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**CH2MHILL**

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

SMO-124/05  
May 31, 2005

U. S. Department of Energy  
Miamisburg Closure Project  
Ms. Margaret L. Marks, Director  
1075 Mound Road  
Miamisburg, OH 45342

ATTENTION: Paul Lucas

SUBJECT: **Contract No. DE-AC24-03OH20152: Deliverable #36 Building Data Package; Section C.2.1.1 Facility Demolition; Buildings 31 and 31A OSC Report, Final**

Dear Ms. Marks:

Attached is the following Final document for your records:

- Buildings 31 and 31A OSC Report, 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,

John Lehew  
Site Manager

JL/ms

Enclosures

cc: T. Fischer, USEPA, (1) w/attachments  
B. Nickel, OEPA, (1) w/attachments  
R. Vandegriff, ODH, (1) w/attachments  
M. Wojciechowski, Tetra Tech, (1) w/attach  
F. Schmaltz, DOE/MCP, (1) w/attachments  
L. Rawls, MCP, w/o attachments  
R. Tormey, DOE/OH, (1) w/attachments  
G. Desai, DOE/HQ, (1) w/attachments  
F. Bullock, MMCIC, (2) w/attachments  
Public Reading Room, (4) w/attachments  
Admin. Record, (2) w/attachs  
DCC (1) w/attachments

ER Records, (1) w/attachments  
CERCLA Records, (1) w/ attachs  
C. Watson, (1) w/attachments  
J. Lehew, w/o attachments  
K. Armstrong, w/o attachments  
D. Rakel, w/o attachments  
V. Darnell, w/o attachments  
B. Wier, w/o attachments  
MOAT Coordinator, w/o attachs  
W. Webb, w/o attachments  
M. McDougal, w/o attachments  
file, w/o attachments

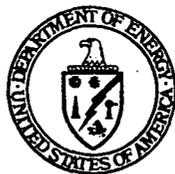
# **BUILDINGS 31 and 31A REMOVAL ACTION**

**PRS 268 is closed via this OSC Report**

# **OSC REPORT**

**May 2005**

**Final**



**Department of Energy  
Miamisburg Closure Project**



**CH2MHILL**

# Buildings 31 & 31A

(includes dock & metal grates)



Bldg 31 (PRS 268)



Bldg 31A

Authorization

**CRA**  
Action Memo  
Add. 1  
structures

**COMPLETE**

Bldg 31/31A  
Fact Sheet

**COMPLETE**

Planning & Execution

Bldg 31/31A  
**BDP**  
Building  
Data Report

Work  
Plan

**COMPLETE**

Bldg 31/31A  
dock soil  
Sampling &  
Analysis Plan

**COMPLETE**

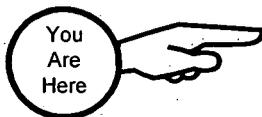
note: if soil contamination is found,  
additional document(s) needed

Completion

Bldg 31 Dock  
Data Report

Bldg 31/31A  
**OSC**  
Report

On-Scene  
Coordinator  
Report



You  
Are  
Here

\* Note: Soil below Bldgs 31 &  
31A are included in PRS 267.

Includes closure of PRS 268,  
and soil below Dock\*.

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## Acronyms

BOSS	Balance of Site Structures
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cm <sup>2</sup>	square centimeters
COC	Contaminant of Concern
CRA	Contingent Removal Action
D&D	Decontamination and Decommissioning
DAC	Derived air concentration
DOE	Department of Energy
dpm	disintegrations per minute
ER	Environmental Restoration
LSA	Low Specific Activity
MCP	Miamisburg Closure Project
OEPA	Ohio Environmental Protection Agency
OSC	On-Scene Coordinator
PRP	Potentially Responsible Party
PRS	Potential Release Site
RA	Removal Action
SM	Special Metallurgical
USEPA	United States Environmental Protection Agency
VSAP	Verification Sampling and Analysis Plan

### Recommendation

Buildings 31 (Contaminated Materials Storage Building/Low Specific Activity [LSA] and Transuranic [TRU] Waste Storage Building) and 31A (LSA and TRU Waste Storage) had been used to store, stage, and prepare for offsite shipment of the low-level wastes (LLW) generated from various site processes and activities. Building 31 is also known as PRS 268. Initial plans were to demolish the buildings as an industrial demolition project; however, radiological surveys identified elevated levels of fixed plutonium-238 on the Building 31 floor. The highest isotopic analysis result (alpha spec) in Building 31 was 3,880,000 dpm/100 cm<sup>2</sup> plutonium-238 (compared with surface release criteria of 100 dpm/100cm<sup>2</sup>). The highest isotopic analysis result on the dock top surface was 270 dpm/100 cm<sup>2</sup> Plutonium-238 (compared with surface release criteria of 100 dpm/100 cm<sup>2</sup>). This radiological contamination warranted the demolition of Buildings 31/31A and the truck dock south of Building 31 as a CERCLA Removal Action (RA).

The Buildings 31 and 31A Public Fact Sheet was issued for public review (June 2004) in accordance with the Contingent Removal Actions (CRA) for Contaminated Soils, Addendum 1: Structures, Public Review Draft (April 2004), which authorized the removal of the Building 31 and 31A structures and slabs, the asphalt staging area, the metal gates, and truck dock. The RA includes verification of the soil below and around the truck dock. Soil below and around Building 31/31A is designated PRS 267, which is a separate RA that will be closed via the Building 38 Soil OSC Report. The soil below and around the dock is not part of PRS 267, but is included in this RA. Soil sampling was conducted below and around the dock, per a Core Team approved Sampling and Analysis Plan (SAP). All verification results were below cleanup objectives. This On-Scene Coordinator (OSC) Report documents the completion of the Building 31/31A RA.

The RA resulted in the demolition of Buildings 31 and 31A, and the truck dock per the Core Team approved Work Plan (BOSS 37544-00), and the disposal of 1,015.3 cubic yards of low-level radiological waste (which was sent to Envirocare). 170 cubic yards of construction debris meeting surface release criteria were sent to Stoney Hollow Landfill, and 0.18 cubic yards of PCB-contaminated light ballasts were sent to Clean Harbors.

After a thorough review of the Buildings 31 and 31A OSC report, the Core Team agrees that the Removal Action of the Building 31 (PRS 268) and 31A structure and slab, the asphalt staging area, the metal grates, and truck dock south of Building 31, and verification sampling and analysis of the soil below and around the truck dock is complete, and that all previously existing environmental issues associated with these structures have been resolved.

*Paul Lucas*

5/25/05

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

*Timothy J. Fischer*

5/25/05

Timothy J. Fischer, Remedial Project Manager  
USEPA  
Chicago, Illinois

*Brian K. Nickel*  
Brian K. Nickel, Project Manager  
OEPA  
Dayton, Ohio

5/25/05

## 1.0 SUMMARY OF EVENTS

This section describes the site background and events leading up to the removal action, parties involved in supporting the removal action, chronological narrative of the removal action, and resources committed to complete the project.

