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ESC-115/00
August 13, 2000

00-TC/08-13

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
WD BUILDING: RELEASE OF FINAL ACTION MEMORANDUM

REFERENCE: Statement of Work Requirement C 7.1d -- Regulator Data Requests

Dear Mr. Provencher:

The attached Final Action Memorandum for WD Building has been authorized for release to USEPA, OEPA, and ODH by Art Kleinrath of MEMP.

Please advise if additional copies are required for distribution within DOE. If you require further information, please contact Dave Rakel at extension 4203.

Sincerely,

Jeffrey S. Stapleton
Manager, Environmental Safeguards & Compliance

JSS/nmg

Enclosures as stated

cc: Tim Fischer, USEPA, (1) w/attachments
Dave Meredith, TechLaw, Inc., (1) w/attachments
Brian Nickel, OEPA, (1) w/attachments
Ruth Vandegrift, ODH, (1) w/attachments
Art Kleinrath, MEMP, (2) w/attachments
Terrence Tracy, DOE/HQ, (1)w/attachments
Joe Bartee, BWXT of Ohio, (2) w/attachments
Ron Paulick, BWXT of Ohio, (1) w/attachments
Public Reading Room, (5) w/attachments
Administrative Record, (2) w/attachments
DCC

**ACTION MEMORANDUM
ENGINEERING EVALUATION/COST ANALYSIS**

BUILDING WD REMOVAL ACTION

**MOUND PLANT
MIAMISBURG, OHIO**

JULY 2000

Final

(Revision 0)



Department of Energy



BWXT of Ohio, Inc.

ACTION MEMORANDUM

BUILDING WD REMOVAL ACTION

**MOUND PLANT
MIAMISBURG, OHIO**

July 2000

PREPARED BY:

BWXT of Ohio, Inc.
P.O. Box 3030
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for the

U.S. DEPARTMENT OF ENERGY



The Mound Core Team
P.O. Box 66
Miamisburg, Ohio 45343-0066

Mr. Daniel Bird, AICP
Planning Manager
Miamisburg Mound Community Improvement Corporation
720 Mound Road
COS Bldg. 4221
Miamisburg, Ohio 45342-6714

Dear Mr. Bird:

The Core Team, consisting of the U.S. Department of Energy Miamisburg Environmental Management Project (DOE-MEMP), U.S. Environmental Protection Agency (USEPA), and the Ohio Environmental Protection Agency (OEPA), appreciates your comments on WD Building Action Memorandum. Attached are our responses.

Should the responses to comments require additional detail, please contact Art Kleinrath at (937) 865-3597 and we will gladly arrange a meeting or telephone conference.

Sincerely,

DOE/MEMP:

Art Kleinrath, Remedial Project Manager

USEPA:

Timothy J. Fischer, Remedial Project Manager

OEPA:

Brian K. Nickel, Project Manager

**MMCIC Comments
to
WD Building Action Memorandum
Public Review Draft
February 2000**

Substantive Comments:

In general, MMCIC supports the proposed action of decontaminating and decommissioning Building WD. The following comments express our concerns regarding the execution of the proposed action.

1. The description of the Verification element of the proposed action (on page 5-3) states that "The results of characterization sampling and waste acceptance sampling will be used to determine if the list of contaminants addressed in the Verification Sampling and Analysis Plan (VSAP) should include more than are listed in Table 5.1." Table 5.1 lists only radionuclides. However, oily soil contamination associated with PRS 405 (just north of Building 23 and adjacent to the east side of Building WD) and creosote soil contamination associated with PRS 413 (related to the Old SD Building, removed in 1997) are both identified in the immediate vicinity of Building WD. PRS 413 is binned for Further Assessment and, as is noted on page 2-7 of this Action Memorandum, will be included in the verification and closure of the Building WD removal action. PRS 405 is binned for a removal action.

The characterization element of the proposed action is not discussed or described in the text of this Action Memorandum. However, as a task, it consumes a significant percentage of both the removal action project schedule and the removal action cost estimate (both of which are included in this document). From this information and the inclusion of PRS 413 in the proposed action, we assume that DOE intends to screen verification samples for potential contaminants other than the four radionuclides listed in Table 5.1. If this is not DOE's intention, we recommend that DOE expand its list of potential soil contaminants for the Building WD removal action to include at least creosote and petroleum hydrocarbons and/or indicator compounds (i.e., benzene, toluene, ethylbenzene, xylenes (BTEX), or polycyclic aromatic hydrocarbons (PAHs)). Our concern is that if cleanup is only concentrated on the removal of radionuclides (although those are the primary historical contaminants in this area), other contaminants such as PAHs or volatile organic compounds (VOCs) might be overlooked in an area with a 50-year history of waste treatment of both radionuclides and all sanitary/process wastes from an industrial facility. The potential for unreported releases, poor or inadequate housekeeping measures, or antiquated waste management practices resulting in releases always

exists in a facility with a lengthy industrial history such as the Building WD/SD area.

Response:

The Core Team does intend to screen verification samples for potential contaminants other than the four radionuclides listed in Table 5.1. The compounds you identified (BTEX, PAHs, and VOCs) are strong candidates for inclusion in the Verification Sampling Plan.

2. The Miamisburg Mound Comprehensive Reuse Plan as amended designates the road in front of WD Building as part of a Looped Road system to provide access to the Main Hill area. MMCIC recommends the demolition of WD Building take this into account and that any regrading of the site be done to accommodate the Loop Road.

Response:

The plans for site restoration will be developed as the removal action proceeds. With continuing, timely communication between DOE and MMCIC, the Core Team expects that final grading of the site will accommodate the Loop Road to the extent practicable.

