

300401-0605150002

CH2M HILL Mound, Inc.

1075 Mound Road

P.O. Box 750

Miamisburg, OH 45343-0750



**CH2MHILL**

SMO-125/06  
February 20, 2006

Mr. Don Pfister, Director  
Miamisburg Closure Project  
U. S. Department of Energy  
175 Tri-County Parkway  
Springdale, OH 45246

ATTENTION: Paul Lucas

**SUBJECT:** Contract No. DE-AC24-03OH20152: Deliverable #36 Building Data Package; Section C.2.1.1 Facility Demolition; Buildings R, SW, 58, and 68 Slab Removal Action, Action Memorandum, Addendum 1, Final

Dear Mr. Pfister:

Attached is the following Final document for your records:

- Buildings R, SW, 58, and 68 Slab Removal Action, Action Memorandum, Addendum 1, Final

If you or members of your staff have any questions regarding the document, or if additional support is needed, please contact Dave Rakel at 937-865-4203.

Sincerely,

Michael D. Ebben  
Site Manager

JL/jg

-- Enclosures

cc: T. Fischer, USEPA, (1) w/attachments  
 B. Nickel, OEPA, (1) w/attachments  
 R. Vandegrift, ODH, (1) w/attachments  
 J. Webb, ODH, (1) w/attachments  
 M. Wojciechowski, Tetra Tech, (1) w/attach  
 G. Gorsuch, DOE/MCP, (1) w/attachments  
 R. Tormey, DOE/OH, (1) w/attachments  
 G. Desai, DOE/HQ, (1) w/attachments  
 C. Kline, CH2M Hill, (1) w/attachments  
 F. Bullock, MMCIC (2) w/attachments  
 Public Reading Room (1) w/attachments

Admin Records, CH2M Hill, (2) w/attachs  
 ER Records, CH2M Hill, (1) w/attachs  
 DCC (1) w/attachments  
 M. Ebben, CH2M Hill, w/o attachments  
 K. Armstrong, CH2M Hill, w/o attachments  
 D. Rakel, CH2M Hill, w/o attachments  
 D. Kramer, CH2M Hill, w/o attachments  
 MOAT Coordinator, CH2M Hill, w/o attachs  
 S. Barr, CH2M Hill, w/o attachments  
 M. McDougal, CH2M Hill, w/o attachments  
 file, CH2M Hill, w/o attachments

Buildings R, SW, 58 and 68 Slab Removal Action

**ACTION MEMORANDUM**

**ADDENDUM 1**

Final

January 2005

Bldg 68 was demolished via E Bldg Action Memo (final, April 2000).

Bldg 62 is considered part of Bldg SW.

PRs 234 (EG-6 tank) is listed in R/SW AM, but was previously NFA on 8/23/96; the remaining soil in the vicinity will be verified via the SUD.

