300502-0606280001

CH2MHILL

CH2M HILL Mound, Inc.

1075 Mound Road

P.O. Box 750

Miamisburg, OH 45343-0750

SMO-341/06
June 5, 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; Building 34 Footprint OSC Report, Final

Dear Mr. Pfister:

Attached is the following Final document for your records:

- Building 34 Footprint 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,

Michael D. Ebben
Site Manager

ME/jg

Enclosures

cc: T. Fischer, USEPA, (1) w/attachments
B. Nickel, OEPA, (1) w/attachments
S.Helmer, ODH, (1) w/attachments
J. Crombie, 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
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
J. Fontaine, CH2M Hill, w/o attachments
S. Barr, CH2M Hill, w/o attachments
M. McDougal, CH2M Hill, w/o attachments
file, CH2M Hill, w/o attachments

300502-0606280001

Building 34 Footprint
Removal Action
OSC REPORT

This Report Closes Building 34 Footprint

May 2006

Final

Department of Energy
Miamisburg Closure Project

CH2MHILL

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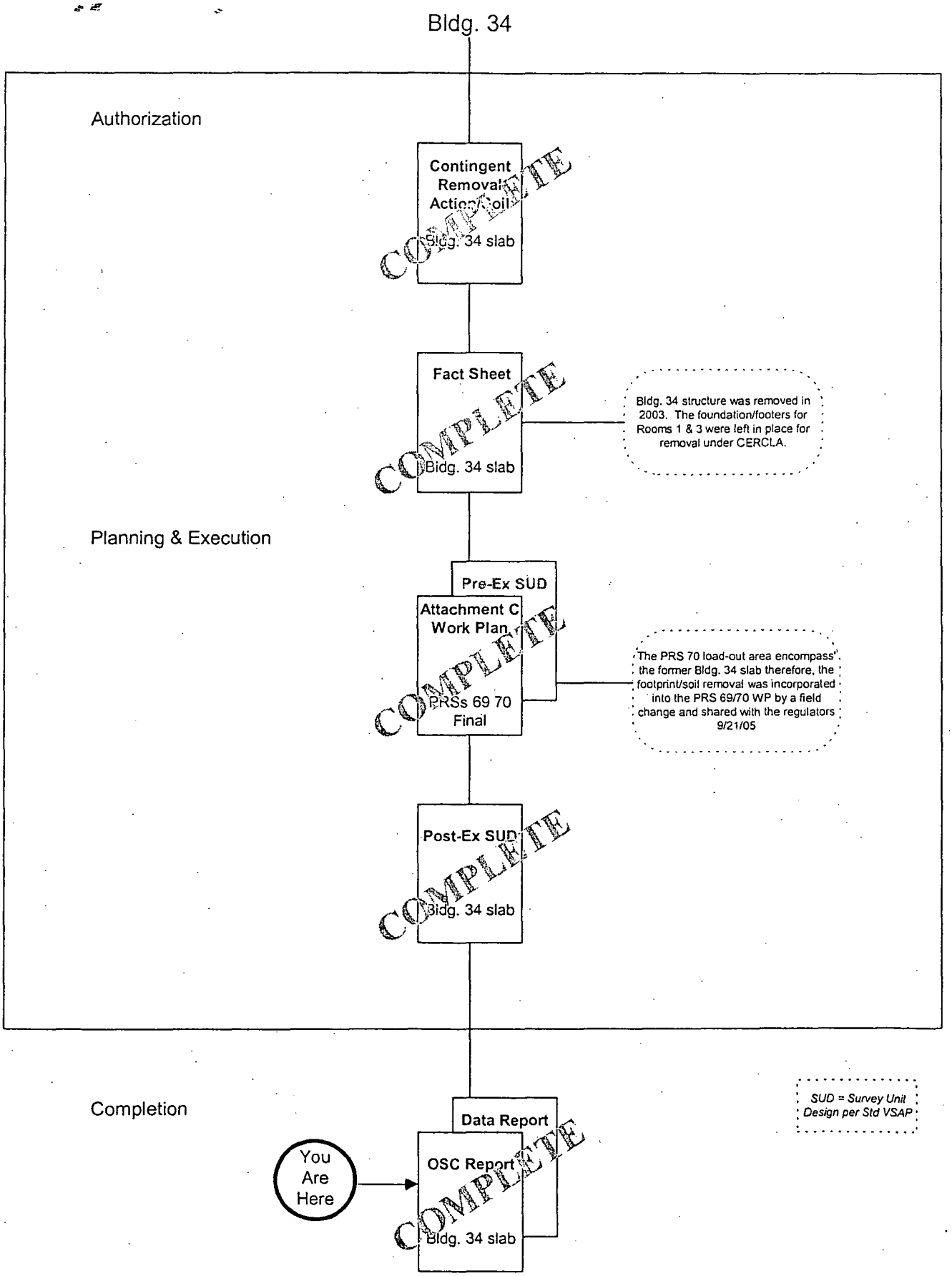
Bldg. 34 slab



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Acronyms

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CO	cleanup objective
COC	contaminant of concern
cy	cubic yards
DOE	Department of Energy
Ex	Excavation
HS	hot spot
MCP	Miamisburg Closure Project
OEPA	Ohio Environmental Protection Agency
OSC	On-Scene Coordinator
pCi/g	picoCuries per gram
PRP	Potentially Responsible Parties
PRS	Potential Release Site
RA	Removal Action
SUD	Survey Unit Design
UCL	upper confidence limit
USEPA	United States Environmental Protection Agency
VSAP	Verification Sampling and Analysis Plan

RECOMMENDATION: BUILDING 34 FOOTPRINT

The Building 34 Footprint Removal Action (RA) was authorized via the Contingent Action Memo, (Action Memorandum EE/CA, Contingent Removal Action for Contaminated Soil, Final, June 2002) and Public Fact Sheet for Building 34 Slab, Final, February 2008. The Building 34 soil RA was performed as a result of historical knowledge and processes, and radiological surveys which showed elevated levels of U-238 on the concrete slab.

There are no storm drains that serviced Building-34 according to drawing presented in Attachment 5 (Refer to: Building-34 Building Data Package Final, Section 9.57.65). A contaminated drainpipe (U-238 >CO) was encountered below the foundation. U-238 above Cleanup Objective (CO) in the sediment within the pipe prompted its removal and disposal as radiological waste.

The above pipe could not be identified on any site utility drawing. The west end of the pipe discharged into the east wall of the MO crossing. An investigation of the west wall of the MO crossing confirmed that the pipe did not extend further west than the MO crossing east wall. The east end of the pipe emanated from a "T" in the line located near the east end of the building footprint. The northern end line (from the "T") connected to a floor drain within Room 2 of Building-34 The southern end line (from the "T") appears to connect to a water valve box (Refer to Appendix A: Figure 3 & 4) The water valve box has since been removed to 3 feet below grade. The remaining pipe section (ten to fifteen feet) was left in place because swipes were below free release criteria and results of sediment/soil from within the pipe were below COs (see A25/46). Because pipe was removed as radiological waste, verification of the base of excavation was required. All verification soil results were below CO. Since the RA had already occurred, a Post-Excavation SUD, rather than a Pre-Excavation SUD, was generated.

Verification sampling was performed per the associated Action Memo, the Standard VSAP, Soils Verification Sampling & Analysis Plan [VSAP], Final, August 2004, and the Post-Excavation SUD to demonstrate that the soil meets the cleanup criteria. This removal action was successfully completed and resulted in the excavation and disposal of soil, concrete, and piping.

The cleanup criteria established in the Standard VSAP are satisfied if all verification sample results are below cleanup objectives (COs) or all sample results are below hot spot (HS) criteria and the 95% UCL (upper confidence limit) for the area of interest is less than the CO and the data set passes the Sign test.

Following the RA, verification sampling confirmed U-238 and Ra-226 were below COs.

After a thorough review of this On-Scene Coordinator (OSC) Report, the Core Team agrees that the RA associated with Building 34 Footprint is complete, and that all previously existing environmental issues associated with it has been resolved

Paul L 5/30/06

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

Timothy J. Fischer 5/25/06

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

5/25/06

Brian Nickel, Project Manager
OEPA
Dayton, Ohio

1.0 SUMMARY OF EVENTS

This section describes the site background and events leading up to the removal action (RA), parties involved in responding to the RA, cleanup objective (CO) determination, chronological narrative of the RA, and resources committed to complete the projects.

1.1 Site Conditions and Background

Background. Building 34, a three-room complex, was constructed in 1965 and demolished in 2003 as documented in the Closeout Report, Building 34 (demolition), Final, September 2003. Due to a concern about U-238 on a portion of the concrete slab, it (along with the foundation/footers) was left in place for removal under a CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) removal action. Historic soil sample results did not support that U-238 was in the soil under/around the slab. The Building 34 slab removal effort was incorporated into the PRS 69/70 Removal Action work package by field change and performed without generation of a Pre-Excavation (Ex) Survey Unit Design (SUD), with Core Team concurrence. In October 2005, the slab/foundation/footers were removed and disposed of as radiological waste.

There are no storm drains that serviced Building-34 according to drawing presented in Attachment 5 (Refer to: Building-34 Building Data Package Final, Section 9.57.65). A contaminated drainpipe (U-238 >CO) was encountered below the foundation. U-238 above Cleanup Objective (CO) in the sediment within the pipe prompted its removal and disposal as radiological waste.

The above pipe could not be identified on any site utility drawing. The west end of the pipe discharged into the east wall of the MO crossing. An investigation of the west wall of the MO crossing confirmed that the pipe did not extend further west than the MO crossing east wall. The east end of the pipe emanated from a "T" in the line located near the east end of the building footprint. The northern end line (from the "T") connected to a floor drain within Room 2 of Building-34. The southern end line (from the "T") appears to connect to a water valve box (Refer to Appendix A: Figure 3 & 4). This section was left in place because swipes were below free release criteria and results of sediment/soil from within the pipe were below COs (see A25/46). Because pipe was removed as radiological waste, verification of the base of excavation was required. All verification soil results were below CO. Since the RA had already occurred, a Post-Excavation SUD, rather than a Pre-Excavation SUD, was generated.