### 1.1 Site Conditions and Background

The Buildings 31 and 31A Fact Sheet and Building Data Package, in conjunction with the Contingent Removal Action Addendum 1, authorize the removal action (RA) resulting in the demolition of the Buildings 31 and 31A structures and slabs, the asphalt, the grating, and the truck dock (south of Building 31). This RA includes the verification of the soil below and around the Building 31 Dock. However, the soil below and around the buildings, the asphalt, and the grates are included in the RA for PRS 267, which will be closed out in the Building 38 Soil OSC Report. The Building 31 Dock Sampling and Analysis Plan (SAP) was approved by the Department of Energy (DOE), the Ohio Environmental Protection Agency (OEPA), and the United States Environmental Protection Agency (USEPA). All verification soil sampling results for the Building 31 Truck Dock area are below Cleanup Objectives (See Appendix F).

This On-Scene Coordinator (OSC) Report documents the completion of the removal action for Buildings 31, 31A, and the truck dock. The levels of radiological contamination present in Buildings 31 and 31A warranted a Removal Action (RA) under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and subsequent demolition of Buildings 31 and 31A.

#### **Background.**

The two-building complex had a combined total of 8,740 square feet of floor space. Built in 1965, Building 31 (Contaminated Materials Storage Building/Low Specific Activity [LSA] and Transuranic [TRU] Waste Storage Building) was a one-story prefabricated building containing 6,090 square-feet of floor space. Built in 1984, Building 31A (LSA and TRU Waste Storage) was a one-story prefabricated building constructed on top of an asphalt floor containing 2,650 square feet of floor space.

The buildings had been used to store, stage, and prepare for offsite shipment of the low-level wastes (LLW) generated from Special Metallurgical (SM) Building, the thorium drum storage area, decontamination and decommissioning (D&D) projects, environmental restoration projects, wastewater treatment processes, and laboratory activities. Asphalt pavement that completely surrounded Buildings 31 and 31A and roughly matches the boundary of PRS 267 was used as a staging area.

South of Building 31 was an area (approximately 63 by 80 feet) that was covered by interlocking metal grates. The metal grates were installed about 1988 to cover a deteriorating asphalt staging area that was covering soil contaminated with thorium. South of the metal grates was the free-standing concrete truck dock. The truck dock was located about 80 feet south of Building 31. The truck dock, which appears from the

aerial views of the site to have been constructed between 1983 and 1994, was approximately 20 feet wide, 35 feet long, and 4 feet high. The dock was used to load boxes of radioactive waste onto semi-trailers through the rear doors of the trailers.

These two structures and their slabs, the asphalt staging area, and the metal grates and truck dock to the south of Building 31 were removed per the Buildings 31 and 31A Demolition Work Package (WP) (BOSS-37544-00).

Appendix D provides photographs of the buildings before, during, and after demolition.

### **Associated Potential Release Sites (PRSs) and Previous Investigations.**

PRS 268, Building 31 Contaminated Material Storage Building, is closed out via this OSC Report. PRSs in proximity to Buildings 31 and 31A are listed in Table 1, and their locations shown on Figure 2.

### **Removal Action.**

The authorization for the Removal Action for Buildings 31 and 31A was made by the Core Team on June 17, 2004 via the Public Fact Sheet, Buildings 31 and 31A, Public Review Draft, June 2004. This Removal action was performed under the Action Memorandum for Contingent Removal Actions for Contaminated Soils, Addendum 1: Structures (authorized April 2004), Final, January 2005. Additional information is provided in the Buildings 31 (PRS 268) and 31A Building Data Package, Public Review Draft, June 2004. Work was performed per the Core Team approved WP BOSS-37544-00.

Since DOE is the sole responsible party for cleanup of contamination in Buildings 31 and 31A, no Potentially Responsible Parties (PRPs) were sought to clean up the site. Monsanto Research Corporation, EG&G Mound Applied Technologies, and BWXT of Ohio, Inc. were the operating contractors at the site from 1948 to 30 September 1988, from 1 October 1988 until 30 September 1997, and from 1 October 1997 until 31 December 2002 respectively. CH2M Hill Mound, Inc. became the site contractor for the Miamisburg Closure Project (MCP) effective January 1, 2003.

## **1.2 Organization of the Removal Action**

Table 2 (Appendix B) lists the parties supporting the removal action and their responsibilities.

## **1.3 Objectives**

Documentation Objective: The objective of this Buildings 31 and 31A OSC Report is to describe the removal action fieldwork, report the air monitoring results, report the soil verification results, and document successful completion of the project. Demolition debris quantities and disposition locations are presented in Table 3. The cost breakdown of the RA is presented in Table 4.

Soil under the Buildings 31 and 31A footprint is not included in the scope of this RA and will be remediated and verified per the Building 38 Area VSAP.

During demolition activities, Radiological Control performed air monitoring to confirm a safe work environment. Air monitoring results from the building demolition are provided in Appendix E. All results were below the 0.3 derived air concentration (DAC) Mound posting criteria.

**Removal Action Objectives:** This RA includes the demolition and disposal of the Buildings 31 and 31A superstructures, slabs, and foundations, asphalt staging area, and the truck dock and metal grates south of Building 31. Verification of the removal of Buildings 31 and 31A and associated structures is provided in the photographs included in Appendix D. Verification results for the soil under and around Building 31 Dock are included in Appendix F.

Per the Action Memorandum for Contingent Removal Actions for Contaminated Soils, Addendum 1: Structures (authorized April 2004), Final, January 2005, and Buildings 31 and 31A Public Fact Sheet (authorized June 2004), Public Review Draft, June 2004, the RA objectives are:

- Project Planning,
- Public Notification,
- Site Preparation,
- Demolition/Structure Removal,
- Excavation (none indicated),
- Verification (structure removal verified by photographs; soil verification for dock area only),
- Site Restoration, and
- Documentation of Completion

**Cleanup Objectives:** Contaminants of concern and cleanup objectives identified in the Fact Sheet are as follows:

Contaminant of Concern	Cleanup Objective
Pu-238*	55 pCi/g
Th-232**	2.1 pCi/g

\* Pu-238 was the only contaminant of concern for the Building 31 Dock; accordingly it is the only analyte included in the soil data report (Appendix F)

\*\* Th-232 contamination was present in the soil below the metal grates, which will be remediated and verified via the PRS 267 RA.

## 1.4 Chronological Narrative of the Removal Action

The following is a chronological narrative of events surrounding the Buildings 31 and 31A structure removal action.

Timeframe	Activity
1965 (31) / 1984 (31A)	Construction Completed
1965 to mid 1970s (31)	Storage of recoverable plutonium wastes and recovered thorium drums (31)
Late 1970s to late 1980s (31)	Storage of new waste packaging containers and interim storage of packaged radioactive waste waiting final disposition (31)
1984 to late 1980s (31A)	Storage of empty waste packages (31A)
Late 1980s to mid 2003 (31)	Storage of sealed containers of TRU waste, and staging area for metal LSA boxes (31)
Late 1980s to early 2002 (31A)	Storage of sealed containers of TRU waste, and staging area for metal LSA boxes (31A)
2002 to mid 2003 (31A)	Storage and staging area for raw materials and equipment from the Heat Source/Radioisotope Thermoelectric Generator
Mid 2003 to mid 2004	Asbestos removal and safe shutdown completed
June 2004	Removal Action authorized
June 2004	Superstructure demo completed
July 2004	Slab/foundation, grates, and dock removal completed
October 2004	Verification sampling of soil below and around former dock location
March 2005	OSC Report generated

## 2.0 EFFECTIVENESS OF THE REMOVAL ACTION

The Buildings 31 and 31A superstructures and slabs/foundations, truck dock, metal grates, and asphalt staging area have been demolished, and the debris removed and properly disposed of per the Work Package. Photographs taken before, during and after demolition are included in Appendix D. Soil below and around the former dock location has been sampled and analyzed; all verification results are below cleanup objectives (Appendix F).