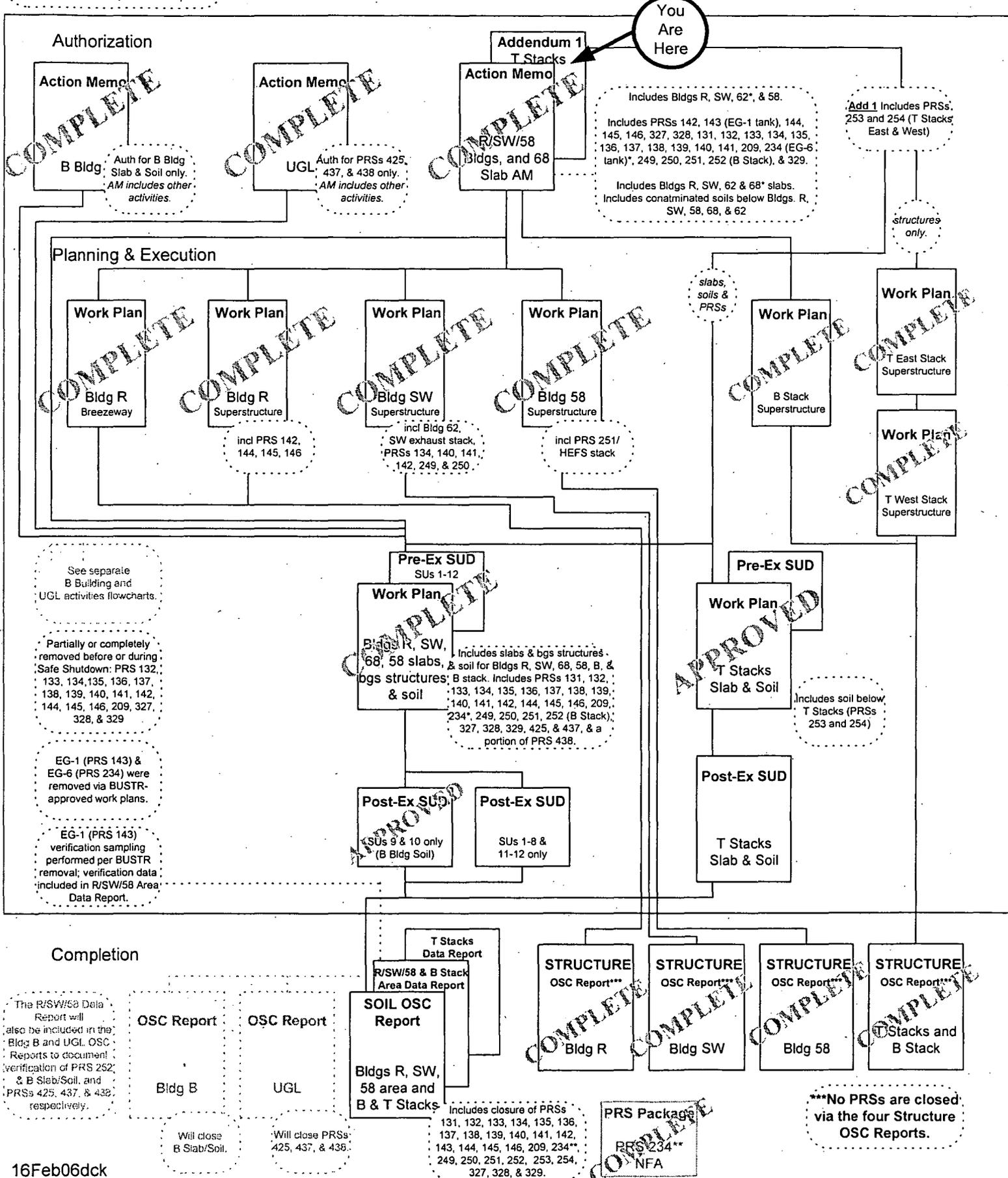
Some PRs are listed in multiple work plans because the work was performed in phases.

# Bldgs R, SW, 58, 68, 62, B & T Stacks, and

Slabs for Bldgs R, SW, 68, 62, & B, & T Stacks, and

PRs 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143 (EG-1 tank), 144, 145, 146, 209, 234\* (EG-6 tank), 249, 250, 251, 252, 253, 254, 327, 328, & 329.

Includes work planning & verification of PRs 425 & 437 and a portion of PRs 438.





The Mound Core Team  
500 Capstone Circle  
Miamisburg, OH 45342

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January 2005

Mr. Frank Bullock, PE  
Director of Operations  
Miamisburg Mound Community Improvement Corporation  
720 Mound Road  
COS Bldg. 4221  
Miamisburg, Ohio 45342-6714

Dear Mr. Bullock:

The Core Team, consisting of the U.S. Department of Energy Miamisburg Closure Project (DOE-MCP), U.S. Environmental Protection Agency (USEPA), and the Ohio Environmental Protection Agency (OEPA), appreciates your comments on the Buildings R, SW, 58, and 68 Slab Removal Action, Action Memorandum, Addendum 1. Attached is our response.