Removal Action. The Building 34 slab RA was authorized via the Contingent Action Memo, (Action Memorandum EE/CA, Contingent Removal Action for Contaminated Soil, Final, June 2002) and Public Fact Sheet for Building 34 Slab, Final, February 2006. This On-Scene Coordinator (OSC) Report documents removal of the remainder of the slab/foundation, piping, and soil contamination realized during the RA.

The former location of Building 34 is shown on Figure 1 (on page A7/34). Building 34 (except part of the slab) was removed and disposed of prior to verification conducted under this RA. There are no Potential Release Sites (PRSs) closed via this OSC Report.

Verification sampling was performed per the associated Action Memo, the Standard VSAP, Soils Verification Sampling & Analysis Plan [VSAP], Final, August 2004, and the Post-Ex SUD to demonstrate that the soil meets the cleanup criteria. An excerpt from the SUD is included in Appendix C of Attachment A to this OSC Report. For Building 34 Footprint, verification sampling was performed and the results demonstrate that the soil meets the CO.

Since the Department of Energy (DOE) is the sole responsible party for verification of the Building 34 footprint, 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 Actions

Table 1 lists the parties responding to the removal actions, and their responsibilities.

Table 1: Organization of the Removal Action

US Environmental Protection Agency (USEPA) SFR-5J 77 W. Jackson Street Chicago, IL 60604 312-353-2000	Timothy J. Fischer	Federal agency responsible for oversight
Ohio Environmental Protection Agency (OEPA) 401 E. Fifth Street Dayton, OH 45402-2911 937-285-6357	Brian K. Nickel	State agency responsible for oversight
US Dept. of Energy Miamisburg Closure Project 175 Tri-County Parkway Springdale, OH 45246 513-246-0071	Paul Lucas	On-scene Coordinator responsible for oversight and success
CH2M HILL Environmental Restoration Project 1075 Mound Road Miamisburg, OH 45343-3030 937-608-8220	Jim Fontaine	Provide OSC with technical assistance, administrative support, field oversight, sample management, site safety, photo, site documentation, and preparation of the OSC Report

1.3 Objectives

Documentation Objective. The objectives of this OSC Report are to describe the RA fieldwork and document successful completion of the project. Material quantities, disposition locations, and project costs are included in the PRS 70 RA. Because of this, complete volumes and costs are not available to report herein. Total project cost for the

PRS 70 RA will include the volumes and costs associated with the Building 34 Footprint RA.

Cleanup Objective. Contaminants and COs/screening levels for the Building 34 footprint are identified in Table 2.

Table 2: Soil Cleanup Objectives (pCi/g)

Contaminant	Cleanup Objective	Hot Spot
Uranium-238+D	2.2	4.2
Radium-226+D	2.9	4.7

The cleanup criteria are satisfied if all verification sample results are below CO or all sample results are below hot spot (HS) criteria and the 95% UCL (upper confidence limit) for the area of interest is less than the CO and the data set passes the Sign test.

Cleanup Objective. Verification results are identified in the Data Report (Attachment A to this OSC Report), Table 1 (A10/34). There were no sample results (except Bi-214) that exceeded the CO for any analyte. Bi-214 is a daughter product in the U-238 decay chain. Since U-238 is a contaminant of concern (COC), and all U-238 results are below CO, the Bi-214 CO exceedances are not considered significant because the CO for the parent nuclide (U-238) accounts for daughter product activity. Therefore, no further action will be taken based on the parent nuclide (U-238+D) results.

Hot Spot Criteria. The Hot Spot criteria for the COCs are presented in Table 2 above. There were no sample results that exceeded the hot spot criteria for any analyte.

1.4 Chronological Narrative of the Removal Actions

Table 3 presents a chronological narrative of events surrounding the RAs.

Table 3: Chronology of RA

Timeframe	Activity
June 2002	Contingent AM finalized
October 2005	Building 34 Fact Sheet approved
August 2005	PRS 69/70 Removal Plan
August 2005-January 2006	Removal of remainder of slab and soil excavation
January 2006	Verification sampling & analysis
April 2006	OSC Report prepared

2.0 EFFECTIVENESS OF THE REMOVAL ACTIONS

The Building 34 footprint removal action is complete, and the objectives of the Action Memorandum have been met. The limits of verification are identified on Figure 2 (see A8/34). Results of verification sampling and analysis are provided in Attachment A.

2.1 Actions Taken by Mound Personnel

CH2M Hill Mound, Inc. personnel planned and performed removal action oversight, and performed excavation, monitoring, sampling and analyses, and documentation. The project met the removal action objectives (Section 1.3), as outlined in the Action Memorandum.

2.2 Actions Taken by Local, State, and Federal Agencies

The DOE/MCP was the lead agency for the RA and provided the funding. DOE, USEPA, and OEPA had oversight responsibility for the RA and review of the Action Memorandum and OSC Report to ensure that the objectives were met.

2.3 Actions Taken by Subcontractors

Subcontractors involved in the project included:

- Envirocare (Clive, Utah) - disposal of radiologically contaminated waste via rail transport.
- Severn Trent Laboratory (St. Louis, MO) – analyzed verification smples.

3.0 DIFFICULTIES ENCOUNTERED

3.1 Items that Affect the Removal Actions

No difficulties were encountered during the removal actions.

3.2 Issues of Intergovernmental Coordination

All DOE/OEPA/USEPA 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 a Recurrence

Soil sampling verified removal of radiological contamination. Mound Removal Actions have regulator approved work plans, each of which has a section that addresses runon/runoff controls. In addition, the site Storm Water Pollution Prevention Plan applies

to the entire site and is monitored by the Environmental Compliance and Analytical Services group. As a result of the removal of contamination and the implementation of runon/runoff protection, spread of contamination is prevented. After the removal action and the CERCLA process for the parcel are complete, the area will be transferred from Federal to private ownership. All State and Federal disposal rules will apply.

ATTACHMENT A

DATA REPORT

DATA REPORT

Building 34 Footprint

May 2006

Rev. 0

Department of Energy
Miamisburg Closure Project

CH2MHILL

A1/46

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Figure 2: Verification Locations
Figure 3: Line from Water Valve Box to Room 2
Figure 4: Line from Water Valve Box to Bldg 34
Figure 5: View of Former Bldg 34 Area Facing West

Tables

Table 1: Buiding 34 Footprint Verification Results

Appendices

Appendix A Figures
Appendix B Tables
Appendix C Post-Ex SUD Excerpt
Appendix D Backfill Package
Appendix E Radiological Surveys
Appendix F Data Review & Validation

Acronyms

CO	cleanup objective
Ex	Excavation
pCi/g	picoCuries per gram
QC	quality control
R&V	review and validation
SUD	Survey Unit Design
VSAP	Verification Sampling and Analysis Plan

1.0 PURPOSE

This Data Report provides documentation of sampling activities conducted in accordance with the Standard VSAP, Soils Verification Sampling & Analysis Plan [VSAP], Final, August 2004 and the Post-Ex (Excavation) Survey Unit Design (SUD); required to close out the Building 34 Footprint.

The purposes of this Data Report are to:

- document any variances to the VSAP/Post-Ex SUD,
- present statistical and bias data (separately),
- present summary statistics and statistical analyses [as necessary] of the applicable data, including retrospective power curve, and
- provide documentation of data review and validation.

2.0 DOCUMENT ORGANIZATION / SUMMARY

This Data Report is for the Building 34 Footprint, the location of which is shown on Figure 1. Unless otherwise specified as a variance, sampling and analyses were conducted in accordance with the VSAP and Post-Ex SUD. An excerpt of the Post-Ex SUD is presented in Appendix C.

3.0 FIELD ACTIVITIES

Verification sampling activities occurred in January 2006. Sample locations are shown on Figure 2. The investigation was conducted in accordance with the Standard VSAP, Soils Verification Sampling & Analysis Plan, Final, August 2004. Per the Post-Ex SUD, all samples were shipped offsite for gamma spec and isotopic uranium analyses. An excerpt of the Post-Ex SUD is included in Appendix C. Results are presented in Table 1. Statistical analyses (standard deviation, power curves, and recalculations of N) are presented in the backfill package (see Appendix D). Radiological surveys are presented in Appendix E.

4.0 DATA REVIEW / VALIDATION

All data were reviewed and 10% of offsite data were validated. Field and laboratory QC (quality control) were assessed as part of the R&V process. Documentation of review

and validation (and related variances) for the verification results is provided in Appendix F. Review and validation supports that the data are usable.

