 108301 | 83 | 38 | 1.1 | (Soil) |
| MND11-0084-0001 | 108401 | 84 | 0 | 1.1 | (Soil) |
| MND11-0085-0001 | 108501 | 85 | 0 | 1.3 | (Soil) |
| MND11-0086-0001 | 108601 | 86 | 25 | 1.0 | (Soil) |
| MND11-0087-0001 | 108701 | 87 | 18 | 0.7 | (Soil) |
| MND11-0088-0001 | 108801 | 88 | 16 | 0.9 | (Soil) |
| MND11-0089-0001 | 108901 | 89 | 18 | 0.8 | (Soil) |
| MND11-0091-0001 | 109101 | 91 | 7 | 0.9 | (Soil) |
| MND11-0080-2001 | 108021 | NA | NA | NA | Trip blank (water) |
| MND11-0080-2002 | 108022 | NA | NA | NA | Trip blank (water) |
| MND11-0090-0001 | 109001 | 90 | 4 | 1.2 | (Soil) |
| MND11-0092-0001 | 109201 | 92 | 14 | 0.8 | (Soil) |
| MND11-0092-1001 | 109211 | 92 | N | N | Field duplicate sample (soil) |
| MND11-0093-0001 | 109301 | 93 | 23 | 1.0 | (Soil) |
| MND11-0094-0001 | 109401 | 94 | 11 | 2.0 | (Soil) |
| MND11-0095-0001 | 109501 | 95 | 15 | 2.0 | (Soil) |
| MND11-0096-0001 | 109601 | 96 | 12 | 1.0 | (Soil) |

Table II.5. (page 2 of 2)

| WESTON Field Sample Number | WESTON Analytics[a] Sample Number | Field[b] Location | Soil Screening Facility[c] | | Notes |
|---|---|---|---|---|---|
| | | | Plutonium-238 (pCi/g) | Thorium-232 (pCi/g) | |
| MND11-0097-0001 | 109701 | 97 | 10 | 1.8 | (Soil) |
| MND11-0098-0001 | 109801 | 98 | 4 | 1.5 | (Soil) |
| MND11-0099-0001 | 109901 | 99 | 17 | 1.8 | (Soil) |
| MND11-0100-0001 | 110001 | 100 | 15 | 1.7 | (Soil) |
| MND11-0101-0001 | 110101 | 101 | 15 | 1.5 | (Soil) |
| MND11-0102-0001 | 110201 | 102 | 9 | 1.8 | (Soil) |
| MND11-0102-1001 | 110211 | 102 | NA | NA | Field duplicate sample (soil) |
| MND11-0103-0001 | 110301 | 103 | 11 | 1.8 | (Soil) |
| MND11-BLNK-28AUG91 | 128A91 | NA | NA | NA | Field blank/rinsate sample |
| MND11-BLNK-29AUG91 | 129A91 | NA | NA | NA | Field blank/rinsate sample |

[a]WESTON analytical software packages could not accomodate the original sample number string, so it had to be recodified into a shorter form.
[b]Field sampling locations indicated on Figure 2.1.
[c]Statistical breakdown for these screening values is given in Table V.10.
NA - not applicable

Reference 5

COPY

Sample Filename: C5_01388.S0
Sample Identification: NA800311/004453
Title: CWPF WETLANDS #6 HPG03384 Rec. 3/24/99
Begin Collection Time & Date: 11:12:38AM Mar/25/1999
Detector Identification: CF-5
User Identification: 5890
Sample Quantity: 594.000 grams

| Isotope | Energy (keV) | Concentration (pCi/gram) | MDA (pCi/gram) | Flag |
|---|---|---|---|---|
| Pu-238 | 15-20 | 7.52882 | 19.7436 | Use MDA value |