Should the responses to comments require additional detail, please contact Paul Lucas at (937) 847-8350, x314 and we will gladly arrange a meeting or telephone conference.

Sincerely,

DOE/MCP:	<u>Paul Lucas</u> Paul Lucas, Remedial Project Manager	<u>1/4/05</u> date
USEPA:	<u>Timothy J. Fischer</u> Timothy J. Fischer, Remedial Project Manager	<u>1/4/05</u> date
OEPA:	<u>Brian K. Nickel</u> Brian K. Nickel, Project Manager	<u>1/4/05</u> date

**Response to MMCIC/ EHS Technology Group, LLC Comments on the  
Buildings R, SW, 58, and 68 Slab Action Memorandum, Addendum 1  
Public Review Draft  
August 2004**

**Comment 1.**

**Reference Document:** Buildings R, SW, 58, and 68 Slab Removal Action, Action Memorandum, Addendum 1, Public Review Draft, August 2004.

**Purpose:** The purpose of this document is to notify the public of the addition of two Potential Release Sites (PRSs) PRS 253 and PRS 254 to the PRSs included in the Building R, SW, 58 and 68 Slab Action Memorandum. The two additional PRS are associated with the T-West Stack (PRS 253) and T-East Stack (PRS 254). Because these additional PRS are in the vicinity of the demolition and decontamination activities in the Building R and SW area, and because the Contaminants of Concern (COC) are the same as those outlined in the original Action Memorandum, incorporation of PRS 253 and 254 represents efficiencies in budget, manpower, and scheduling.

**Assessment of Review:** Building R is one of the original buildings constructed on the Main Hill in 1948. It had a hot side associated with radiological areas used for tritium recovery, plutonium work and analytical support. Building SW is also on the Main Hill and was originally constructed in 1950. Since then, the building has undergone 13 major additions. This building was used for tritium recovery and purification, tritium component development, component evaluation, and analysis of materials. The past operations included research projects on plutonium, actinium, radium, uranium, thorium and protactinium. Building 58 contains the alpha and beta filter banks for Building SW. The Building 68 slab will be used for equipment staging during the cleanup activities at Building R, SW and 58. The T-East and T-West stacks are exhausts stacks that serviced the T Building. The T-Building was host to various research, development and production programs, including two major isotopes of polonium and tritium. The two additional PRS (253 and 254) are associated with these exhaust stacks.

**Technical Analysis:** In August 2004, an Addendum was added to the Action Memorandum for the Buildings R, SW, 58 and 68 Slab Removal Action (originally dated June 2003). The purpose of the addendum was to include two additional PRS to the removal action. Since the PRSs are in close proximity to the removal action, it is appropriate to include them in this cleanup activity. In addition, these two PRS share most of the same contaminants of concern (COC) as the original cleanup PRS. Three additional COC have been included as a result of these PRS associated with the T Building stacks. The additional COC are Bismuth-210m, Cobalt-60 and Silver 108m. These COC will be added to the cleanup verification sampling protocol.

EHS has had the opportunity to review and comment on this both the original Action Memorandum and the Addendum dated August 2004. We concur that it is appropriate to include and address these PRS 253 and 254 with the other cleanup activities addressed with the Building R and SW remediation.

As always, coordination between CH2M Hill, the cleanup contractor at the Mound Site, and Miamisburg Mound Community Improvement Corp. (MMCIC -developer of the Mound site) will result in the return of these areas to the proposed use in the Mound Comprehensive Reuse Plan.

**Substantive Comments:** EHS concurs with the planned remediation of PRS 253 and 254 being included with the Building R and SW cleanup. Coordination between CH2M Hill, the DOE and MMCIC to ensure the area is left in a condition consistent with the Mound Reuse Plan.

If EHS's understandings are correct, no specific response to the above comment is necessary, and we understand that these comments will be included in the OSC report.