### 2.1 Actions Taken by Site Contractor

CH2M Hill Mound, Inc. personnel planned and performed the removal action, building dismantlement and demolition, and onsite transportation and staging of debris. The project met the removal action objectives as outlined in the Contingent Removal Actions for Contaminated Soils Addendum 1: Structures (authorized April 2004) and Fact Sheet. CH2M Hill Mound, Inc. personnel prepared the OSC Report, which shows that the Removal Action objectives were achieved.

In accordance with the RA, the following actions were taken: public notification of the RA, demolition of the structures, and proper disposal of the debris. This OSC Report provides the documentation of completion for the removal of Buildings 31 and 31A superstructures and slabs/foundations, truck dock, metal grates, and asphalt staging area. Soil below and around Buildings 31 and 31A is not included in this RA, but is addressed in the Building 38 Soil VSAP. The soil below and around the truck dock is included in this RA and all verification results are below cleanup objectives (Appendix F). No contaminated soil was removed by this RA; any contaminated soil under or around Buildings 31 and 31A will be removed by the PRS 267 RA.

The resulting demolition debris was disposed of as low-level radiological waste. Prior to demolition, acid etching was done as part of the isotopic analysis (see Recommendation for isotopic analysis) of certain contaminated areas of the floor of Building 31 and on the Building 31 Dock. The resulting samples were analyzed by gamma and/or alpha spectroscopy as appropriate. The samples were then disposed of through the appropriate waste stream. Water misting was performed with the goal of eliminating fugitive dust.

### **Building Dismantlement and Demolition**

Photographs of Buildings 31 and 31A before, during, and after demolition are provided in Appendix D. To prevent the generation of airborne radioactive contamination during demolition activities, engineering controls were employed. These controls included (but were not limited to) using water misting to prevent fugitive dust emissions.

Prior to demolition, Radiological Controls performed an evaluation of the radiological history of the building, and radiological surveys to identify debris within the building that met surface release criteria. Only material that met surface release criteria (DOE Order 5400.5) was released to Stoney Hollow Landfill (see Table 2). All radioactively contaminated debris was size reduced and packaged to meet the Envirocare waste acceptance criteria.

### **Air Monitoring for Worker Safety**

During demolition activities, the Mound Radiological Control organization performed air monitoring to confirm a safe work environment, in accordance with 10 CFR 835. Air monitoring results measured during building demolition are provided in Appendix E. The monitors were repositioned up and downwind from the demolition activities in response to changes in wind direction.

All results were well below the 0.3 derived air concentration (DAC), which is a Mound Administrative Control level based on 10 CFR 835. During demolition activities, radiological personnel identified contaminated floor areas to ensure demolition craft employed appropriate controls to minimize dust-producing activities during size reduction of the contaminated sections of flooring. The air monitoring results indicate that there was no airborne worker radiological exposure (Appendix E).

## **2.2 Actions Taken by Local, State, and Federal Agencies**

The Department of Energy (DOE)/MCP, the United States Environmental Protection Agency (USEPA), and Ohio EPA (OEPA) had oversight responsibility for the removal action. The DOE/MCP was the lead agency for the RA and provided the funding and oversight for the RA. The USEPA and OEPA had oversight responsibility for the RA and review of the Action Memorandum and OSC Report to ensure that the objectives are/were met.

## **2.3 Actions Taken by Subcontractors**

Subcontractors involved in the project include the following:

- Terran, 4080 Executive Drive, Beavercreek, Ohio. Soil sampling and analysis after removal of the Building 31 Dock.

## **3.0 DIFFICULTIES ENCOUNTERED**

### **3.1 Items that Affect the Removal Action**

No difficulties were encountered that affected the removal action.

### **3.2 Issues of Intergovernmental Coordination**

All DOE/USEPA/OEPA interactions were good. The agencies were updated informally on a regular basis, and formally at monthly Core Team meetings. The Mound 2000 Process worked well.

## **4.0 RECOMMENDATIONS**

### **4.1 Means to Prevent Spread of Contamination**

The building and associated structure debris was removed and properly disposed of per the Core Team-approved work plan; therefore, the spread of contamination is prevented. Removal of the Buildings 31 and 31A superstructures and slabs/foundations, metal grates, asphalt staging area, and the truck dock concludes the scope of this RA.

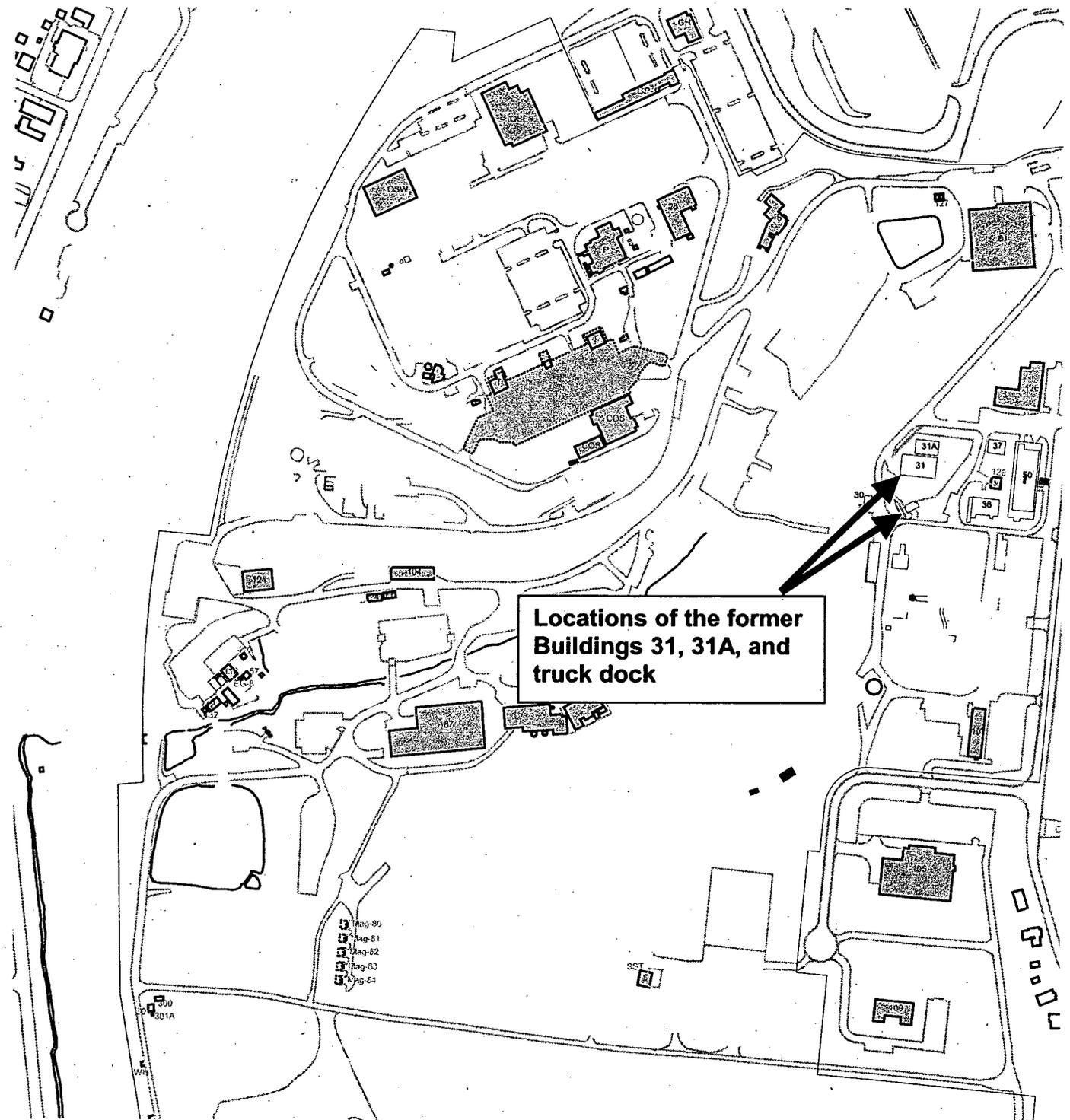
Verification sampling of the soil below and around the Building 31 Dock was performed in accordance with the Building 31 Dock SAP. All results were below cleanup objectives (Appendix F). Therefore, no further action is required. Buildings 31 and 31A footprint soil is included in the PRS 267 RA; verification sampling will be conducted per the Building 38 area VSAP and documented in the Building 38 Soil OSC Report. Following completion of the PRS 267 RA, the area is intended to be transferred from federal to private ownership. All State and Federal disposal rules will apply.