Errata

1. No comments.

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ACRONYMS

AEC	Atomic Energy Commission
AM	Action Memorandum
AM/EE/CA	Action Memorandum/Engineering Evaluation/Cost Analysis
ARARs	Applicable or Relevant and Appropriate Requirements
BGS	Below Ground Surface
BVA	Buried Valley Aquifer
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
D&D	Decontamination and Decommissioning
DOE	Department of Energy
EE/CA	Engineering Evaluation/Cost Analysis
EPA	Environmental Protection Agency
ER	Environmental Restoration
FFA	Federal Facilities Agreement
FSP	Field Sampling Plan
ID	Identification
LSA	Low Specific Activity
mrem	millirem
MSL	Mean Sea Level
NCP Plan	National Oil and Hazardous Substances Pollution Contingency
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NTS	Nevada Test Site

ACRONYMS (cont.)

OAC	Ohio Administrative Code
OEPA	Ohio Environmental Protection Agency
OU	Operable Unit
OSC	On-Scene Coordinator
OSHA	Occupational Safety and Health Administration
pCi/g	picoCuries per gram
PRS	Potential Release Site
RCRA	Resource Conservation and Recovery Act
RESRAD	Residual Radioactive Material Program (Software)
RI/FS	Remedial Investigation/Feasibility Study
RSE	Removal Site Evaluation
SARA	Superfund Amendments and Reauthorization Act
SW	Semi-Works
TRU	Transuranic
USEPA	United States Environmental Protection Agency

1. PURPOSE

The U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (USEPA) have agreed on an approach for decommissioning surplus DOE facilities consistent with the *Policy on Decommissioning of Department of Energy Facilities under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)* dated May 22, 1995 (DOE 1995). According to this approach, decommissioning activities will be conducted as CERCLA removal actions, unless the circumstances at the facility make it inappropriate (DOE 1995). The DOE is the designated lead agency under CERCLA and removal actions at the Mound Plant are implemented as federal-lead actions with DOE funds instead of the funds available to the USEPA under CERCLA (i.e., non-Superfund). DOE provides the On-Scene Coordinator (OSC). Non-Superfund, federal-lead removal actions are not subject to USEPA limitations on the OSC (\$50,000 authority) and are not subject to National Oil and Hazardous Substances Pollution Contingency Plan (NCP) limitations on removal actions (i.e., \$2,000,000 in cost and 12 months in duration).

This Action Memorandum (AM) has been completed to document the evaluation of site conditions, to propose the action described herein, and to allow public input.

2. SITE CONDITIONS AND BACKGROUND

2.1 Site Description

This section describes the physical site location, site characteristics, release of contaminants into the environment and the site's National Priorities List (NPL) status.

2.1.1 Physical Location

The Mound Plant is a 306-acre site on the southern border of the city of Miamisburg in Montgomery County, Ohio. The site is approximately 10 miles south-southwest of Dayton and 45 miles north of Cincinnati. This removal action is proposed for Building WD and contaminated soils in the vicinity. The location of Building WD is shown in Figure 2.1.

2.1.2 Site Characteristics

Building WD is the treatment facility for low specific activity (LSA) radioactive wastes generated by process activities at Mound. This building was designed and constructed in 1948. Since its construction, the building has been enlarged through the addition of an annex to the present size of 28,000 square feet. Building WD is a multi-story building with penthouses, a full basement, and a partial sub-basement. It has an irregular shape, and is 22 feet high, 135 feet wide, and 211 feet long. The exterior walls of the building are reinforced concrete and concrete block. The roof is a concrete slab. Penthouses have lightweight block and aluminum-siding walls with built-up steel roofs. Building services include heating and air conditioning by central steam and chilled water and electrical service of 480 Volts. The building is contaminated with radioactive materials (DOE 1993).

Active and inactive processes housed within the WD facility include alpha wastewater treatment, beta waste water treatment, laboratory and bench-scale research, LSA waste drum repackaging, a glass melter furnace, and a packed bed reactor.

There are forty-four (44) Potential Release Sites (PRs) associated with Building WD. Table 2.1 provides summary information about these PRs.

Figure 2.2 is a photograph of Building WD.