APPENDIX A

FIGURES

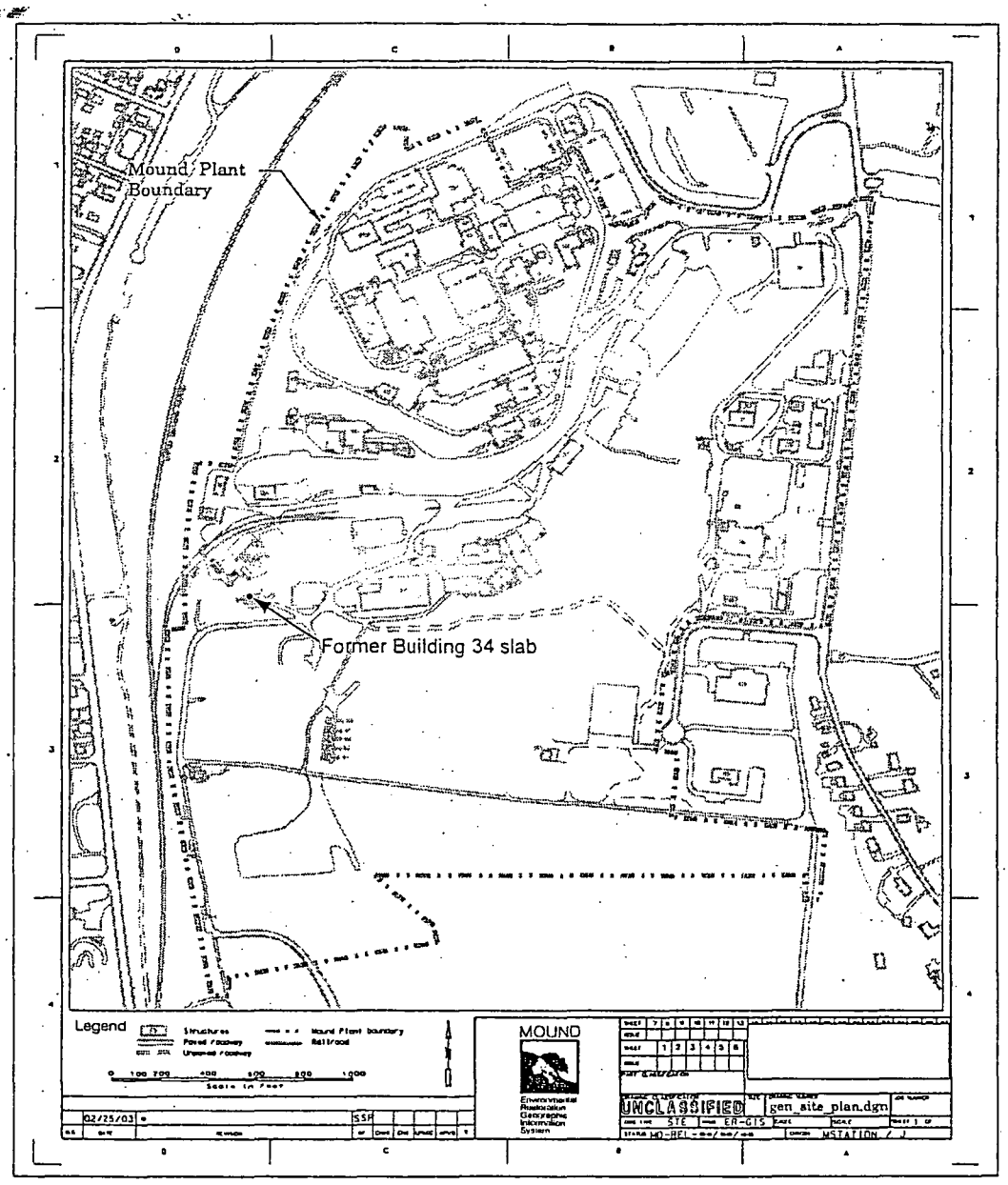

Figure 1: Location of Building 34 Footprint

A7/46

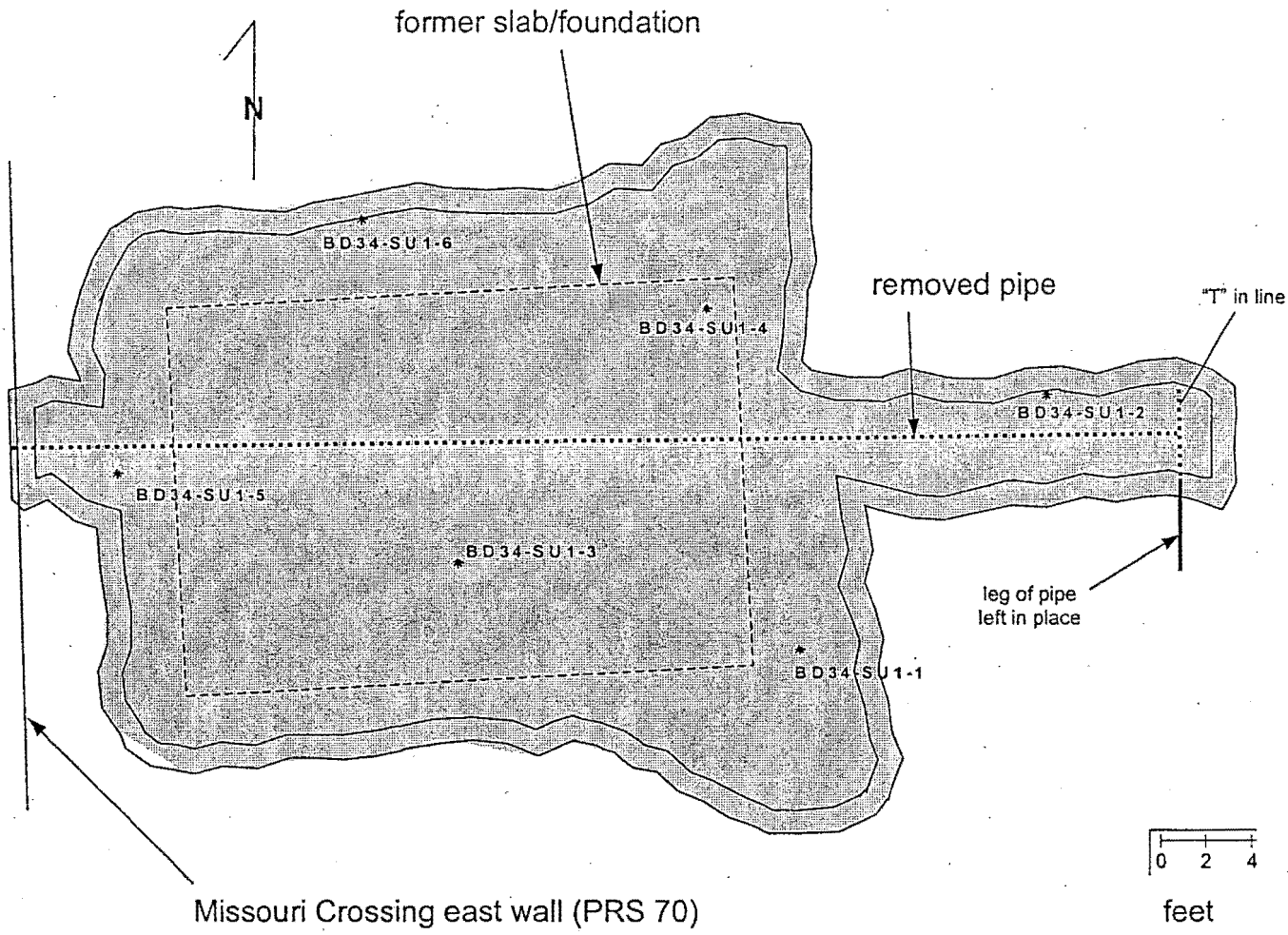

Figure 2: Verification Locations

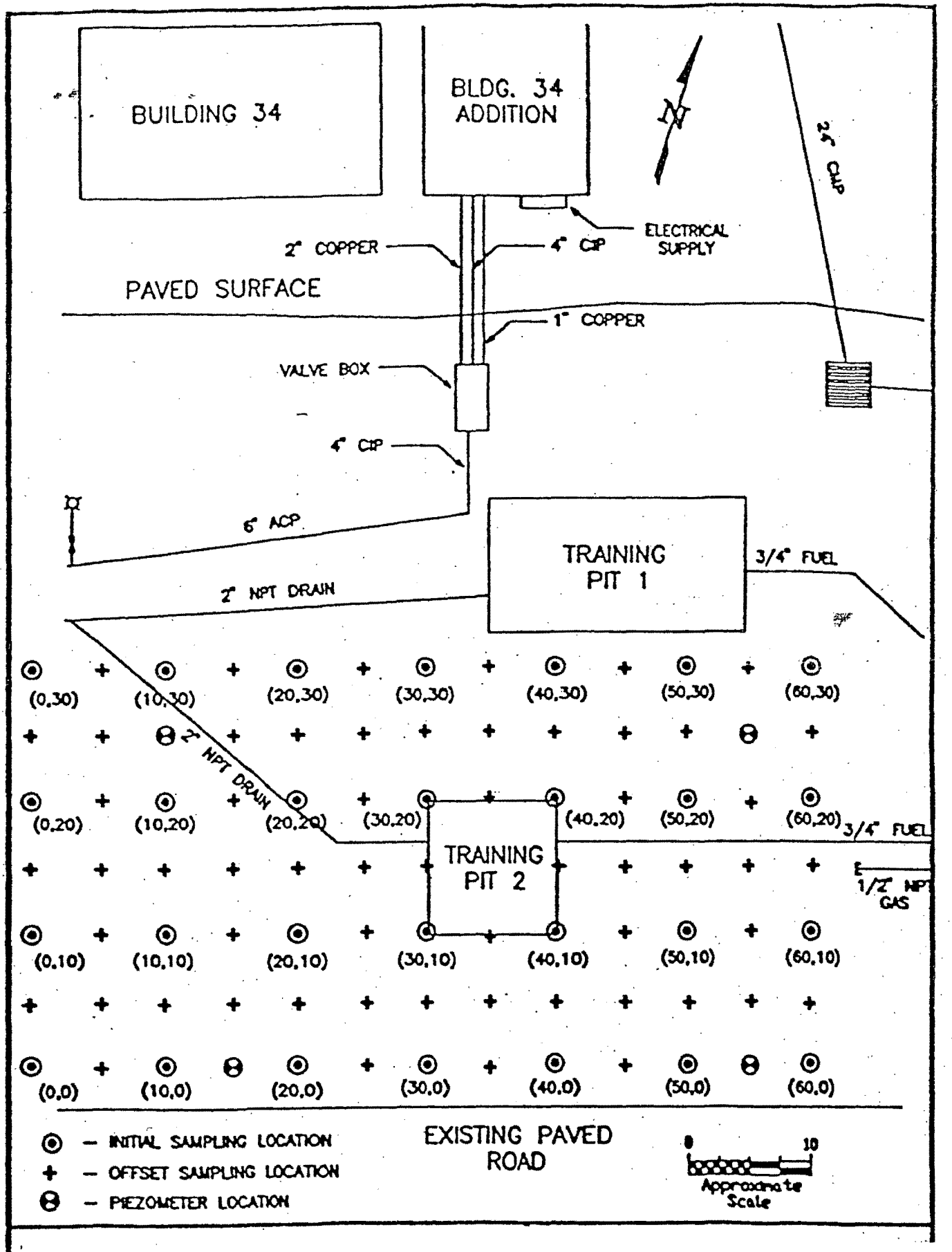

Figure 3: Line from Water Valve Box to Room 2