# **APPENDIX A**

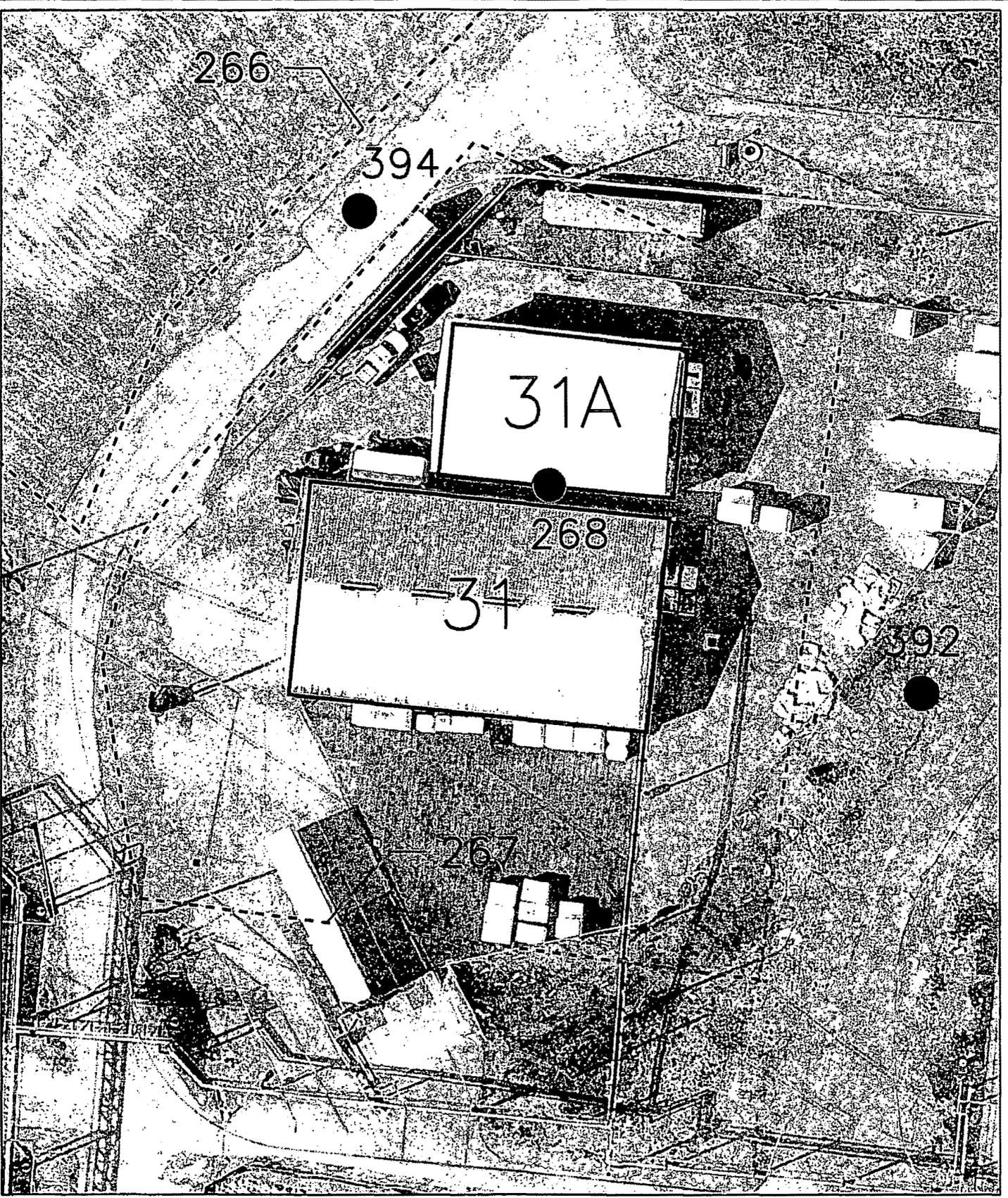
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## **FIGURES**

**Figure 1: Site Map/Building 31/31A**



**Figure 1 - Site Map**



- PRS Point
- PRS Area
- PRS Line



SHEET	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
ISSUE																					
SHEET	1	2	3	4	5	6															
ISSUE	*																				
PART CLASSIFICATION																					
UNCLASSIFIED															vicinity.dgn						
DSD TYPE STE FROM ER-GIS															SCALE						
STATUS MD-RE1															CORON M5TATION / J						

Figure 2  
Building 31/31A  
and Vicinity

05/06/04	SSP	BY	CHKD	ENR	UNCLC	APVD	IS
DATE	REVISION						

A A2/2

# **APPENDIX B**

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## **TABLES**

**Table 1 - PRSs in Proximity to Buildings 31 and 31A**

<b>PRS</b>	<b>CERCLA or Bldg. Related</b>	<b>Binning Status</b>	<b>Comments</b>
266	CERCLA	RA Complete	Area 8, Thorium-Contaminated Soils from Area 1 and 9
267*	CERCLA	RA	Area 9, Thorium Storage and Redrumming Area
268**	Building	RA Complete	Building 31, Contaminated Material Storage Building
392	CERCLA	NFA	Elevated Soil Gas Location
394	CERCLA	NFA	Elevated Soil Gas Location

\* The soil below and around Buildings 31 and 31A are within the PRS 267 boundary, which is binned a Removal Action. Documentation of the soil removal action activities will be provided in the Building 38 Soil OSC Report.