**Response 1.** Thank you for your review and input to the document. MMCIC is encouraged to coordinate with DOE and the clean-up contractor regarding demolition activities. The demolition Work Plan specifies any site restoration activities following structure removal. The Core Team understands MMCIC's request and encourages MMCIC to meet with DOE to obtain an agreeable end state.

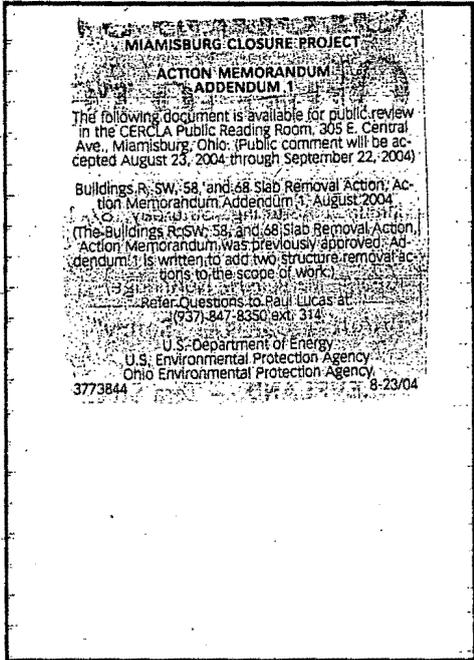
Public comments are included in the final version of the document to which they pertain; accordingly, these comments will not be included in an OSC Report as your comment indicated, but are included in the Final version of the Buildings R, SW, 58, and 68 Slab Action Memorandum, Addendum 1.

**AFFIDAVIT OF PUBLICATION**

State of Ohio

SS: CH2M HILL

Montgomery County



Before me, the undersigned, a Notary public in and for said County, personally came Tina Sears, who being first duly sworn says she is the Legal Advertising Agent of the DAYTON DAILY NEWS, which she says is a newspaper of general circulation in Montgomery, Clark, Warren, Butler, Clinton, Greene, Preble, Miami, Darke, Mercer, Shelby, Fayette, Logan, Auglaize, and Champaign Counties, and State of Ohio, and she further says that the Legal Advertisement, a copy of which is hereunto attached, has been published in the said DAYTON DAILY NEWS

25 Lines, 1 Time(s), last day of publication being 8/23/04, and he/she further says

that the bona fide daily paid circulation of the said DAYTON DAILY NEWS was over Twenty-five Thousand (25,000) at the time the said advertisement was published, and that the price charged for same does not exceed the rates charged on annual contract for the like amount of space to other advertisers in the general display advertising columns.

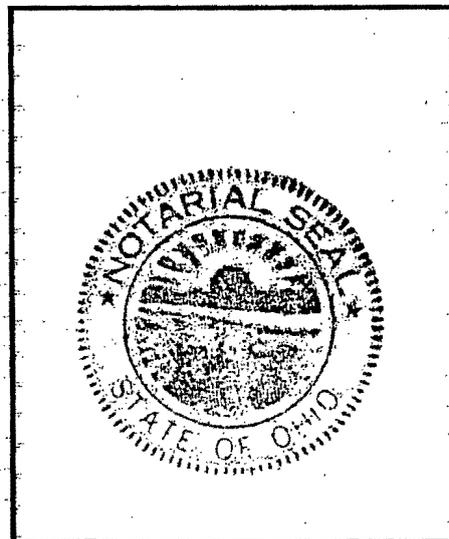
Signed Tina Sears

Sworn or affirmed to, and subscribed before me, this

23 day of August 2004

In Testimony Whereof, I have hereunto set my hand and affixed my official seal, the day and year aforesaid.