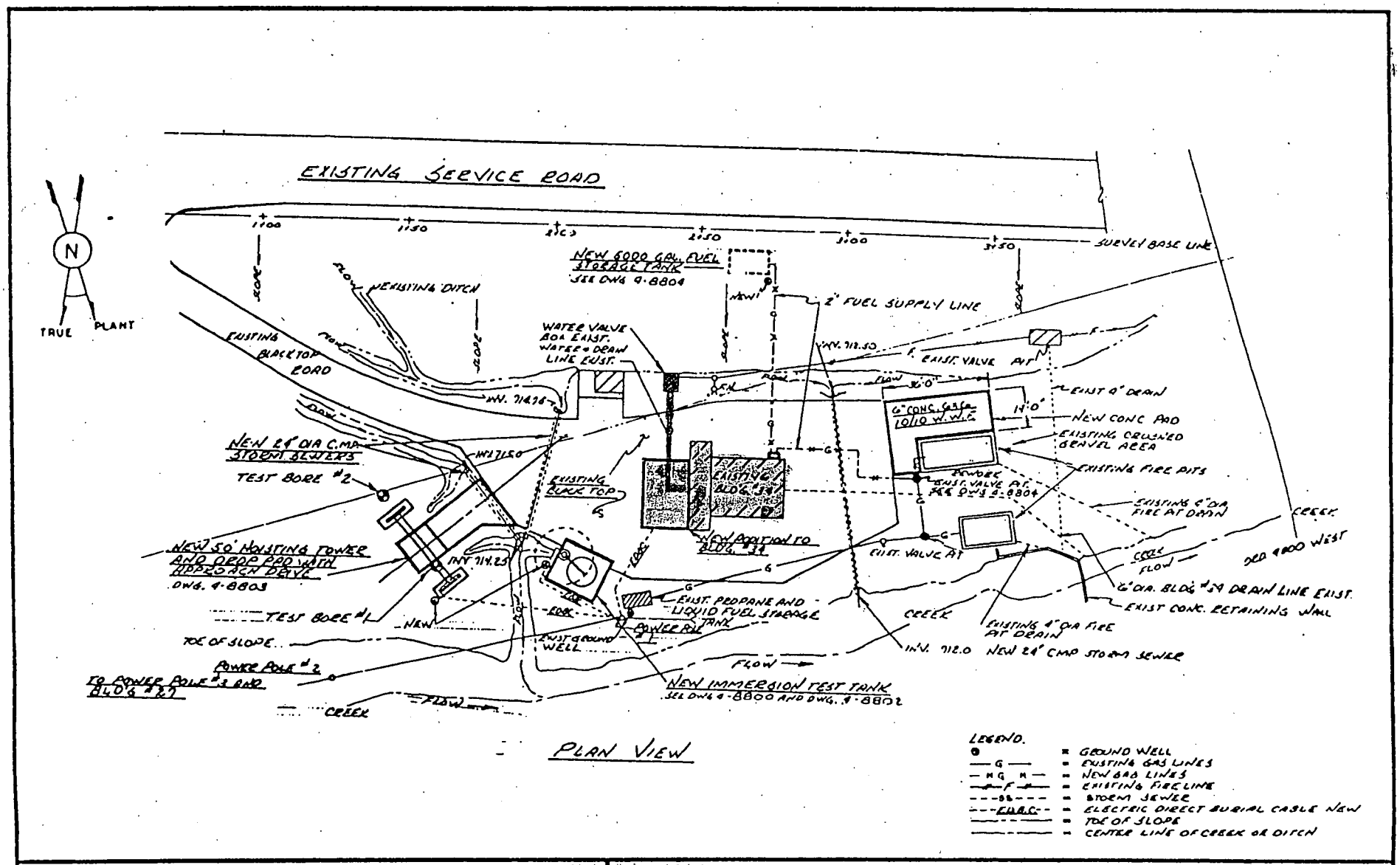

Figure 4: Line from Water Valve Box to Building 34

A 86/440

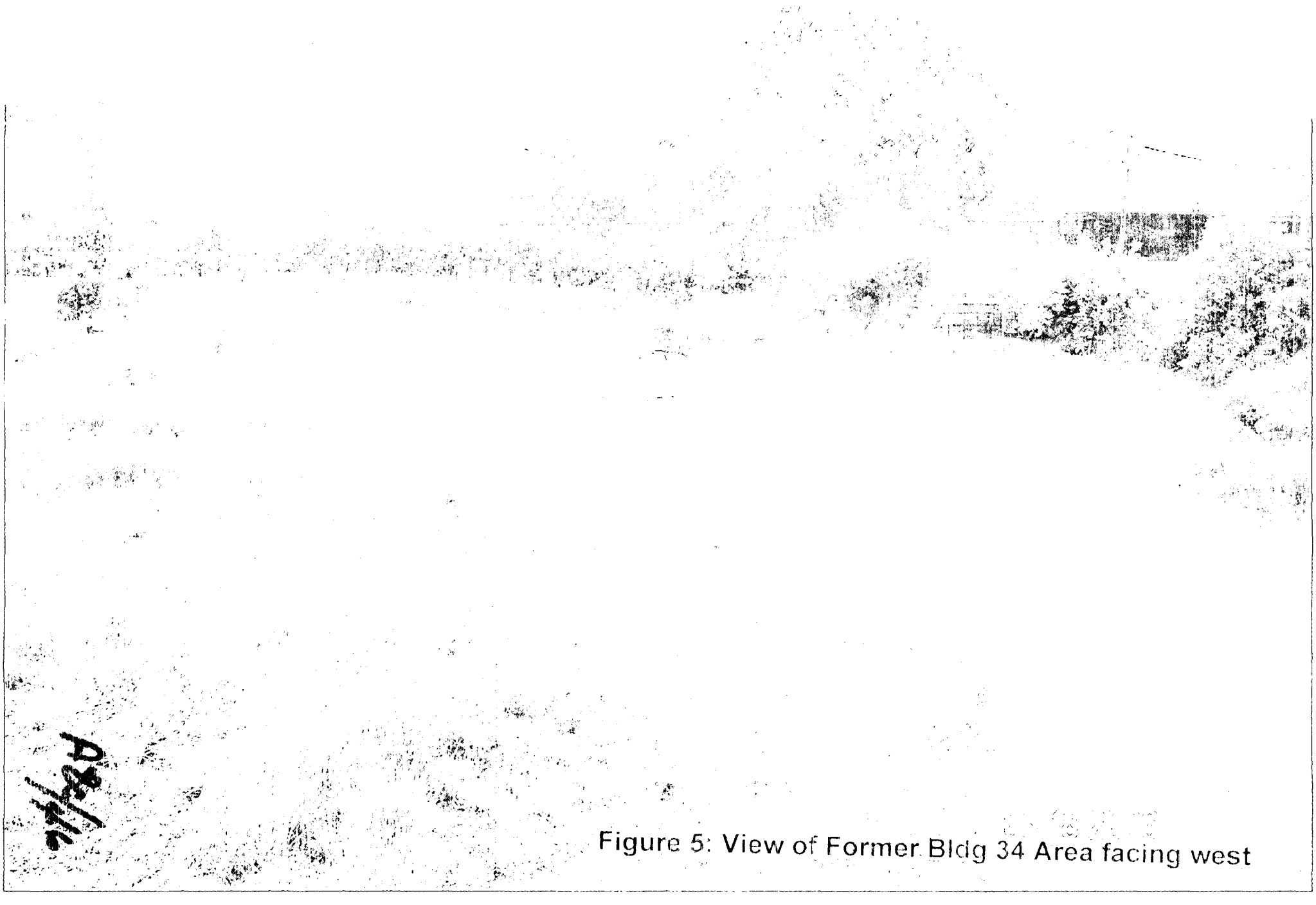

Figure 5: View of Former Bldg 34 Area facing west

APPENDIX B

TABLES

Table 1: Offsite Verification Results (pCi/g)

[all are surface soil samples; results >CO are in bold]