\*\* PRS 268 is closed via this OSC Report

**Table 2: Organization of the Removal Action**

Agency or Party Involved	Contact	Description of Participation
US EPA (SR-6J) 77 W. Jackson Chicago, IL 60604 312-886-7058	Timothy Fischer	Federal agency responsible for MCP oversight.
Ohio EPA 410 E. Fifth Street Dayton, OH 45402-2911 937-285-6468	Brian Nickel	State agency responsible for MCP oversight.
DOE/ MCP 1075 Mound Rd Miamisburg, OH 45342 937-847-8350, ext. 304	Frank Schmaltz	DOE/ MCP Project Manager responsible for project oversight and success.
CH2M Hill Mound, Inc. BOSS Project P.O. Box 3030 1 Mound Road Miamisburg, OH 45343-3030 937-608-8007	Chris Watson	Provided the DOE/ MCP Project Manager with technical assistance, administrative support, sampling, decontamination, photo and site documentation, site safety, and report preparation.
CH2M Hill Mound, Inc. General Superintendent and Equipment Manager P.O. Box 3030 1 Mound Road Miamisburg, OH 45343-3030 937-865-4278	Max Edington	Provided the equipment necessary for the demolition.

**Table 3: Buildings 31 and 31A Waste Disposition**

Building 31, 31A Material	Quantity	Disposal Method	Destination
Construction Debris (concrete and rebar)	170 cubic yards	Landfill	Stoney Hollow Dayton, Ohio
Clean Hard Fill Debris (concrete) Slab	56 cubic yards	Reused Onsite	Concrete Crusher
PCB Light ballasts	0.18 cubic yards	Treatment	Clean Harbors Cincinnati, Ohio
Rad contaminated debris	1,015.3 cubic yards	Rail	Envirocare Salt Lake City, Utah

\* No soil contamination under and around the Building 31 Dock was found; therefore, no quantities for contaminated soil removal are included. Soil contamination under and around Buildings 31 and 31A will be removed by the PRS 267 RA.

**Table 4: Buildings 31 and 31A Removal Estimated Costs**

	Bldgs 31 and 31A
Work Planning	\$22,000
Facility Prep	\$20,000
Demolition	\$36,000
Total	\$78,000

# **APPENDIX C**

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## **GENERAL MEDIA INFORMATION**

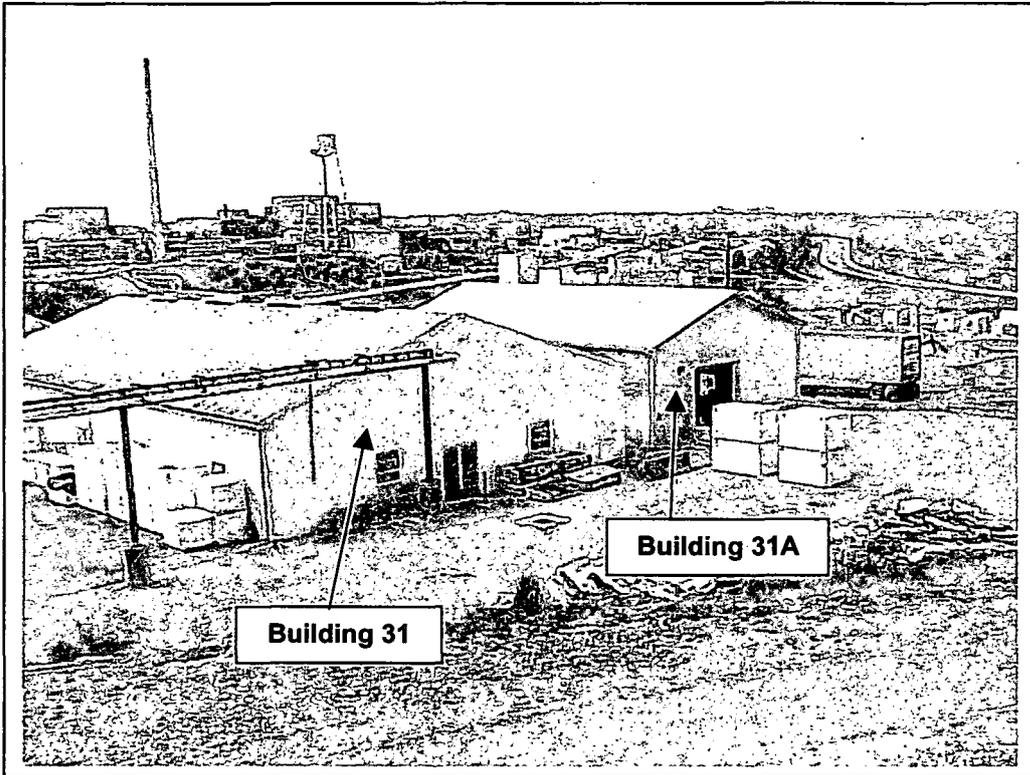
**No Media Information Exists**

# **APPENDIX D**

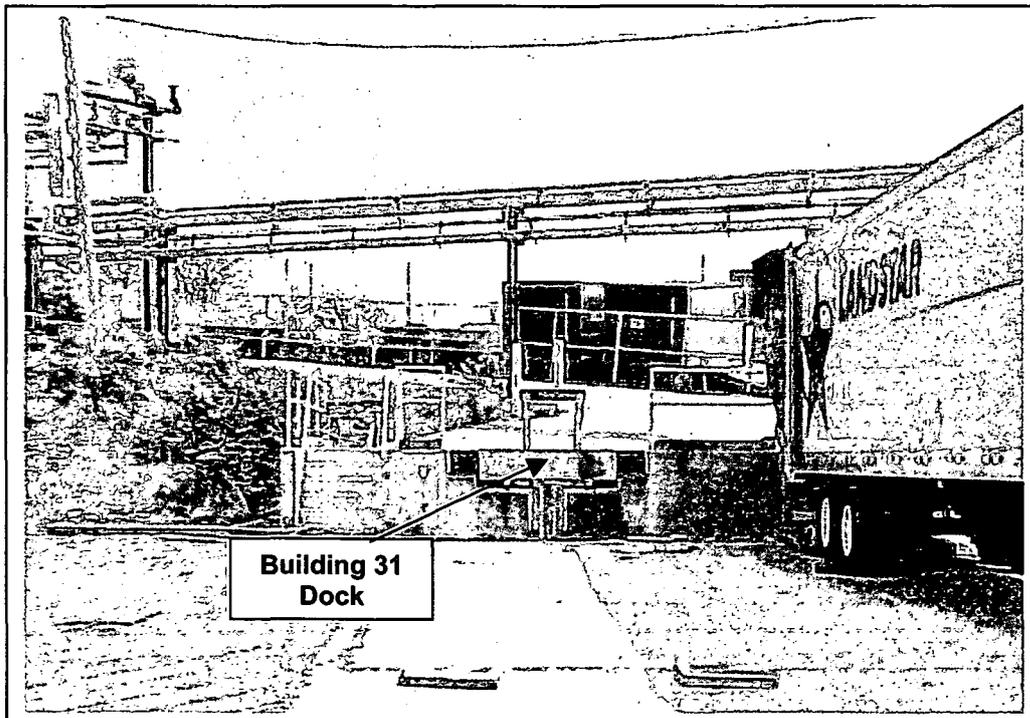
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## **PHOTOGRAPHIC DOCUMENTATION**