Kell Maxey  
Notary Public in and for the State of Ohio



### **PURPOSE:**

The purpose of this addendum is to add two Potential Release Sites (PRSs) PRS253 and PRS254 to those included in the Buildings R, SW, 58 and 68 Slab Action Memorandum (AM, Reference 1). Justification for adding the two PRSs to the existing Action Memo is as follows:

- the two PRSs (253, 254) are located in the immediate vicinity of the Buildings R, SW, 58 and 68 Slab removal actions,
- the contaminants for these PRSs are the same as those for the soil removal/verification in the existing action memo,
- combining like work scopes increases efficiencies in budget and use of manpower and allows for a potential reduction in overall schedule duration, and
- combining local PRSs into one Action Memo affords streamlining of sampling and reporting documentation.

The approach used to add the two PRSs into the Buildings R, SW, 58 and 68 Slab Action Memo is to identify sections in the Buildings R, SW, 58 and 68 Slab Action Memo where additional information would be presented and provide the information as an attachment to this addendum for ease in comparison to the parent document. The additional information required includes updates to:

- Section 2, Site Conditions and Background,
- Table 2.1 PRSs to be dispositioned,
- Table 5.1 Cleanup Objectives
- Section 5.1.1, Proposed Action Description, Phase II,
- Section 5.2, Estimated Costs, and
- Section 9 Recommendation (see new Recommendation Page for Addendum 1)

The Buildings R, SW, 58 and 68 Slab Action Memorandum Addendum 1 was generated to include Buildings R, SW, 58, 68 slab, B Stack, T East and T West stacks, and contaminated soil in the vicinity. Included herein are two tables, one for building -related PRSs and one for soil/slab-related PRSs.

### **REFERENCES:**

- 1) Action Memorandum, Buildings R, SW, 58 and 68 Slab Removal Action, June 2003, Final.

### **PREPARED BY:**

Mary E. Sizemore, CH2MHill, Main Hill Technical Staff  
Ken Armstrong, CH2MHill, Main Hill Deputy Program Manager

## 2. SITE CONDITIONS AND BACKGROUND

### 2.1 SITE DESCRIPTION

This section describes the physical site location, site characteristics, and release of contaminants into the environment.

#### 2.1.1 Physical Location

The Miamisburg Closure Project is a site on the southern border of the city of Miamisburg in Montgomery County, Ohio. The additional removal action is proposed for T East and T West stacks shown in Figure 2-1.

#### 2.1.2 Site Characteristics

##### 2.1.2.1 Building R, Building 68 Slab, -West stack, and T-East stack

Building R is a single-story structure, with a penthouse, constructed of concrete block with brick facing. The roof is metal with a built-up membrane of coal tar. Building R, one of the original buildings constructed in 1948, is located on the main hill. The total area of Building R is 55,006 square feet. The R Building penthouse contains a high efficiency particulate air (HEPA) filter bank and associated ductwork connecting it to the T-West stack. T-West and T-East stack are both two hundred foot tall brick and mortar exhaust stacks. T-West stack is an exhaust stack that services T Building and R/SW Buildings. T-East stack services T Building. The building has central steam for heat, chilled water, and electrical service of 480V. The building was divided into two areas: the cold side and the hot side.

Seven Potential Release Sites (PRSs) (PRS 142, 143, 144, 145, 146, 327, and 328) are associated with Building R. There is one PRS (252) associated with B Stack. There is one PRS (253) associated with T-West Stack. There is one PRS (254) associated with T-East Stack. The PRSs and a brief description are listed in Table 2.1. These PRSs are included in the removal action. Additional COCs associated with the T Building stacks have been added to Table 5-1. These COCs were associated with the polonium processing that was conducted in T Building.