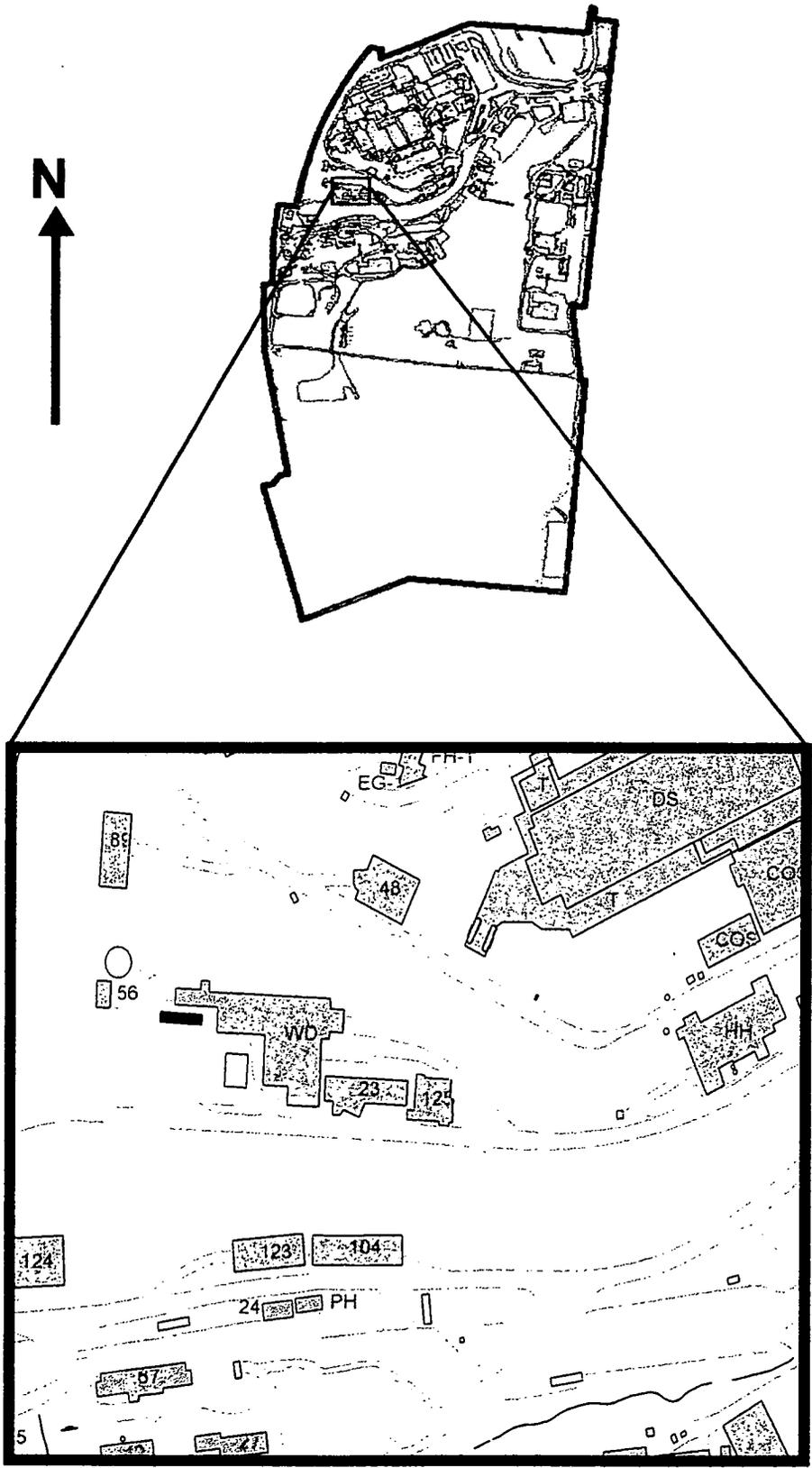


Figure 2.1 Location of WD Building

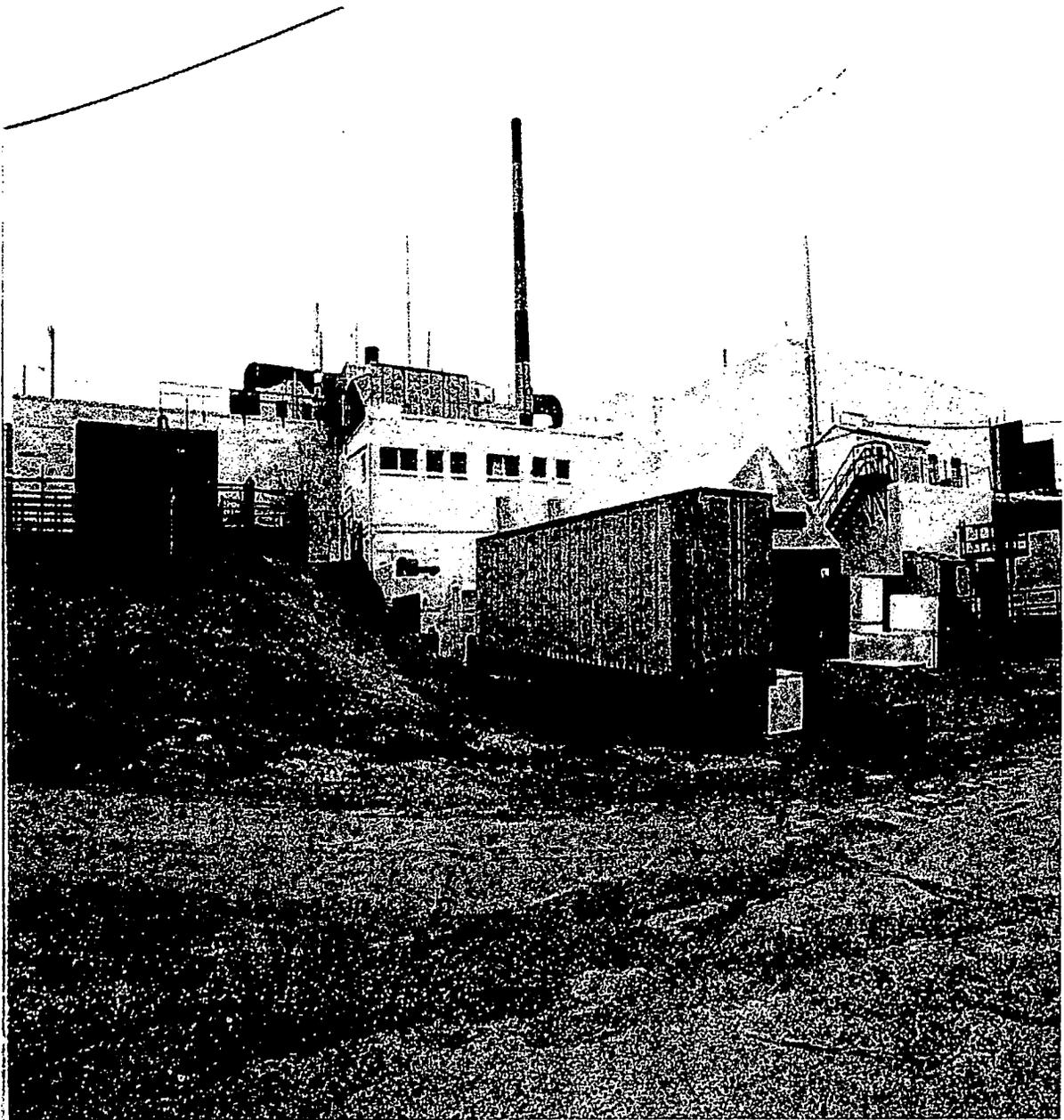


Figure 2.2 Photo of Building WD

2.1.3 Release or Threatened Release into the Environment

The potential release of radionuclides prompted this removal action.