Location	Date	Analyte	CO	Result	DL	DQ	LQ	Easting	Northing
BD34-SU1-1	20060126	Actinium-227	4.6	0.42	0.42		U	1464212	597707.8
BD34-SU1-1	20060126	Actinium-228	1.93	0.79	0.3			1464212	597707.8
BD34-SU1-1	20060126	Americium-241	63	0.14	0.14		U	1464212	597707.8
BD34-SU1-1	20060126	Bismuth-207	1.2	0.081	0.081		U	1464212	597707.8
BD34-SU1-1	20060126	Bismuth-210M	8.3	0.081	0.081		U	1464212	597707.8
BD34-SU1-1	20060126	Cesium-137	3.8	0.098	0.098		U	1464212	597707.8
BD34-SU1-1	20060126	Cobalt-60	0.7	0.14	0.14		U	1464212	597707.8
BD34-SU1-1	20060126	Lead-210	7.4	1.9	1.9		U	1464212	597707.8
BD34-SU1-1	20060126	Lead-212	16.6	0.54	0.16			1464212	597707.8
BD34-SU1-1	20060126	Lead-214	8.9	1.01	0.15			1464212	597707.8
BD34-SU1-1	20060126	Potassium-40	47.8	13.7	0.6			1464212	597707.8
BD34-SU1-1	20060126	Protactinium-231	4	2.4	2.4		U	1464212	597707.8
BD34-SU1-1	20060126	Radium-226	2.9	0.84	0.42		J	1464212	597707.8
BD34-SU1-1	20060126	Radium-228	2.1	0.79	0.3			1464212	597707.8
BD34-SU1-1	20060126	Thallium-208	0.498	0.233	0.071			1464212	597707.8
BD34-SU1-1	20060126	Uranium-234	2	0.51	0.03		J	1464212	597707.8
BD34-SU1-1	20060126	Uranium-235	3.2	0.047	0.032		J	1464212	597707.8
BD34-SU1-1	20060126	Uranium-238	2.2	0.74	0.05		J	1464212	597707.8
BD34-SU1-2	20060126	Actinium-227	4.6	0.66	0.66		U	1464223	597718.6
BD34-SU1-2	20060126	Actinium-228	1.93	0.8	0.48			1464223	597718.6
BD34-SU1-2	20060126	Americium-241	63	0.26	0.26		U	1464223	597718.6
BD34-SU1-2	20060126	Bismuth-207	1.2	0.092	0.092		U	1464223	597718.6
BD34-SU1-2	20060126	Bismuth-210M	8.3	0.16	0.16		U	1464223	597718.6
BD34-SU1-2	20060126	Bismuth-214	1.17	**1.4**	0.2			1464223	597718.6
BD34-SU1-2	20060126	Cesium-137	3.8	0.1	0.1		U	1464223	597718.6
BD34-SU1-2	20060126	Cobalt-60	0.7	0.12	0.12		U	1464223	597718.6
BD34-SU1-2	20060126	Lead-210	7.4	3.4	3.4		U	1464223	597718.6
BD34-SU1-2	20060126	Lead-212	16.6	1.21	0.17			1464223	597718.6
BD34-SU1-2	20060126	Lead-214	8.9	1.32	0.25			1464223	597718.6
BD34-SU1-2	20060126	Potassium-40	47.8	21.8	1.1			1464223	597718.6
BD34-SU1-2	20060126	Protactinium-231	4	3.3	3.3		U	1464223	597718.6
BD34-SU1-2	20060126	Radium-226	2.9	1.4	0.2			1464223	597718.6
BD34-SU1-2	20060126	Radium-228	2.1	0.8	0.48			1464223	597718.6
BD34-SU1-2	20060126	Thallium-208	0.498	0.41	0.14			1464223	597718.6
BD34-SU1-2	20060126	Uranium-234	2	0.88	0.05		J	1464223	597718.6
BD34-SU1-2	20060126	Uranium-235	3.2	0.053	0.053		U	1464223	597718.6
BD34-SU1-2	20060126	Uranium-238	2.2	0.78	0.06		J	1464223	597718.6
BD34-SU1-2FD	20060126	Actinium-227	4.6	0.59	0.59		U	1464223	597718.6
BD34-SU1-2FD	20060126	Actinium-228	1.93	1.09	0.36			1464223	597718.6
BD34-SU1-2FD	20060126	Americium-241	63	0.23	0.23		U	1464223	597718.6
BD34-SU1-2FD	20060126	Bismuth-207	1.2	0.095	0.095		U	1464223	597718.6
BD34-SU1-2FD	20060126	Bismuth-210M	8.3	0.11	0.11		U	1464223	597718.6
BD34-SU1-2FD	20060126	Bismuth-214	1.17	**1.18**	0.23			1464223	597718.6
BD34-SU1-2FD	20060126	Cesium-137	3.8	0.16	0.16		U	1464223	597718.6
BD34-SU1-2FD	20060126	Cobalt-60	0.7	0.15	0.15		U	1464223	597718.6
BD34-SU1-2FD	20060126	Lead-210	7.4	2.7	2.7		U	1464223	597718.6
BD34-SU1-2FD	20060126	Lead-212	16.6	1.31	0.17			1464223	597718.6
BD34-SU1-2FD	20060126	Lead-214	8.9	1.33	0.2			1464223	597718.6
BD34-SU1-2FD	20060126	Potassium-40	47.8	22	1.4			1464223	597718.6
BD34-SU1-2FD	20060126	Protactinium-231	4	3.3	3.3		U	1464223	597718.6
BD34-SU1-2FD	20060126	Radium-226	2.9	1.18	0.23			1464223	597718.6

Table 1: Offsite Verification Results (pCi/g)

[all are surface soil samples; results >CO are in bold]

Location	Date	Analyte	CO	Result	DL	DQ	LQ	Easting	Northing
BD34-SU1-2FD	20060126	Radium-228	2.1	1.09	0.36			1464223	597718.6
BD34-SU1-2FD	20060126	Thallium-208	0.498	0.43	0.1			1464223	597718.6
BD34-SU1-2FD	20060126	Uranium-234	2	0.67	0.03		J	1464223	597718.6
BD34-SU1-2FD	20060126	Uranium-235	3.2	0.09	0.056		J	1464223	597718.6
BD34-SU1-2FD	20060126	Uranium-238	2.2	0.75	0.03		J	1464223	597718.6
BD34-SU1-3	20060126	Actinium-227	4.6	0.5	0.5		U	1464198	597711.5
BD34-SU1-3	20060126	Actinium-228	1.93	0.86	0.33			1464198	597711.5
BD34-SU1-3	20060126	Americium-241	63	0.19	0.19		U	1464198	597711.5
BD34-SU1-3	20060126	Bismuth-207	1.2	0.074	0.074		U	1464198	597711.5
BD34-SU1-3	20060126	Bismuth-210M	8.3	0.11	0.11		U	1464198	597711.5
BD34-SU1-3	20060126	Cesium-137	3.8	0.1	0.1		U	1464198	597711.5
BD34-SU1-3	20060126	Cobalt-60	0.7	0.14	0.14		U	1464198	597711.5
BD34-SU1-3	20060126	Lead-210	7.4	2.3	2.3		U	1464198	597711.5
BD34-SU1-3	20060126	Lead-212	16.6	0.74	0.2			1464198	597711.5
BD34-SU1-3	20060126	Lead-214	8.9	0.96	0.18			1464198	597711.5
BD34-SU1-3	20060126	Potassium-40	47.8	16.4	0.7			1464198	597711.5
BD34-SU1-3	20060126	Protactinium-231	4	2.5	2.5		U	1464198	597711.5
BD34-SU1-3	20060126	Radium-226	2.9	0.83	0.46		J	1464198	597711.5
BD34-SU1-3	20060126	Radium-228	2.1	0.86	0.33			1464198	597711.5
BD34-SU1-3	20060126	Thallium-208	0.498	0.22	0.11			1464198	597711.5
BD34-SU1-3	20060126	Uranium-234	2	0.76	0.04		J	1464198	597711.5
BD34-SU1-3	20060126	Uranium-235	3.2	0.037	0.033		J	1464198	597711.5
BD34-SU1-3	20060126	Uranium-238	2.2	0.83	0.03		J	1464198	597711.5
BD34-SU1-4	20060126	Actinium-227	4.6	0.61	0.61		U	1464208	597722.3
BD34-SU1-4	20060126	Actinium-228	1.93	1.04	0.41			1464208	597722.3
BD34-SU1-4	20060126	Americium-241	63	0.23	0.23		U	1464208	597722.3
BD34-SU1-4	20060126	Bismuth-207	1.2	0.097	0.097		U	1464208	597722.3
BD34-SU1-4	20060126	Bismuth-210M	8.3	0.14	0.14		U	1464208	597722.3
BD34-SU1-4	20060126	Cesium-137	3.8	0.13	0.13		U	1464208	597722.3
BD34-SU1-4	20060126	Cobalt-60	0.7	0.16	0.16		U	1464208	597722.3
BD34-SU1-4	20060126	Lead-210	7.4	3.5	3.5		U	1464208	597722.3
BD34-SU1-4	20060126	Lead-212	16.6	0.96	0.23			1464208	597722.3
BD34-SU1-4	20060126	Lead-214	8.9	1.23	0.21			1464208	597722.3
BD34-SU1-4	20060126	Potassium-40	47.8	17.8	0.8			1464208	597722.3
BD34-SU1-4	20060126	Protactinium-231	4	3.8	3.8		U	1464208	597722.3
BD34-SU1-4	20060126	Radium-226	2.9	1.14	0.58			1464208	597722.3
BD34-SU1-4	20060126	Radium-228	2.1	1.04	0.41			1464208	597722.3
BD34-SU1-4	20060126	Thallium-208	0.498	0.39	0.11			1464208	597722.3
BD34-SU1-4	20060126	Uranium-234	2	0.76	0.03		J	1464208	597722.3
BD34-SU1-4	20060126	Uranium-235	3.2	0.035	0.035		U	1464208	597722.3
BD34-SU1-4	20060126	Uranium-238	2.2	1.03	0.04			1464208	597722.3
BD34-SU1-5	20060126	Actinium-227	4.6	0.41	0.41		U	1464183	597715.3
BD34-SU1-5	20060126	Actinium-228	1.93	0.77	0.3			1464183	597715.3
BD34-SU1-5	20060126	Americium-241	63	0.17	0.17		U	1464183	597715.3
BD34-SU1-5	20060126	Bismuth-207	1.2	0.071	0.071		U	1464183	597715.3
BD34-SU1-5	20060126	Bismuth-210M	8.3	0.088	0.088		U	1464183	597715.3
BD34-SU1-5	20060126	Bismuth-214	1.17	0.92	0.15			1464183	597715.3
BD34-SU1-5	20060126	Cesium-137	3.8	0.11	0.11		U	1464183	597715.3
BD34-SU1-5	20060126	Cobalt-60	0.7	0.11	0.11		U	1464183	597715.3
BD34-SU1-5	20060126	Lead-210	7.4	2	2		U	1464183	597715.3
BD34-SU1-5	20060126	Lead-212	16.6	0.67	0.12			1464183	597715.3

Table 1: Offsite Verification Results (pCi/g)

[all are surface soil samples; results >CO are in bold]