Buildings R, SW, 58 and 68 Slab Action Memo

Addendum 1

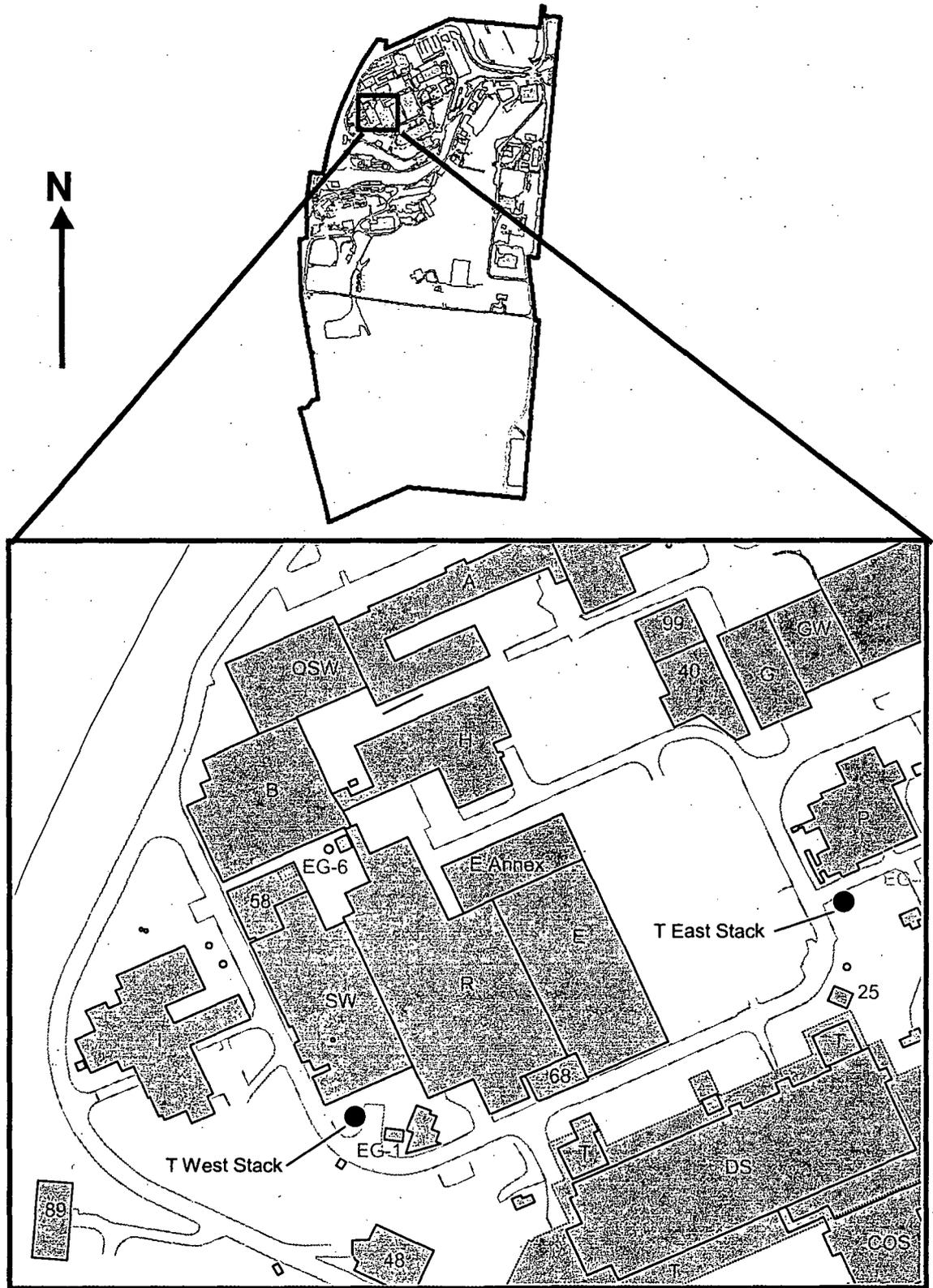


Figure 2.1  
Location of Buildings R, SW, 58, and formerly 68

Table 2.1 - PRSs Associated with Building R, T West Stack, and T East Stack

PRS	Description	Comments
142	Building SW/R Solid Radioactive Waste Compactor	
143	Building SW/R/T Stack Diesel Fuel Storage Tank (Tank 117)	
144	R Building Sanitary Waste Collection Tank (Tank 120)	
145	Room R-128 Alpha Waste Water Tank (Tank 19)	
146	R Building Rooms 121, 144, 146, and 148 entombed drains	Sealed in concrete in building floor drains.
327	R-111 Calorimetry Bath (Tank 255)	
328	R-111 Calorimetry Bath (Tank 256)	
252	B Building Stack	
253	T West Stack	
254	T East Stack	