2.1.4 National Priorities List Status

The USEPA placed the Mound Plant in Miamisburg, Ohio on the NPL by publication in the Federal Register on November 21, 1989.

2.2 Other Actions To Date

The Mound Plant initiated a CERCLA program in 1989, now guided by the agreement between the DOE, Ohio Environmental Protection Agency (OEPA), and USEPA. A Federal Facilities Agreement (FFA) under CERCLA Section 120 was executed between DOE and USEPA Region V on October 12, 1990 (USEPA 1990). It was revised on July 15, 1993 (EPA Administrative Docket No. OH 890-008984) to include OEPA as a signatory (USEPA 1993). The general purposes of this agreement are to:

- Ensure that the environmental impacts associated with past and present activities at the site are thoroughly investigated and appropriate remedial action taken as necessary to protect the public health, welfare, and the environment.
- Establish a procedural framework and schedule for developing, implementing, maintaining, and monitoring appropriate response actions at the site in accordance with CERCLA, Superfund Amendments and Reauthorization Act (SARA), the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), Superfund guidance and policy, and Resource Conservation and Recovery Act (RCRA) guidance and policy.
- Facilitate cooperation, exchange of information, and participation of the parties in such actions.

Table 2.1 Potential Release Sites Associated with Building WD and WD Annex

PRS	Description	Phase When Completed
161	Glass Melter Furnace	Phase I
162	Glass Melter Feed Drum	Phase I
163	Off-Gas Treatment System Deluge Tank	Phase I
164	Off-Gas Treatment System Venturi Scrubber	Phase I
165	Off-Gas Treatment System Cyclone Demister	Phase I
166	Off-Gas Treatment System HEPA Filter	Phase III
167	Off-Gas Treatment System WD Building Filter Bank	Phase III
168	Off-Gas Treatment System Recycle Tank	Phase I
169	Off-Gas Treatment System Strainer	Phase I
170	Off-Gas Treatment System Leaf Solution Filter	Phase I
171	Off-Gas Treatment System Iodine Absorption Filter	Phase I
172	WDA Building Basement Wash Sump (Tank 11) (a.k.a. Glass Melter Room Sump)	Phase IV
173	Cyclone Incinerator	Removed 1990
174	WD Building Drum Staging Area	Phase II
175	Area 4, WD Building Influent Tank Overflow	Phase II
179	WD Building Alpha Wastewater Influent Tank (Tank 3)	Phase IV
180	WD Building Alpha Wastewater Influent Tank (Tank 4)	Phase IV
181	WD Building Alpha Wastewater Influent Tank (Tank 5)	Phase IV
182	WD Building Alpha Wastewater Influent Tank (Tank 6)	Phase IV
183	Room WD-1 Basement Sump (Tank 12)	Phase IV
184	Room WD-1 Alpha Wastewater Sump (Tank 17)	Phase IV
185	Room WD-1 Sanitary Waste Sump (Tank 134)	Phase IV

186	Room WD-8 Alpha Wastewater Sump (Tank 18)	Phase IV
187	WD Building Alpha Wastewater Clariflocculators (2 units)	Phase II
188	WD Building Alpha Wastewater Mixing Box	Phase II
189	WD Building Alpha Wastewater Sand Filters (2 units)	Phase II
190	WD Building Alpha Wastewater Bone Char Columns (2 units)	Phase II
191	WD Building Alpha Wastewater Effluent Tank (Tank 7)	Phase IV
192	WD Building Alpha Wastewater Effluent Tank (Tank 8)	Phase IV
193	WD Building Alpha Wastewater Effluent Tank (Tank 9)	Phase IV
194	WD Building Alpha Wastewater Effluent Tank (Tank 10)	Phase IV
195	WD Building Alpha Wastewater Sludge Pits (2 units)	Phase IV
196	WD Building Alpha Wastewater Sludge Solidification/Drumming Unit	Phase IV
197	WD Building Solid Radioactive Waste Compactor	Phase IV
198	WDA Building Basement Sanitary Waste Tank (Tank 135)	Phase IV
199	WDA Building Beta Wastewater Influent Tank (Tank 13)	Phase IV
200	WDA Building Beta Wastewater Influent Tank (Tank 14)	Phase IV
201	WDA Building Beta Wastewater Metering Station	Phase I
202	WDA Building Beta Wastewater Mixing/Solidification Unit	Phase I
203	WDA Building Alpha Wastewater Influent tank (Tank 15)	Phase IV
204	WDA Building Alpha Wastewater Influent tank (Tank 16)	Phase IV
205	WDA Building Alpha Effluent Tank (Tank 214)	Phase IV
206	WDA Building Alpha Effluent Tank (Tank 215)	Phase IV
207	WDA Building Alpha Effluent Tank (Tank 216)	Phase IV
208	WDA Building Solidification Unit	Phase I

2.2.1 Previous Removal Actions

Until recently, environmental restoration projects at Mound were conducted as Decontamination and Decommissioning projects (D&D, generally buildings) or CERCLA projects (generally soils and groundwater). No previous CERCLA Removal Actions or D&D projects were conducted at Building WD. However, the nearby Old SD facility was removed as a D&D project. Demolition of Old SD was completed in 1997. Verification of old SD soils will be included in this removal action. The location of this previous D&D project is shown in Figure 2.3. Verification and closure of the Building WD removal action will include the Old SD project area. There are five PRSs associated with the Old SD Building and one PRS associated with adjacent soil. Table 2.2 summarizes these PRSs. A single On-Scene Coordinator Report will be prepared for Building WD and old SD.