**Photograph 1: Buildings 31 and 31A, and 31 Dock Before Demolition**

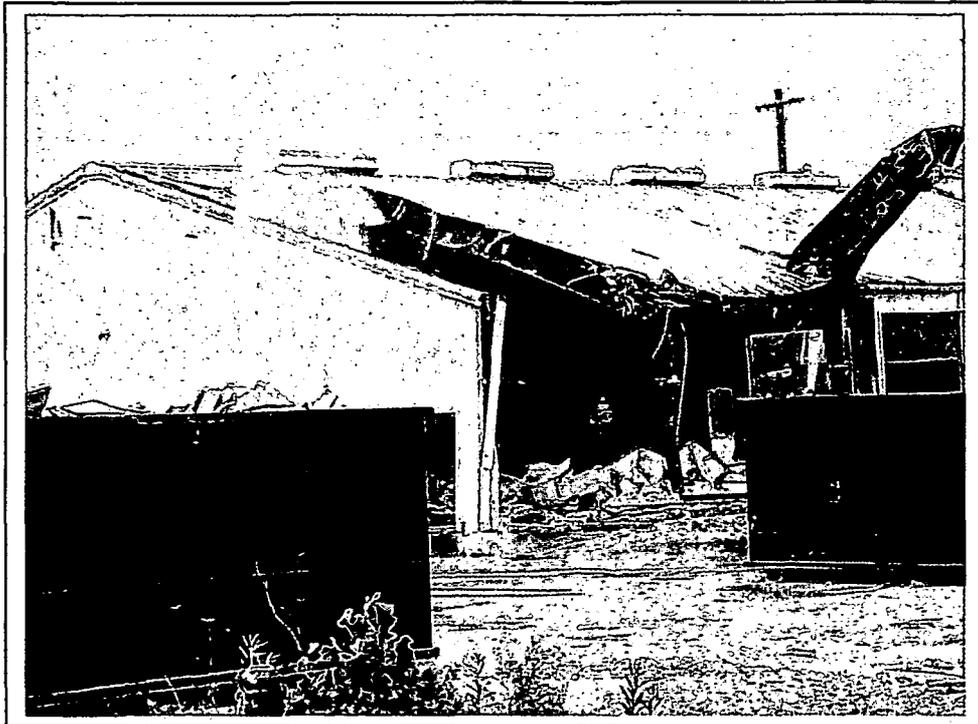


**View Looking Northwest**

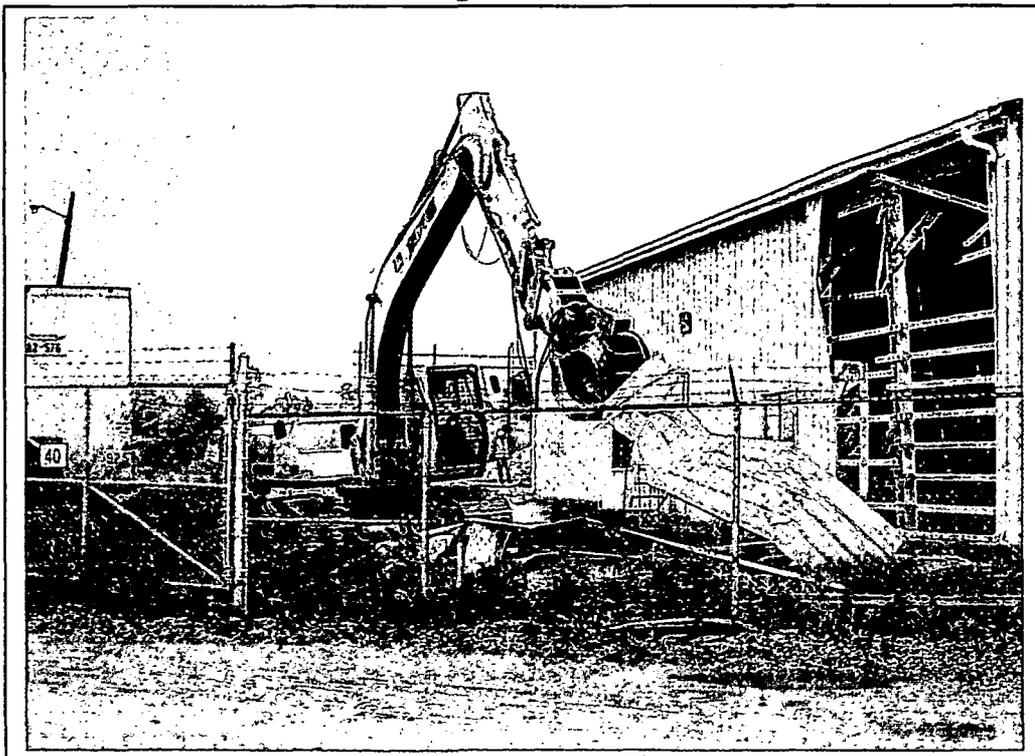


**View Looking Southeast**

**Photograph 2: Buildings 31 and 31A During Demolition**

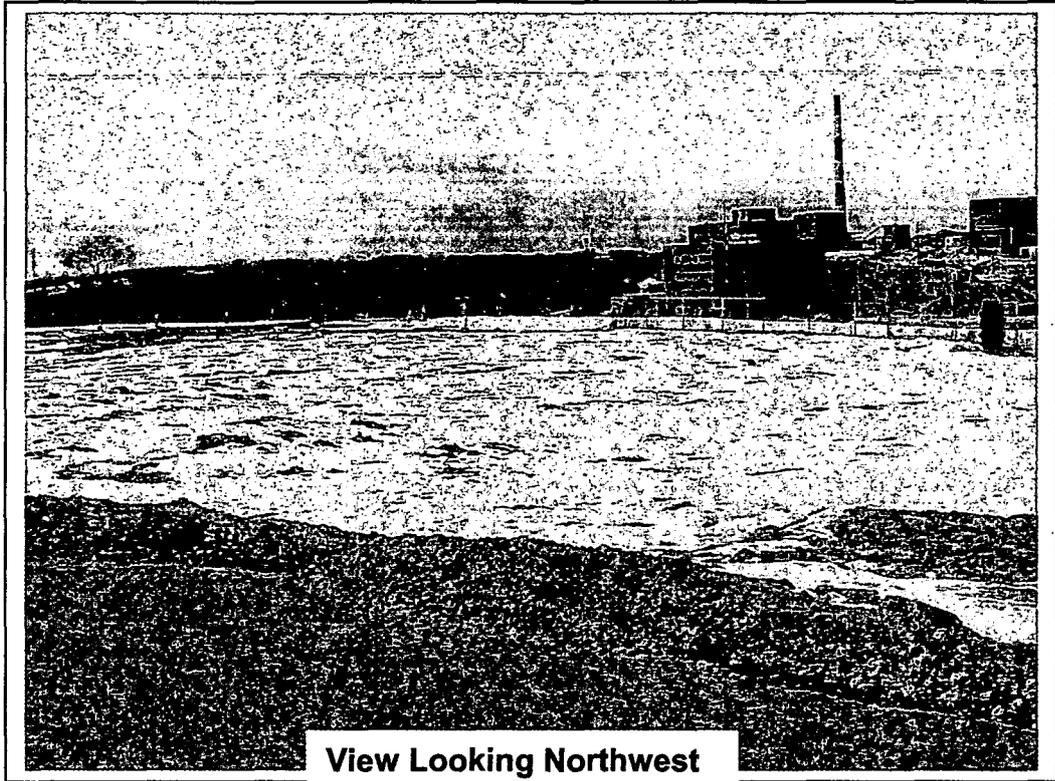


**View Looking Northeast**



**View Looking Southeast**

**Photograph 3: Buildings 31 and 31A After Demolition**



# **APPENDIX E**

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## **RADIOLOGICAL AIR MONITORING RESULTS**