Location	Date	Analyte	CO	Result	DL	DQ	LQ	Easting	Northing
BD34-SU1-5	20060126	Lead-214	8.9	0.84	0.12			1464183	597715.3
BD34-SU1-5	20060126	Potassium-40	47.8	10.3	1.1			1464183	597715.3
BD34-SU1-5	20060126	Protactinium-231	4	2.3	2.3		U	1464183	597715.3
BD34-SU1-5	20060126	Radium-226	2.9	0.92	0.15		J	1464183	597715.3
BD34-SU1-5	20060126	Radium-228	2.1	0.77	0.3			1464183	597715.3
BD34-SU1-5	20060126	Thallium-208	0.498	0.192	0.088			1464183	597715.3
BD34-SU1-5	20060126	Uranium-234	2	0.66	0.05		J	1464183	597715.3
BD34-SU1-5	20060126	Uranium-235	3.2	0.033	0.033		U	1464183	597715.3
BD34-SU1-5	20060126	Uranium-238	2.2	0.93	0.03		J	1464183	597715.3
BD34-SU1-6	20060126	Actinium-227	4.6	0.58	0.58		U	1464194	597726
BD34-SU1-6	20060126	Americium-241	63	0.25	0.25		U	1464194	597726
BD34-SU1-6	20060126	Bismuth-207	1.2	0.07	0.07		U	1464194	597726
BD34-SU1-6	20060126	Bismuth-210M	8.3	0.13	0.13		U	1464194	597726
BD34-SU1-6	20060126	Cesium-137	3.8	0.16	0.16		U	1464194	597726
BD34-SU1-6	20060126	Cobalt-60	0.7	0.095	0.095		U	1464194	597726
BD34-SU1-6	20060126	Lead-210	7.4	3.3	3.3		U	1464194	597726
BD34-SU1-6	20060126	Lead-212	16.6	0.79	0.16			1464194	597726
BD34-SU1-6	20060126	Lead-214	8.9	1.13	0.18			1464194	597726
BD34-SU1-6	20060126	Potassium-40	47.8	18.6	1.1			1464194	597726
BD34-SU1-6	20060126	Protactinium-231	4	3.4	3.4		U	1464194	597726
BD34-SU1-6	20060126	Radium-226	2.9	1.22	0.63			1464194	597726
BD34-SU1-6	20060126	Radium-228	2.1	0.8	0.8		U	1464194	597726
BD34-SU1-6	20060126	Thallium-208	0.498	0.28	0.1			1464194	597726
BD34-SU1-6	20060126	Uranium-234	2	0.89	0.04		J	1464194	597726
BD34-SU1-6	20060126	Uranium-235	3.2	0.038	0.035		J	1464194	597726
BD34-SU1-6	20060126	Uranium-238	2.2	0.78	0.03		J	1464194	597726

CO: cleanup objective
DL: detetcion limit
DQ: data qualifier
LQ: lab qualifier
U: not detected
J: estimated
FD: field duplicate

APPENDIX C

POST-EX SUD EXCERPT

Survey Unit Design (SUD)

Project: Bldg. 34 Slab

Review & Approval

Project Engineer: Karen Arthur _____

Reviewer: James Fontaine Clline for J. Fontaine

Reviewer: _____

Document	Title
Fact Sheet	Building 34 Slab, October 2005
RP	PRS 69/70 Removal Plan, Final, August 2005
WP	Building 34, Room 1,Slab Removal Plan, Final, August 2005
VSAP	Standard Verification Sampling & Analysis Plan, Final, August 2004
Closeout Report	Building 34 (demolition), Final, September 2003

NOTE: Pre-Ex SUD was not developed. See Item 1 for details.

☐ Pre-Excavation or X Post-Excavation?

Summary of Changes (for Post-Excavation SUDs ONLY) (See following pages for details)	YES	NO	COMMENTS
1. Did the COC(s) change?		X	
2. Did the grid size or N change?		X	
3. Did the classification change?		X	
4. Were bias/judgmental samples collected?		X	
5. Other significant change?		X	

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SUD Worksheet

Item 1

Summary of historic information relevant to SU:

Building 34, a three-room complex, was constructed in 1965 and demolished in 2003. Due to a concern about U-238 on a portion of the concrete slab, it (along with the foundation/footers) was left in place for removal under a CERCLA removal action (RA). Historic soil sample results did not support that U-238 was in the soil under/around the slab. The Building 34 slab removal effort was incorporated into the PRS 69/70 Removal Action work package by field change and performed without generation of a Pre-Ex SUD (with Core Team concurrence). In October 2005, the slab/foundation/footers were removed and disposed of as radiological waste. A contaminated drainpipe was encountered below the foundation. This pipe could not be identified on any drawings and was removed and disposed of as radiological waste. Because U-238 was identified above CO within the drain pipe, and contamination was chased, verification of the base of excavation was required. Since the RA had already occurred, a Post-Ex SUD, rather than a Pre-Ex SUD, was generated.

Item 2

Summary of historic data relevant to SU:

Contamination was expected to only be present on the slab's top surface. There was no historic U-238 contamination found adjacent to the slab or in the soil beneath the slab. Sediment within the contaminated drainpipe was sampled and found to contain U-238 at a maximum concentration of 17.39 pCi/g. U-238 was the only radiological COC above CO.

PRS 66 data was used to simulate "as Left" conditions using offsite analysis for U-238, the only COC for this SUD. Data used to calculate the standard deviation are presented in Attachment A.

Item 3a

COC	BASIS	(pCi/g) CO	HS	Offsite Analysis & Compendium Method: gamma (A-015)	Iso Pu (A-012)	Iso Th (A-012)	Iso U (A-012)
U-238	Public Fact Sheet for Building 34 Slab Removal	2.2	4.2				X
Ra-226	Based on RASS data	2.9	4.7	X			

Analyses are to be performed per Mound Methods Compendium and COs (for surface samples/analysis i.e., bedrock, asphalt, concrete) as applicable. Compendium Method A-012 is Isotopic Uranium, Isotopic Plutonium, and Isotopic Thorium by Alpha Spectrometry and Compendium Method A-015 is Gamma Spectrometry. Surface samples/analysis are to be in accordance with MD-80036 OP 30005, 30007, and 30040. Hard surfaces will be swiped and gross alpha and beta measurements will be performed and compared to the most restrictive COC in Mound 2000 Work Plan Appendix A Table 1 (NUREG 1.86 Regulatory Guide). If the location fails to meet the most restrictive criteria then it will be sent to alpha spec for determination of the COC so the applicable, instead of the most restrictive, criteria can be applied.

Changes if any, from Pre-Ex SUD: NA

Item 3b	Chemical basis for std dev, AM COCs/New COCs NA

Item 4

Classify Areas & provide justification

SU 1 was designated as a class 1 due to known contamination.

Selection	Class	Scan Coverage guidelines
X	1	100%
	2	10-90%
	3	Judgmental

Changes if any, from Pre-Ex SUD: NA

Item 5

Subdivide areas into SUs

See Attachment A for Data

See Attachment B for SUs

This SUD consists of one SU (the entire base of excavation): SU1 is approximately 25 feet by 30 feet (916 sq. ft.)

Item 6a

Calculations / Rad

1. Calculate the (s) for each COC listed above: See Attachment B.
2. Number of Samples (N): See Attachment B.

Spreadsheet Calculated = 16 samples based upon the data for the single SU.

SU1 Scanning MDC (Area Factor) corrected = 21 samples

Visual Sample Plan (VSP) 15 foot triangular grid: This has been chosen as the default method.

SU1 Calculated = 5 (on a 15 ' triangular grid) Selected Samples (on Map) = 6

The determination of the number of samples is consistent with Section 3.5 of the standard VSAP, addresses small area SUs. Where the SU is <100 m2 a minimum of six samples are required for statistical analysis.

A total of 6 sample locations will be assessed.

Sample locations were selected by VSP with sampling goals of finding a Hot Spot utilizing a 15-foot triangular grid with a random starting point. Sample locations will be surveyed at the time of sampling or closely following. Use of a grid rather than random bias placement is a deviation of the standard VSAP, however; the grid locations were used because the spacing was reasonable.

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	Changes if any, from Pre-Ex SUD: NA
Item 6b	Calculations/Chemical Std dev, Number of Samples NA
	Changes if any, from Pre-Ex SUD: NA
Item 7	Grid spacing From Attachment B. Triangular 15 foot grid, laid out by Visual Sample Plan.
	Changes if any, from Pre-Ex SUD: NA
Item 8	QA/QC: 1/20 via field duplicate in accordance with Mound Methods Compendium. Q-008 Data Integrity Verification Q-002 Chain-of-Custody Procedures Q-010 Electronic Data Deliverable Format Specifications – MEIMS Std. ... Q-003 Documentation Requirements S-001 General Instructions for Field Personnel Q-004 Laboratory Data Reduction S-002 Soil Sampling With a Spade and Scoop Q-006 Validation of Laboratory Data Packages S-028 Sample Control and Documentation Q-007 Data Assessment S-029 Guide to Handling, Packaging, and Shipping of Samples and Method Q-002
Item 9	Bias/judgement samples (Additional bias samples are always within the discretion of the EPA.) No bias samples are planned by CH2M Hill at this time.

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Item	Not otherwise covered.../ comments
10	Site policy requires performance of onsite soil screening (NaI or germanium) on verification samples slated for offsite analysis and evaluation of the results prior to shipment. This analysis will generally be performed on a split of the verification sample containerized in an EPA dish (approximately 500 ml) but may be performed on the actual verification sample as long as containerization requirements are maintained for the offsite lab. Count time of the analysis will be sufficient to meet the cleanup objectives (COs) of the contaminants of concern (COCs) requiring verification. If there is an insufficient volume of material to fill an EPA dish within a 1m x 1m square centered on the proposed sample location, due to bedrock or obstruction (such as a structure, foundation, concrete, pavement/asphalt, large rock formations, utility bank, etc. which is not to be removed), then sediment/soil analysis will not be performed. In lieu of a sediment/soil analysis result, RadCon will survey the surface per COs and provide documentation thereof in an RSDS. Potentially impacted work areas atop the excavation, where excavated sediment/material was loaded into haulers, and are not hard surfaces (e.g., concrete and asphalt) are shown as an additional SU. Potentially impacted work area atop the excavation, where excavated materials were loaded into haulers, and are hard surfaces (e.g., concrete and asphalt) will be surveyed and released per RadCon procedures. The RSDS(s) will be included as documentation. Any final sample location that does not meet the surface release criteria will be submitted to the Core Team for concurrence or determination of further action. Accessibility for sampling is a constraining factor. Sampling of the excavation walls may be impeded due to excavation wall accessibility by both personnel and equipment. Sidewall sampling will be performed via excavator sampling. Accessibility to the excavation floor by personnel may be impeded due to the width of the excavation not being sufficient to use a man-box for access. Where sufficient volume of soil exists and is accessible with an excavator a soil sample will be taken otherwise a surface survey (swipe and direct) will be performed utilizing methods available from atop the excavation. Potentially impacted the work areas atop the excavation, where excavated materials were loaded into haulers, and are not hard surfaces (i.e., concrete and asphalt) are shown as part of the SU. Potentially impacted work area atop the excavation, where excavated materials were loaded into haulers, and are hard surfaces (i.e., concrete and asphalt) will be surveyed and released per RadCon procedures in accordance Mound 2000 Work Plan Appendix A Table 1. In-process sampling events (Characterization and Remedial Action Support Survey (RASS) samples) were conducted during the entire PRS remediation. Those samples underwent gamma spectrometry analysis to guide actions. RASS sampling of the remediated areas Occurred and were analyzed onsite via long count gamma spec to determine if the verification sampling could be conducted. These results indicated the area is ready for verification but were not of sufficient analytical quality to calculate the standard deviation of verification samples. Offsite U-238 results from PRS 66 were used to simulate "as left" data.