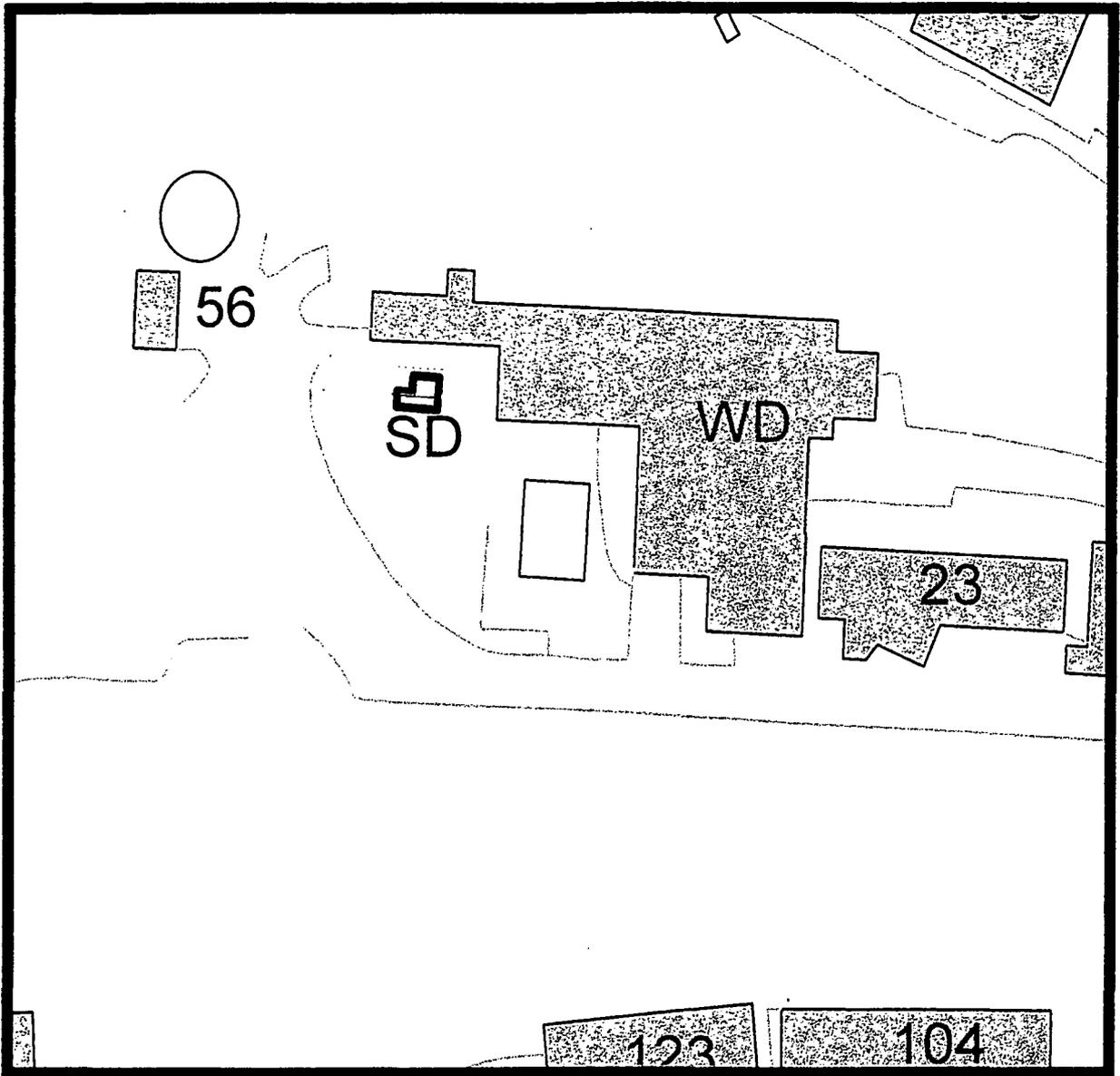


Figure 2.3 Location of SD Building

Table 2.2 Potential Release Sites Associated with Old SD Building

PRS	Description	Comment
155	Old Sanitary Disposal (SD) Plant (a.k.a. Old Sanitary Wastewater Treatment Plant)	Removed 1997
156	Old SD plant Tank (Tank 205)	Removed 1997
157	Old SD plant Tank (Tank 206)	Removed 1997
158	Old SD Plant Tank (Tank 207)	Removed 1997
159	Area 4A, Sewage Sludge Drying Pits	Removed 1997
413	Soil Contamination - Creosote	Designated by DOE, USEPA, and OEPA for Further Assessment August, 1997

2.2.2 Current Actions

Current actions pertinent to Building WD include Work Planning, Safe Shutdown, and review of Characterization data. Work Planning consists of the up-front work required to execute building disposition activities in accordance with Environmental Safety & Health requirements, DOE orders, and best management practices. Safe Shutdown includes Building Surveillance (weekly and monthly contamination surveys), inventory of equipment, and disposition of surplus equipment.

2.3 State And Local Authorities' Roles

2.3.1 State And Local Action To Date

In 1989, as a result of Mound Plant's placement onto the NPL, DOE and USEPA entered into a Federal Facilities Agreement (FFA) which specified the manner in which the CERCLA program was to be implemented at Mound. In 1993, the FFA was amended to include the OEPA. DOE remains the lead agency.

2.3.2 Potential For Continued State and Local Response

OEPA will continue its oversight role until all the terms of the FFA have been completed.

3. THREAT TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT

3.1 Threats To Public Health Or Welfare

The potential release of radionuclides may create a potential threat to the public health or welfare.

3.2 Threats To The Environment

The potential release of radionuclides may create a potential threat to the environment.