**RADIOLOGICAL AIR MONITORING RESULTS  
BUILDING 31/31A DEMOLITION  
TABLE E**

RWP	Sample ID	Date Collected	RSDS No.	Bldg.	Sample Area	Purpose	DAC Fraction
1588	27068	6/12/04	0168	30-31	DOWNWIND	Boundary Verification	0
1588	27069	6/12/04	0168	30-31	UPWIND	Boundary Verification	0
1588	27072	6/14/04	0171	31	UPWIND	Boundary Verification	0
1588	27073	6/14/04	0171	31	DOWNWIND	Boundary Verification	0
1588	27075	6/15/04	0172	31	UPWIND	Boundary Verification	0
1588	27076	6/15/04	0172	31	DOWNWIND	Boundary Verification	0
1588	27080	6/16/04	0173	31	UPWIND	Boundary Verification	0
1588	27081	6/16/04	0173	31	DOWNWIND	Boundary Verification	1.96E-05
1588	27083	6/17/04	0174	31	UPWIND	Boundary Verification	2.62E-05
1588	27084	6/17/04	0174	31	DOWNWIND	Boundary Verification	0
1588	27140	6/21/04	0178	31	OUTSIDE	Boundary Verification	0
1588	27141	6/21/04	0178	31	OUTSIDE	Boundary Verification	3.04E-05
1588	27142	6/21/04	0178	31	OUTSIDE	Boundary Verification	0
1588	27143	6/22/04	0179	31	OUTSIDE	Boundary Verification	0.003376
1588	27144	6/22/04	0179	31	OUTSIDE	Boundary Verification	2.01E-05
1588	27145	6/22/04	0179	31	OUTSIDE	Boundary Verification	0.000256
NA	27146	6/23/04	0181	31	OUTSIDE	Boundary Verification	0
NA	27147	6/23/04	0181	31	OUTSIDE	Boundary Verification	1.65E-05
NA	27148	6/23/04	0181	31	OUTSIDE	Boundary Verification	0
NA	27149	6/24/04	0185	31	OUTSIDE	Boundary Verification	0
NA	27150	6/24/04	0185	31	OUTSIDE	Boundary Verification	0
NA	27151	6/24/04	0185	31	OUTSIDE	Boundary Verification	0
NA	27189	6/28/04	0188	31	UPWIND	Boundary Verification	3.01E-05
NA	27190	6/28/04	0188	31	DOWNWIND	Boundary Verification	0
NA	27192	6/29/04	0190	31	UPWIND	Boundary Verification	1.68E-05
NA	27193	6/29/04	0190	31	DOWNWIND	Boundary Verification	0
NA	27198	7/1/04	0191	31	DOWNWIND	Boundary Verification	0
NA	27199	7/1/04	0191	31	UPWIND	Boundary Verification	3.86E-06
NA	27195	7/1/04	0194	30/31	UPWIND	Boundary Verification	2.91E-05
NA	27196	7/1/04	0194	30/31	DOWNWIND	Boundary Verification	2.02E-05
NA	27244	7/12/04	0209	31	UPWIND	Boundary Verification	0.000155
NA	27245	7/12/04	0209	31	DOWNWIND	Boundary Verification	0
NA	27247	7/12/04	0210	31	OUTSIDE	Boundary Verification	0
NA	27248	7/12/04	0210	31	OUTSIDE	Boundary Verification	0
NA	27249	7/12/04	0210	31	OUTSIDE	Boundary Verification	0.000778
NA	27256	7/13/04	0213	31	DOWNWIND	Boundary Verification	2.64E-05
NA	27257	7/13/04	0213	31	UPWIND	Boundary Verification	0
NA	27259	7/14/04	0216	31	UPWIND	Boundary Verification	0
NA	27260	7/14/04	0216	31	DOWNWIND	Boundary Verification	0
NA	27268	7/15/04	0222	31	UPWIND	Boundary Verification	3.25E-05
NA	27269	7/15/04	0222	31	DOWNWIND	Boundary Verification	0
NA	27271	7/19/04	0223	31	UPWIND	Boundary Verification	1.73E-05
NA	27272	7/19/04	0223	31	Downwind	Boundary Verification	0
NA	27281	7/20/04	0219	31	OUTSIDE	Boundary Verification	1.73E-05

## RADIOLOGICAL AIR MONITORING RESULTS BUILDING 31/31A DEMOLITION

NA	27282	7/20/04	0219	31	OUTSIDE	Boundary Verification	0
NA	27283	7/20/04	0219	31	OUTSIDE	Boundary Verification	0
NA	27278	7/21/04	0227	31	OUTSIDE	Boundary Verification	3.07E-05
NA	27279	7/21/04	0227	31	OUTSIDE	Boundary Verification	2.78E-05
NA	27280	7/21/04	0227	31	OUTSIDE	Boundary Verification	0
						<b>Max</b>	<b>0.003376</b>
						<b>Average</b>	<b>7.83E-05</b>
						<b>Standard Deviation</b>	<b>0.000435</b>
						<b>Confidence Interval</b>	<b>0.000107</b>

NA Not applicable

# **APPENDIX F**

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## **BUILDING 31 DOCK SOIL SAMPLING RESULTS**

Pu-238 was the only contaminant of concern for the Building 31 Dock; accordingly, it is the only analyte included in the soil data report. Th-232 contamination was present in the soil below the metal grates, which will be remediated and verified via the PRS 267 RA.

**Building 31 Dock Soil Analysis Survey Results (pCi/g)**  
**TABLE FI**

<b>Statistical Samples</b>	<b>Pu-238</b>	<b>MDA*</b>
31DV-0-001-00-000180	0.029	0.02
31DV-0-002-00-000182	0.298	0.017
31DV-0-003-00-000183	0.601	0.018
31DV-0-004-00-000184	0.67	0.018
31DV-0-005-00-000185	1.74	0.01
31DV-0-006-00-000186	0.073	0.013
31DV-0-007-00-000187	0.993	0.021
31DV-0-008-00-000188	0.595	0.015
31DV-0-009-00-000189	0.017	0.017
31DV-0-010-00-000191	0.24	0.02
31DV-0-011-00-000192	0.207	0.01
31DV-0-012-00-000193	0.277	0.011
31DV-0-013-00-000194	0.252	0.015
31DV-0-014-00-000195	0.54	0.017
31DV-0-015-00-000196	0.307	0.019
31DV-0-016-00-000197	0.888	0.021
Hot Spot:	165.13	
Action Level (CO):	55	
Maximum:	1.74	
below/ABOVE CO:	below	
Standard Deviation:	0.44	

<b>Lab/Field Duplicates</b>	<b>Pu-238</b>	<b>MDA</b>
31DV-1-001-00-000181	0.021	0.021
31DV-1-009-00-000190	0.017	0.014
Hot Spot:	165.13	
Action Level (CO):	55	
Maximum:	0.021	
below/ABOVE CO:	below	
Standard Deviation:	0.00	

<b>Matrix Spikes</b>	<b>Pu-238</b>	<b>MDA</b>
31DV-0-016-00-000197	Matrix Spike/Matrix Spike Duplicate	

\*Minimum detectible activity. Terran report stated minimum detectible concentration (MDC), however, MDA is correct for measuring radioactive analytes.