Density: 1.25053
Efficiency: 0.00358000
Concentration: 7.52882

NA800310/004452V11 , 16.9526 , 11:09:53AM Mar/25/1999,
CF-4 , 5890 , 588.000 , CWPF WETLANDS #5 HPG03383 Rec. 3/25/99

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COPY

Sample Filename: C4_00072.S0
Sample Identification: NA800310/004452
Title: CWPF WETLANDS #5 HPG03383 Rec. 3/25/99
Begin Collection Time & Date: 11:09:53AM Mar/25/1999
Detector Identification: CF-4
User Identification: 5890
Sample Quantity: 588.000 grams

| Isotope | Energy (keV) | Concentration (pCi/gram) | MDA (pCi/gram) | Flag |
|---|---|---|---|---|
| Pu-238 | 15-20 | 0.000000 | 16.9526 | Use MDA value |

Density: 1.23789
Efficiency: 0.00370700
Concentration: 0.000000

NA800309/004451V11 , 22.2466 , 10:56:51AM Mar/25/1999,
CF-3 , 5890 , 553.000 , CWPF WETLANDS #4 HPG03382 Rec. 3/2599

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COPY

Sample Filename: C3_01580.S0
Sample Identification: NA800309/004451
Title: CWPF WETLANDS #4 HPG03382 Rec. 3/2599
Begin Collection Time & Date: 10:56:51AM Mar/25/1999
Detector Identification: CF-3
User Identification: 5890
Sample Quantity: 553.000 grams

| Isotope | Energy (keV) | Concentration (pCi/gram) | MDA (pCi/gram) | Flag |
|---|---|---|---|---|
| Pu-238 | 15-20 | 0.000000 | 22.2466 | Use MDA value |

Density: 1.16421
Efficiency: 0.00355000
Concentration: 0.000000

NA800307 , 0.000000 , 15.9063 , 10:19:44AM Mar/25/1999,
CF-4 , 5890 , 636.000 , CWPF WETLANDS #2 HPG03380 Rec. 3/25/99

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COPY

Sample Filename: C4_00071.S0
Sample Identification: NA800307/004449
Title: CWPF WETLANDS #2 HPG03380 Rec. 3/25/99
Begin Collection Time & Date: 10:19:44AM Mar/25/1999
Detector Identification: CF-4
User Identification: 5890
Sample Quantity: 636.000 grams

| Isotope | Energy (keV) | Concentration (pCi/gram) | MDA (pCi/gram) | Flag |
|---|---|---|---|---|
| Pu-238 | 15-20 | 0.000000 | 15.9063 | Use MDA value |

Density: 1.33895
Efficiency: 0.00370700
Concentration: 0.000000

CF-5 , 5890 , 482.000 , CWPF WETLANDS #3 HPG03381 Rec. 3/25/99

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COPY

Sample Filename: C5_01387.S0
Sample Identification: NA800308/004450
Title: CWPF WETLANDS #3 HPG03381 Rec. 3/25/99
Begin Collection Time & Date: 10:21:32AM Mar/25/1999
Detector Identification: CF-5
User Identification: 5890
Sample Quantity: 482.000 grams

| Isotope | Energy (keV) | Concentration (pCi/gram) | MDA (pCi/gram) | Flag |
|---|---|---|---|---|
| Pu-238 | 15-20 | 0.000000 | 23.7018 | Use MDA value |

Density: 1.01474
Efficiency: 0.00358000
Concentration: 0.000000

CF-3 , 5890 , 557.000 , CWPF WETLANDS #1 HPG03379 Rec. 3/25/99

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COPY

Sample Filename: C3_01579.S0
Sample Identification: NA800306/004448
Title: CWPF WETLANDS #1 HPG03379 Rec. 3/25/99
Begin Collection Time & Date: 10:17:46AM Mar/25/1999
Detector Identification: CF-3
User Identification: 5890
Sample Quantity: 557.000 grams

| Isotope | Energy (keV) | Concentration (pCi/gram) | MDA (pCi/gram) | Flag |
|---|---|---|---|---|
| Pu-238 | 15-20 | 0.000000 | 23.2887 | Use MDA value |

Density: 1.17263
Efficiency: 0.00355000
Concentration: 0.000000

Page Redacted

Contains Proprietary Information