3.3 Removal Site Evaluation

The Removal Site Evaluation (RSE) requirements, as outlined under USEPA's NCP regulations in 40 CFR 300.415, are presented throughout this AM. An evaluation by public health agencies has not been performed for this area, and, therefore, is not included in this AM.

The NCP identifies eight factors that must be considered in determining the appropriateness of a removal action [40 CFR 300.415(b)(2)]. These criteria are evaluated in Table 3.1.

**Table 3.1 Evaluation of Removal Action Appropriateness Criteria
[40 CFR 300.415(b)(2)]**

Criteria		Evaluation
(i)	"...potential exposure to nearby human populations, animals, or the food chain..."	There is potential exposure to nearby human populations, animals, or the food chain from radionuclides when present institutional controls are relaxed.
(ii)	"Actual or potential contamination of drinking water supplies..."	There is potential contamination of on-site drinking water supplies by radionuclides. The contaminants could migrate to the ground water that is the source for the plant drinking water.
(iii)	"Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release;"	Not applicable. This removal action does not address hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage.
(iv)	"High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;"	There are high levels of radioactive contaminants in soils largely at or near the surface, that may migrate when present institutional controls are relaxed.
(v)	"Weather conditions that may cause hazardous substances to migrate or be released;"	This site is exposed to weather conditions. Rain might cause the associated hazardous substances to migrate.
(vi)	"Threat of fire or explosion;"	Not applicable.
(vii)	"The availability of other appropriate federal or state response mechanisms to respond to the release;" and	There are no other appropriate federal or state mechanisms to respond. The Federal Facilities Agreement (FFA) established a combined state and federal mechanism to respond under CERCLA. DOE is the designated lead agency at Mound under CERCLA
(viii)	"Other situations or factors that may pose threats to public health or welfare or the environment."	Not applicable.

4. ENDANGERMENT DETERMINATION

There is a potential or threat of release of pollutants or contaminants from this site that could pose an endangerment to public health or welfare or to the environment. To eliminate the possibility of endangerment, as the site transfers from DOE ownership and control, DOE has determined that removal of the contaminants is appropriate.

5. PROPOSED ACTION AND ESTIMATED COSTS

5.1 Proposed Action

The proposed action is the demolition of Building WD and removal of contaminated soils in the vicinity of Building WD. Since the proposed action is within the site boundaries, it is not expected to have a disproportionate impact on low income or minority populations.

5.1.1 Proposed Action Description

The proposed action is described as follows:

- **Project Planning**

The major components of the proposed action are; WD Annex Interior D&D (Phase I), WD Interior D&D (Phase II), Ductwork and High Efficiency Particulate Absorber (HEPA) filter system D&D (Phase III), and Structural D&D (Phase IV). Due to the complexity of the work, multiple work plans may be generated for each major component. Appropriate environmental controls will be considered, identified, and applied through this work planning effort. Because the environmental envelope is still intact during Phase I through Phase III, work plan documents will be reviewed and approved by DOE and made available to USEPA and OEPA on request. Work plans for Phase IV will be reviewed and approved by DOE, USEPA, and OEPA. Project specific safety documentation, i.e., Health and Safety Plan/Job Specific Hazard Analysis (HASP/JSAA), will be reviewed and approved by DOE.

- **Public Notification**

A notice of the availability of this Action Memorandum for 30 day public review will be published in a local newspaper.

- **Safe Shutdown**

This activity includes performing surveillance and maintenance activities required for the safe operation of critical systems and equipment on operations; performing routine radiological monitoring activities; performing physical inventory of all equipment, supplies, furniture, and systems in the buildings; performing characterization to determine disposition plan for surplus items; removing miscellaneous equipment for

be affected by the work; isolating or rerouting utilities, as needed; and establishing those controls necessary to ensure that only authorized workers are allowed access to perform decommissioning activities.

- **Decontamination & Decommissioning**

Decontamination and demolition includes the following:

- **Establish Work Zone for WD Annex and Building WD**

This activity includes establishing the work zones for the facility, establishing air monitoring for personnel and at the work zone perimeters, installing temporary facilities and utilities, construction hazard abatement, general housekeeping, and establishing dust control prior to D&D activities.

- **Decontamination of Interior of WD Annex**

Perform interior decontamination of the inactive areas in the Building WD Annex. Contaminants will be removed to levels acceptable for demolishing the facility without posing unacceptable environmental and safety risks.

- **Demolition of Interior Areas of Building WD Annex**

Perform interior demolition of the inactive areas in the Building WD Annex.

- **Decontamination of Interior of Building WD**

Perform interior decontamination of the inactive Beta/Alpha Treatment Systems and the process control labs in Building WD. Contaminants will be removed to levels acceptable for demolishing the facility without posing unacceptable environmental and safety risks

- **Demolition of Interior of Building WD**

Perform interior demolition of the inactive Beta/Alpha Treatment Systems and the process control labs in Building WD.

- **Demolition of Ductwork and HEPA Filter System**

Perform demolition of the Ductwork and HEPA Filter System.

- Decontamination of Building WD Structure

Perform final decontamination of residuals from the building structure. Contaminants will be removed to levels acceptable for demolishing the facility without posing unacceptable environmental and safety risks

- Demolition of Building WD Structure

Perform structural demolition of Building WD and WD Annex. This activity includes demolishing the structure and waste handling and preparation for disposal. Demolition will be accomplished with heavy duty equipment, such as an excavator mounted shear and/or grapple.

- Remove Foundation/Soil

This activity includes foundation and soil removal if required. This activity is completed after the waste has been removed from the project site and the site is ready for verification.