4/8/96

APPENDIX D

BACKFILL PACKAGE

STD VSAP BACKFILL INFO

This information will be represented in the Data Report.

For: Building 34 Slab

Checklist:

(per Section 5.6 of Std VSAP, Final, Aug 04)

- ☒ final Graphic
  (show sample locations & note any >CO and/or >HS)
- ☒ sample results
  (show DLs, HS, COs, and COC std deviation(s))
- ☒ recalc of N
- ☒ preliminary data were reviewed
  (Data Review & Validation Report will be submitted with the Data Report)
- NA Sign test & 95%UCL (per SU)
  (not required if all results <CO, see pg 19/21 of VSAP)
- ☒ retro curve

From: (sign/date) Mark R. Spivey

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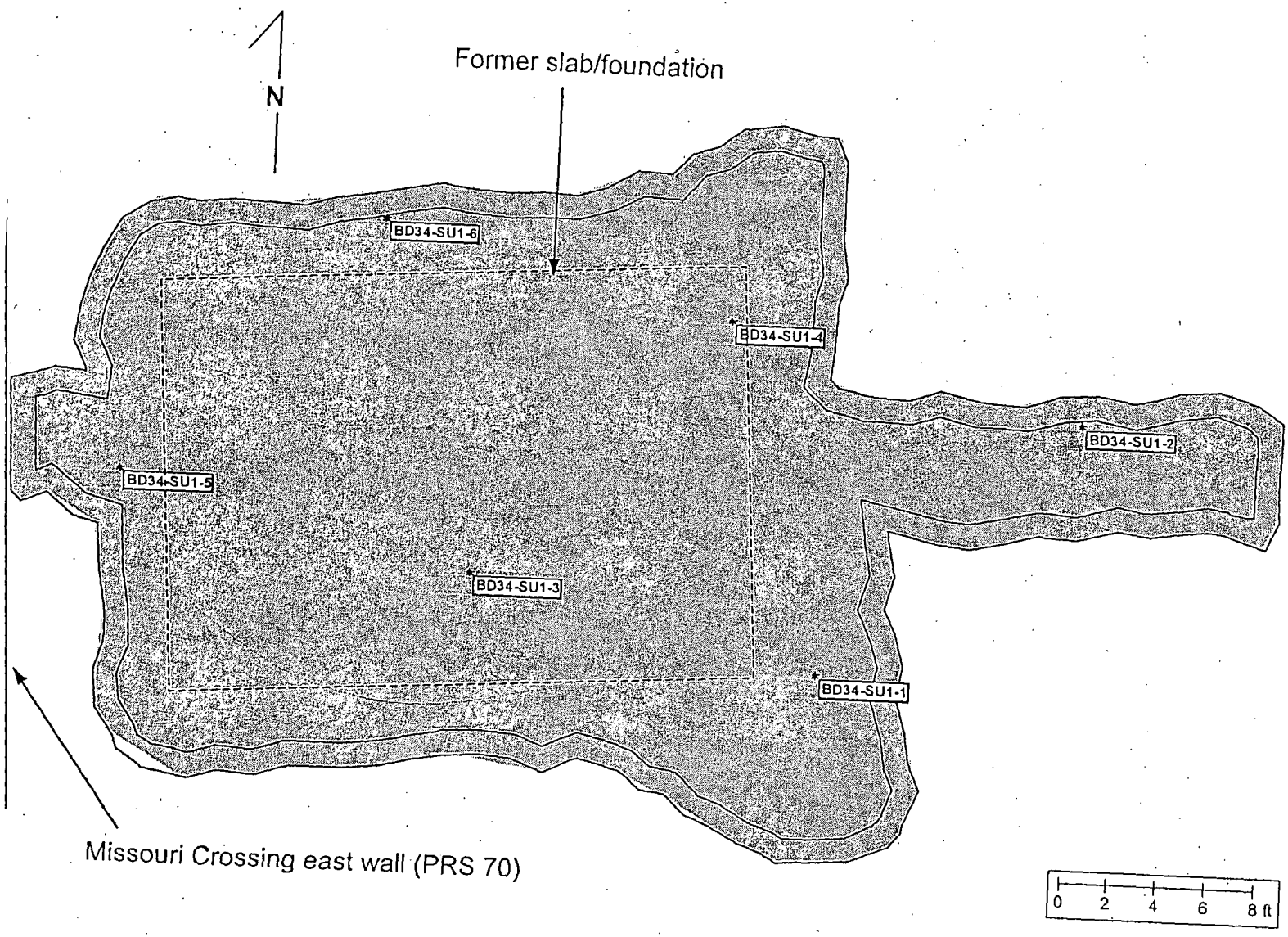

Bldg 34 slab Survey Unit 1

Verification Sample Locations

A-1/46

Sample ID	Date Collected	Ra-226 Result pCi/g	Ra-226 MDC pCi/g	Ra-226 Used pCci/g	U-238 Result pCi/g	U-238 MDC pCi/g	U-238 Used Pci/g
BD34-SU1-1	1/26/2006	0.84	0.42	0.84	0.74	0.05	0.74
BD34-SU1-2	1/26/2006	1.40	0.20	1.40	0.78	0.06	0.78
BD34-SU1-3	1/26/2006	0.83	0.46	0.83	0.83	0.03	0.83
BD34-SU1-4	1/26/2006	1.14	0.58	1.14	1.03	0.04	1.03
BD34-SU1-5	1/26/2006	0.92	0.15	0.92	0.93	0.03	0.93
BD34-SU1-6	1/26/2006	1.22	0.63	1.22	0.78	0.03	0.78
			Average	1.06		Average	0.85
			Std. Dev.	0.23		Std. Dev.	0.11
			Max	1.40		Max	1.03
			CO	2.90		CO	2.20
			HS	4.70		HS	4.20

Duplicates:

Sample ID	Date Collected	Ra-226 Result pCi/g	Ra-226 MDC pCi/g	U-238 Result pCi/g	U-238 MDC pCi/g
BD34-SU1-1 DUP	1/26/2006	0.71	0.43	0.75	0.03
BD34-SU1-2 FD	1/26/2006	1.18	0.23	0.75	0.03

Notes: BD34-SU1-2 had a Bi-214 result of 1.4 pCi/g (CO=1.17, HS=3.51)
Since Bi-214 is a daughter product in the U-238 (COC for this SU) decay chain.
This result is not of concern because ALL the U-238+D results are <CO.
Therefore, no further action will be taken based on the parent nuclide (U-238+D) results.

Special Consideration for Small Areas where SU<100m^2, **N=6**

Sample Standard Deviation (s)	Radionuclide	Cleanup Objective	Units
	Ac-227+D	4.6	(pCi/g)
	Am-241	63	(pCi/g)
	Ce-141	38	(pCi/g)
	Cs-137+D	3.8	(pCi/g)
	Co-60	0.7	(pCi/g)
	Cu-244	92	(pCi/g)
	Pb-210+D	7.4	(pCi/g)
	Np-237+D	10.4	(pCi/g)
	Ni-95	2.5	(pCi/g)
	Pu-238	55	(pCi/g)
	Pu-239/240	62	(pCi/g)
	Pa-231+D	4	(pCi/g)
0.23	Ra-226+D	2.9	(pCi/g)
	Ra-228	2.1	(pCi/g)
	Th-228+D	2.6	(pCi/g)
	Th-230+D	2.8	(pCi/g)
	Th-232+D	2.1	(pCi/g)
	U-233+D	4.8	(pCi/g)
	U-234	106.1	(pCi/g)
	U-234+D	2	(pCi/g)
	U-235	16.11	(pCi/g)
	U-235+D	3.2	(pCi/g)
	U-238	121.2	(pCi/g)
0.11	U-238+D	2.2	(pCi/g)
	Bi-207	1.2	(pCi/g)
	Bi-210m	8.3	(pCi/g)
	Bi-214	1.17	(pCi/g)
	Tc-99	2140	(pCi/g)
	tritium	7580	(pCi/g)
	Sr-90	94.72	(pCi/g)

Type I Error	0.05	*Estimate (N) - Sign Test*	
$Z_{1\text{-alpha}}$	1.645	DCGL	1
Type II Error	0.2	LBGR	0.72
$Z_{1\text{-beta}}$	0.842	Delta	0.28
		(s)	0.09
		Rel Shift	2.986
Effective	0.09 *(s)*	*(N)*	8.00
Sign p	0.993790	U-238 Area Factor (N)	21

Calculate the Total Effective (s)

Special Consideration for Small Areas where SU < 100m2, N=6

Sample Grid Spacing			Sample Grid Spacing		
SU Area	85.19	m^2	SU Area	916	ft^2
Grid Length	3.0	m	Grid Length	10.0	ft
Grid Height	2.6	m	Grid Height	8.6	ft