Building 68 was a one-story structure constructed in 1979 of pre-fabricated metal with a metal roof. The Building 68 structure was demolished as part of the E Building demolition project in May 2000. (See E Building Action Memo, Final, April 2000.) Following the demolition of the Building 68 structure, the slab was left to be used as an equipment staging area for the Buildings R/SW demolition project. The total area of the Building 68 slab is approximately 1,990 square feet. Following completion of the R/SW demolition, the Building 68 slab will be removed along with the R and SW building slabs. B, T-West, and T-East stacks will be demolished.

## PROPOSED ACTION AND ESTIMATED COSTS

### 5.1 PROPOSED ACTION

The proposed action is the demolition of Buildings R, SW, 58, B stack, T West stack, T East Stack, Building SW exhaust stacks, removal of the Building 68 slab, and removal of contaminated soils in the vicinity of Building SW. 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

- **Phase I - Buildings R, SW, and 58, T West and T East Stack Decontamination**

Decontamination of Building R includes the removal of contaminants from the solid radioactive waste compactor (PRS 142), contaminated sumps (wastewater tanks) (PRSs 144, 145), the EG-1 diesel fuel storage tank (PRS 143), the R-111 calorimetry baths (PRS 327, 328), the contaminated (entombed) room drains (PRS 146), B Stack (PRS 252), T West Stack (PRS 253), T East Stack (PRS 254), fan houses associated with the stacks, fixed contamination areas/walls, soil, waste handling, and disposal. Openings to the underground airshafts associated with the T East and West stacks will be sealed. The plena associated with the stacks will be demolished to 3 feet below grade.

- **Phase II: Remove Associated Foundations and Soil**

The foundations and soils associated with Buildings R, SW, 58, 68, B stack, T West stack, and T East stack will be removed. Some soil remediation will occur prior to the demolition of the building. This includes the area under SW-8 and the "Old Cave" area. The underground airshafts that lead from the T building head houses to the plena are addressed under the T Building Action Memorandum.

- **Phase II: Verification**

A partial listing of radionuclides processed in Buildings R and SW including the primary contaminants of concern (COC) for Buildings R, SW, 58, T West stack and T East stack is given in Table 5.1, along with the risk-based guideline values (RBGV) and cleanup objectives. The RBGV have been identified in (DOE 1997) Risk Based Guideline Values, Mound Plant, March 1997.

# Buildings R, SW, 58 and 68 Slab Action Memo

## Addendum 1

**Table 5.1 - Cleanup Objectives [pCi/g]**  
Footnotes on next page

Contaminant	Risk Based Guideline Values (10 <sup>-5</sup> ) <sup>(2)</sup>	Background Values	Cleanup Objective
Actinium-227 + decay products in secular equilibrium to Lead-207	4.5	0.11 <sup>(3)</sup>	4.6
Americium-241	63	ND	63
Bismuth-207	1.2	ND	1.2
Bismuth-210m*	8.3	NA	8.3
Cesium-137 + decay products in secular equilibrium to Barium-137	3.4	0.42	3.8
Cobalt-60*	0.7	NA	0.7
Lead-210 + decay products in secular equilibrium to Lead-206	6.2	1.2 <sup>(3)</sup>	7.4
Protactinium-231 + decay products in secular equilibrium to Lead-207	3.9	0.11 <sup>(3)</sup>	4.0
Plutonium-238	61	0.13	55 <sup>(1)</sup>
Plutonium-239/240	60	0.18	60.2
Radium-226 + decay products in secular equilibrium to Lead-206	0.9	2.0	2.9
Strontium-90 + decay products in secular equilibrium to Zirconium-90	94	0.72	94.7
Silver 108m*	1.2	NA	1.2
Thorium-228 + decay products in secular equilibrium to Lead-208	1.1	1.5	2.6
Thorium-230 + decay products in secular equilibrium to Lead-206	0.9	1.9	2.8
Thorium-232 + decay products in secular equilibrium to Lead-208	0.7	1.4	2.1
Tritium	75,800	1.6	75,800
Uranium-233 + decay products in secular equilibrium to Bismuth-209	4.8	NA	4.8
Uranium-234 + decay products in secular equilibrium to Lead-206	0.9	1.1	2.0
Uranium-238 + decay products in secular equilibrium to Lead-206	1.0	1.2	2.2 <sup>(4)</sup>