- Verification

This step includes among other activities: sampling and analysis of soil at edges of excavation to determine the residual contaminant concentration and verifying that the residual contaminant concentration is within acceptable limits. The locations previously remediated by the Old SD D&D project (described in Section 2.2.1 - Previous Removal Actions) will also be verified. The verification sampling and analysis process will be further defined by a Verification Sampling and Analysis Plan (VSAP). Table 5.1 lists the primary contaminants in WD Building and the corresponding clean-up objectives. The results of characterization sampling and waste acceptance sampling will be used to determine if the list of contaminants addressed in the VSAP should include more than are listed in Table 5.1.

The VSAP will define the number, location, and frequency of field samples to be taken to verify attainment of the cleanup objectives. The VSAP will be consistent with USEPA's Methods for Evaluating the Attainment of Cleanup Goals (EPA 230/02-89/042)(USEPA 1989). The VSAP will describe field sampling activities, sampling techniques, sample handling procedures, and verification sample data evaluation. The VSAP will also describe the statistical procedures to be used to demonstrate that the cleanup objectives were met. (Currently, the site meets 95% UCL.)

- Site Restoration

Equipment, materials, waste containers, and boundaries will be removed. The site will be back-filled and restored to industrial use standards. The grounds will be seeded and mulched.

- Documentation of Completion

Completion of the Removal Action will be documented by an On-Scene Coordinator (OSC) report.

5.1.1.1 Rationale, Technical Feasibility, and Effectiveness

The removal action chosen is necessary for the removal of known contamination and to ensure that migration of the contamination does not occur.

Table 5.1 Clean-Up Guidelines⁺

Contaminant	Concentration
238-Plutonium	55 pCi/g
60-Cobalt	1 pCi/g
Tritium	235,000 pCi/g
234-Uranium + decay products in secular equilibrium to 206-Lead	1.3*

⁺ Construction/Mound Employee, Soil/Sediment Risk Based Guideline Values, 1×10^{-5} risk (DOE 1997)

* DOE 1997 did not include the decay chain from 234-Uranium. The calculation of this Risk Based Guideline Value is outlined in Appendix A.

5.1.1.2 Monitoring

Health and safety monitoring will be performed throughout the removal action according to standard Mound procedures. Sampling and analysis of excavated soil will be described in more detail in the Work Plan for this removal action.

5.1.1.3 Uncertainties

The major uncertainties are the concentration levels of the contaminants and the extent of contamination.

5.1.1.4 Institutional Controls

DOE will remain in control of Building WD during the removal action.

5.1.1.5 Post-Removal Site Control

Initially, post removal site control will be provided by DOE/Mound. The Mound Plant is to be sold to Miamisburg Mound Community Improvement Corporation (MMCIC). The institutional and site controls needed at the time of the site transfer in order to ensure future protection of human health and the environment will be included in the Record of Decision.

5.1.1.6 Cross-Media Relationships and Potential Adverse Impacts

The potential cross-media impact associated with the removal action is the potential for unintended release of contaminated materials into the atmosphere. Careful monitoring and control, such as misting, will be implemented during the removal action.

No potential adverse impacts of the removal action have been identified.

5.1.2 Contribution to Future Remedial Actions

To facilitate further assessments and removal actions in or near the site of this removal action, the exact dimensions of the excavation and the levels of contamination identified and removed will be documented. The On-Scene Coordinator Report will document the removal action with photographs, drawings, and other information collected during the field work.

The information obtained, as a result of this removal, will be used in determining the availability of the Mound site for final disposition and will be subject to review in the subsequent residual risk evaluation.

5.1.3 Description of Alternative Technologies

Alternative technologies frequently evaluated for CERCLA remediation include institutional controls, containment, collection, treatment, and disposal. Based on the prevailing conditions, the following alternatives (in addition to the proposed alternative of dismantlement) were developed.

1. No Action
2. Institutional Controls

The performance capabilities of each alternative with respect to the specific criteria is discussed below.

5.1.3.1 No Action

The levels of radioactive contamination in Building WD and the associated soils are unacceptable. The "No Action" option was eliminated from further consideration.

5.1.3.2 Institutional Controls

Existing Mound Plant institutional controls effectively minimize the potential for contact of the subject contamination with the general public. However, after ownership is transferred, these same institutional controls will be difficult to monitor and enforce. Thus, institutional controls were eliminated from further consideration. A Removal Action is warranted.

5.1.4 Engineering Evaluation/Cost Analysis (EE/CA)

This document serves as the Action Memorandum and EE/CA.

5.1.5 Applicable, or Relevant and Appropriate Requirements (ARARs)

Mound ARARs for the ER Program have been identified (DOE 1998). CERCLA regulations require that removal actions comply with ARARs.

The following have been identified as applicable, or relevant and appropriate to this removal action:

- 49 CFR 172, 173: DOT hazardous material transportation and employee training requirements.

5.1.5.1 Air Quality

- 40 CFR Part 61 Subpart H: National Emissions Standards for Emissions of Radionuclides other than Radon from Department of Energy Facilities.
- Ohio Administrative Code (OAC) 3745-15-07(A): Air Pollution Nuisances Prohibited.
- OAC 3745-17-02 (A, B, C): Particulate Ambient Air Quality Standards

- OAC 3745-17-05: Particulate Non-Degradation Policy
- OAC 3745-17-08: (A1), (A2), (B),(D): Emission Restrictions for Fugitive Dust

5.1.5.2 To Be Considered

- EPA/230/02-89/042: Methods for Evaluating the Attainment of Cleanup Standards.
- DOE Order 5400.5: Radiation Protection of the Public and the Environment

5.1.5.3 Worker Safety

- 29 CFR Part 1910: Occupational Safety and Health Act (OSHA) - General Industry Standards
- 29 CFR Part 1926: Occupational Safety and Health Act (OSHA) - Safety and Health Standards
- 29 CFR Part 1904: Occupational Safety and Health Act (OSHA) - Record keeping, Reporting, and Related Regulations

5.1.6 Other Standards and Requirements

Other standards or requirements related to the actual implementation of the response action may be identified subsequently during the design phase and will be incorporated into the Work Plan for this removal action.