**Building 31 Dock Verification Sampling Information  
TABLE F2**

Sample Location Code 31DV-W-XXX-YY	Sequential Sample ID ZZZZZ	Matrix	QC Type	Sample Date	Collection Time	On-Site Rad. Screening	Isotopic Pu
31DV-0-001-00	000180	soil		10/26/2004	0903	yes	yes
31DV-1-001-00	000181	soil	DUP	10/26/2004	0800	yes	yes
31DV-0-002-00	000182	soil		10/26/2004	0917	yes	yes
31DV-0-003-00	000183	soil		10/26/2004	0926	yes	yes
31DV-0-004-00	000184	soil		10/26/2004	0933	yes	yes
31DV-0-005-00	000185	soil		10/26/2004	0950	yes	yes
31DV-0-006-00	000186	soil		10/26/2004	0957	yes	yes
31DV-0-007-00	000187	soil		10/26/2004	1002	yes	yes
31DV-0-008-00	000188	soil		10/26/2004	1009	yes	yes
31DV-0-009-00	000189	soil		10/26/2004	1024	yes	yes
31DV-1-009-00	000190	soil	DUP	10/26/2004	1000	yes	yes
31DV-0-010-00	000191	soil		10/26/2004	1030	yes	yes
31DV-0-011-00	000192	soil		10/26/2004	1036	yes	yes
31DV-0-012-00	000193	soil		10/26/2004	1042	yes	yes
31DV-0-013-00	000194	soil		10/26/2004	1054	yes	yes
31DV-0-014-00	000195	soil		10/26/2004	1100	yes	yes
31DV-0-015-00	000196	soil		10/26/2004	1108	yes	yes
31DV-0-016-00	000197	soil	MS/MSD	10/26/2004	1115	yes	yes

DUP - duplicate sample

MS/MSD - matrix spike/matrix spike duplicate

**BUILDING 31 DOCK SOIL SAMPLE LOCATIONS  
TABLE F3**

<b>Location</b>	<b>Easting</b>	<b>Northing</b>	<b>Elevation</b>
31D01	1466195.073	598423.552	869.533
31D02	1466210.070	598431.512	867.595
31D03	1466225.067	598439.472	867.903
31D04	1466240.195	598447.432	867.759
31D05	1466194.291	598406.066	870.691
31D06	1466209.157	598414.026	868.245
31D07	1466224.155	598421.986	868.210
31D08	1466239.282	598429.816	868.176
31D09	1466209.157	598396.932	871.753
31D10	1466224.155	598404.892	871.209
31D11	1466239.152	598412.982	871.039
31D12	1466254.279	598420.942	870.657
31D13	1466208.245	598379.576	872.529
31D14	1466223.242	598387.406	873.405
31D15	1466238.369	598395.496	873.661
31D16	1466253.236	598403.326	873.989

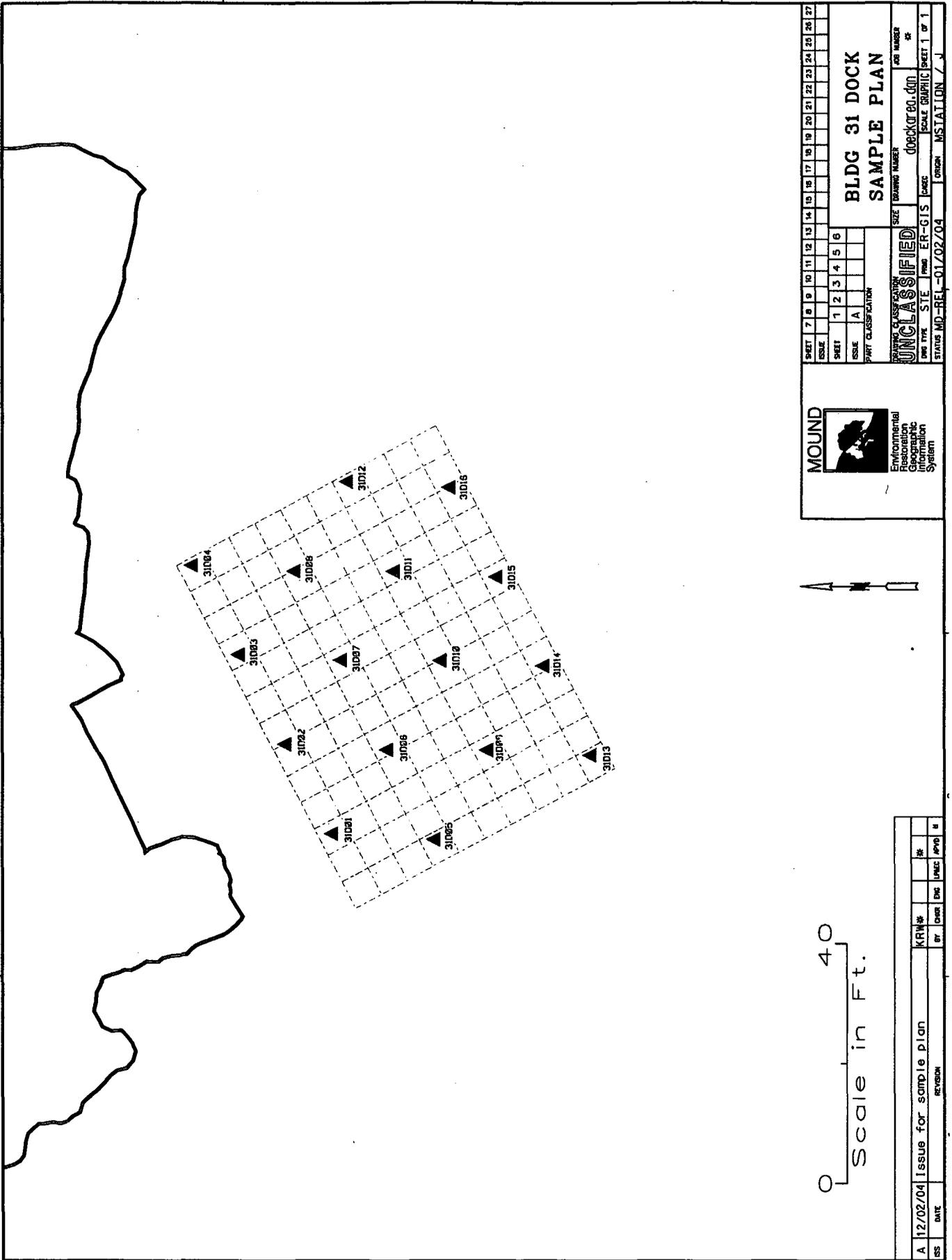


Figure E4. Building 31 Dock Verification Sampling Grid