**Footnotes to Table 5.1**

- (1) The  $10^{-5}$  RBGV for Pu-238 is 61 pCi/g, however, 55 pCi/g has been retained due to its familiarity to the public.
- (2) These guideline values are based on the more restrictive of the Construction Worker and Site Employee Values. These values were calculated using the methodology contained in Risk Based Guideline Values, March 1997, Final but were performed using April 2001 HEAST slope factors.
- (3) These radionuclides have comparatively short half-lives and are deduced to be in secular equilibrium with the parent nuclide. Thus the background value measured for the parent is considered to be the appropriate value for these as well. The validity of using this method for background determination for other radionuclides will be assessed on a case by case basis.
- (4) If Uranium-238 is present in concentrations greater than 2.2 pCi/g, evaluate secular equilibrium with daughters. If secular equilibrium exists, use 2.2 pCi/g as cleanup goal. If secular equilibrium does not exist, adjust Uranium-238 cleanup goal upward to account for reduced daughter concentrations.

NA = Not Available; ND = Not Detected, \* = associated only with T stacks

### 5.2.1 R Building and Building 68 Slab Estimated Costs

The cost estimate to perform the removal action, based on the Main Hill Project work scope definition sheets for Building R, T-West and T-East Stacks is shown in Table 5.4. Costs include the construction activities, all engineering and construction management, and site restoration.

**Table 5.4 - Removal Action Cost Estimate for Building R, T West Stack, and T East Stack**

COST ESTIMATE	
Activity	Cost
Work Planning	\$710,827
Buildings Decontamination <sup>(A)</sup>	\$23,079,496
Buildings Demolition	\$6,049,237
Remove Foundations & Soils	\$155,833
Verification	\$122,470
Site Restoration	\$76,155
OSC Report	\$32,564
<b>TOTAL</b>	<b>\$30,231,370</b>

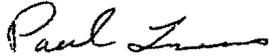
<sup>(A)</sup> Building R, T West and T East stack costs consist of historical costs plus the latest revised estimate to complete for work associated with Main Hill.

Note: Costs are subject to change pending award of the cost plus incentive fee contract for completing the work.

RECOMMENDATION

This decision document represents concurrence to incorporate PRSs 253 (T West Stack) and 254 (T East Stack) into the Buildings R, SW, 58 and 68 Slab Removal Action. Presentation of the information in this addendum models the approved Buildings R, SW, 58 and 68 Slab Action Memorandum that was prepared in accordance with CERCLA as amended by SARA, and not inconsistent with the NCP. This decision is based on the administrative record for the site.

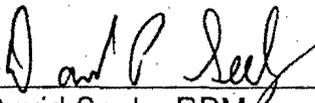
Information provided in this Addendum 1 is consistent with the actions already proposed for Buildings R, SW, 58 and 68 Slab Removal Action. No additional contaminants of concern were identified. The contaminants of concern associated with the addition of these two PRSs are already included. We recommend that they be initiated as described herein.



8/2/04

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Paul Lucas, OSC  
U.S. Department of Energy  
Miamisburg, Ohio



7/15/04

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David Seely, RPM  
USEPA  
Chicago, Illinois



8/2/04

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Brian Nickel  
OEPA  
Dayton, Ohio