5.1.7 Project Schedule

The schedule established for planning and implementing the removal action is illustrated in Figure 5.1.

Figure 5.1 Schedule Summary

Project Name: WD Removal

Task Name	1998				1999				2000				2001				2002				2003				2004
	Qtr4	Qtr1	Qtr2	Qtr3	Qtr4	Qtr1	Qtr2	Qtr3	Qtr4	Qtr1	Qtr2	Qtr3	Qtr4	Qtr1	Qtr2	Qtr3	Qtr4	Qtr1	Qtr2	Qtr3	Qtr4	Qtr1			
Work Planning	[Bar]																								
Site Shutdown	[Bar]																								
Characterization	[Bar]																								
Decontamination & Decommissioning	[Bar]																								
Phase I: WDA Interior Demolition																									
Phase II: WD Interior Demolition																									
Phase III: Ductwork & HEPA Filter Demolition																									
Phase IV: Structural Demolition																									
Remove Soils & Foundation																									
Verification																									
Site Restoration																									
On Scene Coordinator Report																									

5.2 Estimated Costs

The cost estimate to perform the removal action is shown in Table 5.2. Costs include the construction activities, all engineering and construction management, and site restoration.

TABLE 5.2 REMOVAL ACTION COST ESTIMATE

COST ESTIMATE	
Activity	Cost
Work Planning	\$ 331,000
Safe Shutdown	1,589,000
Characterization	1,000,000
Decontamination & Decommissioning	1,700,000
Miscellaneous Items	4,000
TOTAL	\$4,624,000

6. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

There is the potential for the contaminants to migrate.

7. OUTSTANDING POLICY ISSUES

There are currently no outstanding policy issues affecting performance of this removal action.

8. ENFORCEMENT

The core team consisting of DOE, USEPA, and OEPA has agreed on the need to perform the removal. The work described in this document does not create a waiver of any rights under the Federal Facility Agreement, nor is it intended to create a waiver of any rights under the Federal Facility Agreement. The DOE is the sole party responsible for implementing this clean-up. Therefore, DOE is undertaking the role of lead agency, per CERCLA and the NCP, for the performance of this removal action. The funding for this removal action will be through DOE budget authorization and no Superfund monies will be required.

10. REFERENCES

DOE 1993. Mound Facility Physical Characterization, December 1, 1993.

DOE 1997. Risk Based Guideline values, Mound Plant, Final (Rev 4), March, 1997.

DOE 1995. Policy on Decommissioning of Department of Energy Facilities under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), May 22, 1995.

DOE 1998. List of Ohio Administrative Code and Ohio Revised Code ARARs, Letter from Nickel to Kleinrath, August 19, 1998.

USEPA 1989. Methods for Evaluating the Attainment of Cleanup Goals (EPA 230/02-89/042)

USEPA 1990. Federal Facilities Agreement under CERCLA Section 120, USEPA, October 12, 1990.

USEPA 1993. Federal Facilities Agreement under CERCLA Section 120, USEPA, July 15, 1993.

Appendix A

Calculation of Risk Based Guideline Values for $^{234}\text{Uranium}$ and its Decay Chain to ^{206}Pb

Construction Worker - Soil/Sediment Exposure Pathway Variables defined in Table 4.1.3 p93 RBGV Report 3/97
 Equations listed in Table 4.1.3 p92 RBGV Report 3/97

Enter the following:

Series U-234 to Pb-206			Cancer Slope Factors HEAST Table 4			
			Series Segment	Ingestion	Inhalation	External Exp
Target Risk		1.00E-05	U-234	4.40E-11	1.40E-08	2.14E-11
Oral Cancer Slope Factor		1.39E-09 risk/pCi	Th-230	3.75E-11	1.72E-08	4.40E-11
Inhalation Cancer Slope Factor		3.78E-08 risk/pCi	Ra-226	2.96E-10	2.75E-09	6.74E-06
External Cancer Slope Factor		6.74E-06 risk/pCi	Pb-210	1.01E-09	3.86E-09	1.45E-10
			Pb-206	1.39E-09	3.78E-08	6.74E-06
			Total			
Ingestion						
Target Risk	TR	1.00E-05				
Exposure Duration 1	ED ₁	5 yrs				
Exposure Frequency	EF	250 days/yr				
Oral Cancer Slope factor	SF ₀	1.39E-09 risk/pCi				
Conversion Factor 1	CF ₁	0.001 g/mg				
Ingestion rate - Soil	IR _{soil}	480 mg/day				
Radionuclide Concentration in Soil (Ingestion)	CS _{ing}	12.01 pCi/g				
Inhalation						
Inhalation Cancer Slope factor	SF ₁	3.78E-08 risk/pCi				
Conversion Factor 2	CF ₂	1000 g/kg				
Inhalation Rate	IR _{air}	20 m ³ /day				
Soil to Air Volatilization Factor	VF	1 m ³ /kg				
Particulate Emission Factor	PEF	4.28E+09 m ³ /kg				
Radionuclide Concentration in Soil (Inhalation)	CS _{inh}	4.53E+04 pCi/g				
External						
External Cancer Slope Factor	SF _e	6.74E-06 risk/pCi				
Exposure Duration 2	ED ₂	3.425 yrs				
Gamma Shielding Factor	S _g	0.1				
Gamma Exposure Time factor	T _g	0.33				
Radionuclide Concentration in Soil (External Exposure)		1.45 pCi/g				
Total						
	CS _{TOTAL}	1.29E+00 pCi/g				

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