PRSs	BD34	Survey Unit	SU1

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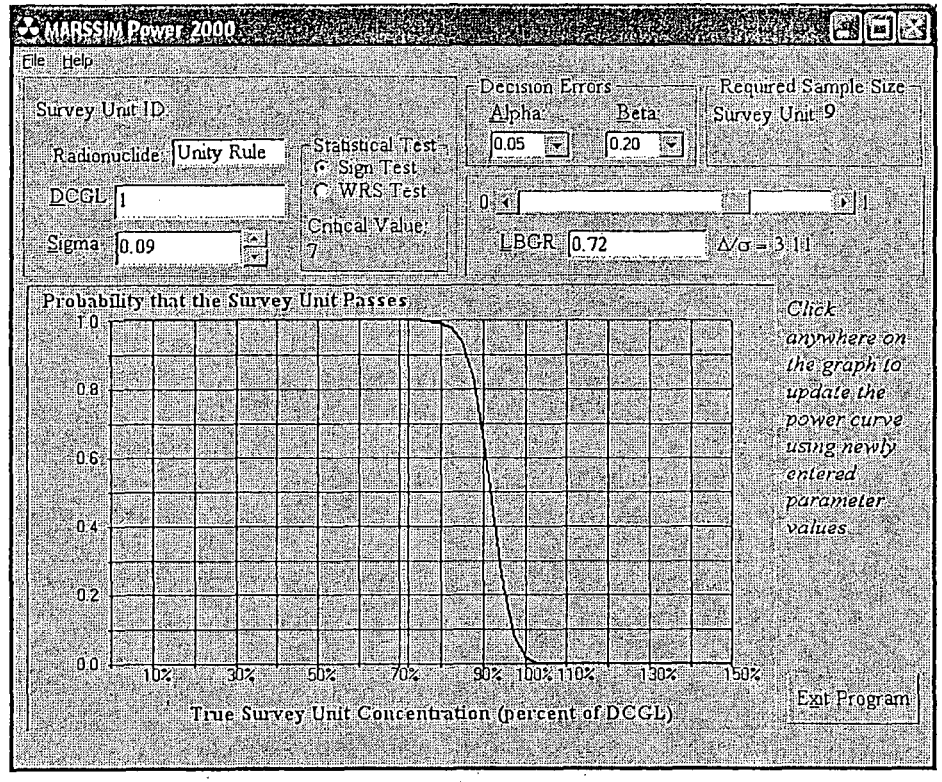
Building 34 Footprint Retro Power Curve:
(Special Consideration for Small Areas)
N=6



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APPENDIX E

RADIOLOGICAL SURVEYS

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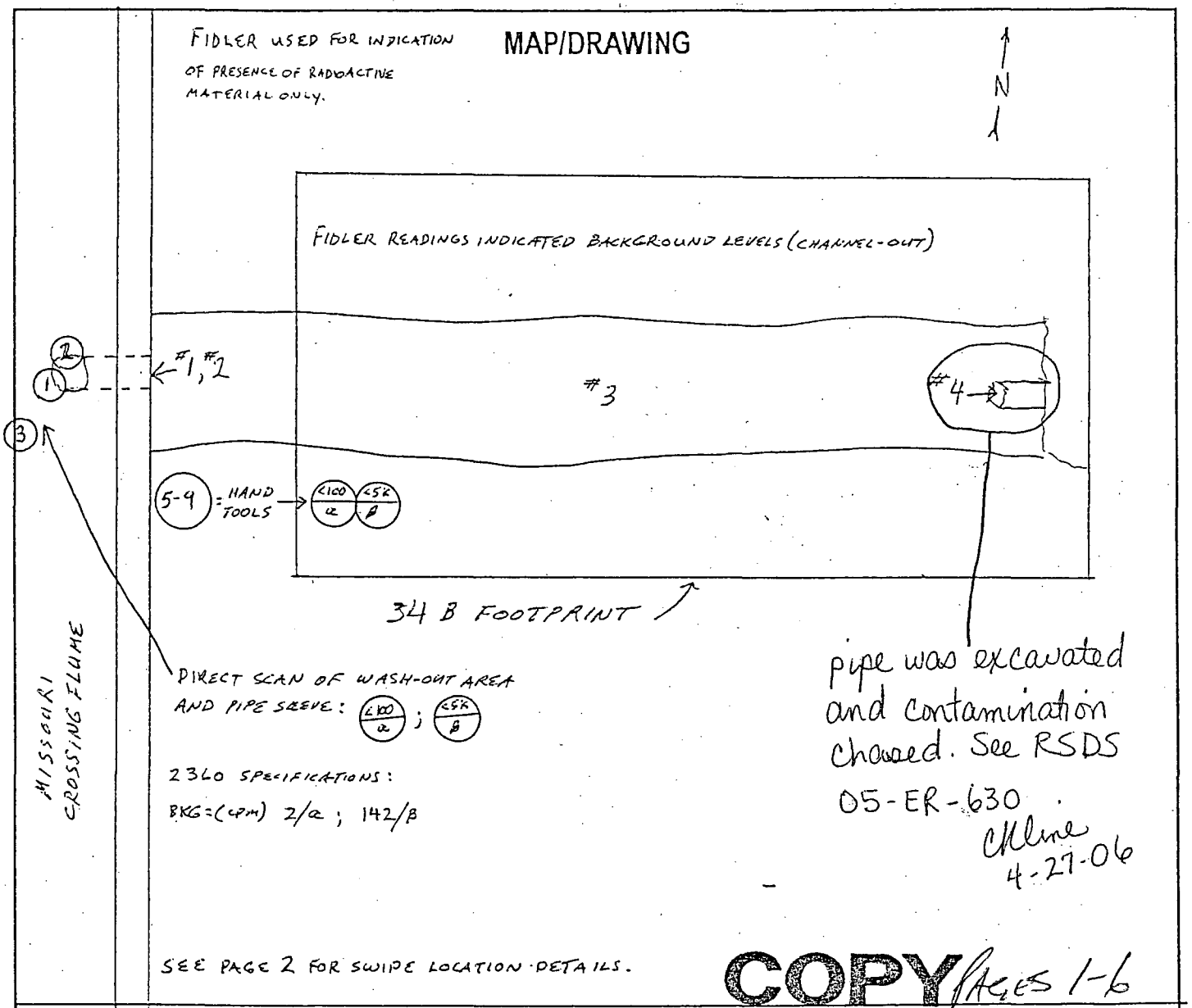
RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) PRS 70 / BLD. 34B FOOTPRINT	SURVEY NO. 05 ER-629
PURPOSE: SAMPLE PIPE TRENCH + REMAINING PIPE @ 34 B EXCAVATION	RWP NO. 1661
	DATE: 10 04 05
	TIME: 1600

MAP/DRAWING

FIDLER USED FOR INDICATION OF PRESENCE OF RADIOACTIVE MATERIAL ONLY.



SEE PAGE 2 FOR SWIPE LOCATION DETAILS.

COPY PAGES 1-6

LEGEND:
= ~~mrem/hr (γ) whole body~~ SAMPLE LOCATION PR 10405
#E = mrem/hr (β+η+γ) extremity on contact
△# = mrem/hr neutron
□# = air sample number
(#) = swipe number
(#/α) or/β = direct cont. measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2360	5751/5785	11 02 05
FIDLER	3855/3967	04 13 06
3030	5822	07 19 06

Completed by: (Signature) [redacted]	HP # SSZO 4992	DATE: 10 10 05
	HP # 4992	DATE: 10 04 05
	HP # 7348	DATE: 11 1 05
Reviewed/Approved by: (~~Print Name~~) [redacted]		

ML-9620 (2-98)

Survey No. 05 ER 629

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination			
Swipes (dpm/100cm²)			
Sample #	β/γ	Alpha	Comments
1	<DL	0	1/5 DRAIN PIPE
2	<DL	0	1/5 DRAIN PIPE
3	<DL	0	FLUME FLOOR
4	<DL	0	SHOVEL HANDLE
5	<DL	0	BLADE
6	<DL	0	HANDLE
7	<DL	0	SHOVEL BLADE
8	<DL	0	SPUD BAR HANDLE
9	<DL	0	SPUD BAR BLADE
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			

Removable Contamination			
Swipes (dpm/100cm²)			
Sample #	β/γ	Alpha	Comments
36			
37			
38			
39			
40			
41			
42			
43			
44			
45			
46			
47			
48			
49			
50			
51			
52			
53			
54			
55			
56			
57			
58			
59			
60			
61			
62			
63			
64			
65			
66			
67			
68			
69			
70			

N/A

COPY

COMMENTS:	3030 # 5822	alpha	Bkg 0.0	Ct 0.5	DL 0.0	MDA 15.3
		Beta	Bkg 30.0	Ct 0.5	DL 34.8	MDA 95.4

NOTES:

1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for β/γ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

A27/46

SOIL ANALYSIS REPORT

Field Sample ID:
Lab Sample ID: GL07762
File ID: 2SC03027.s0
Priority: Yes

Description\Location
PRS70 100405-1 34 B West @ Pipe
Long Count

Collector: 4992[redacted]
Date Received: 10/04/05
Date Collected: 10/04/05

Radionuclide		Activity (pCi/g)	MDA
Co-60	*	0	0.05
Cs-137	*	0.02	0.03
Pb-210		0.5	0.41
Ra-226		0.72	0.54
Ac-227 (D)	*	0	0.17
Th-230	*	0	4.66
Th-232 (D)		0.28	0.17
Pu-238	*	0	10.7
Am-241	*	0	0.05

Other Nuclides

Radionuclide	Activity (pCi/g)	MDA

Σ_{DOT} 0.02 nCi/g

Instrument type: High Purity Germanium

Σ_{DOT} 2nCi/g limit, total activity.

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

* Indicates activity < MDA. MDA used in limits calculation

Comments:

Date: 10/05/05 Counted By: 5288 Analyzed By: 5288 Initials [redacted]

SOIL ANALYSIS REPORT

Field Sample ID:
Lab Sample ID: GL07763
File ID: 2SC03028.s0
Priority: Yes

Description\Location
PRS70 100405-2 34 B West Below Pipe
Long Count

Collector: 4992[redacted]
Date Received: 10/4/05
Date Collected: 10/4/05

Radionuclide		Activity (pCi/g)	MDA
Co-60	*	0	0.05
Cs-137	*	0	0.03
Pb-210	*	0.2	0.33
Ra-226		0.59	0.46
Ac-227 (D)	*	0	0.15
Th-230	*	2.17	3.45
Th-232 (D)		0.22	0.13
Pu-238	*	1.33	10.47
Am-241	*	0.01	0.03

Other Nuclides

Radionuclide	Activity (pCi/g)	MDA

Σ_{DOT} 0.02 nCi/g

Instrument type: High Purity Germanium

Σ_{DOT} 2nCi/g limit, total activity.

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

* Indicates activity < MDA. MDA used in limits calculation

Comments:

Date: 10/5/05 Counted By: 5288 Analyzed By: 5288 Initials [redacted]

SOIL ANALYSIS REPORT

Field Sample ID:
Lab Sample ID: GL07764
File ID: 2SC03029.s0
Priority: Yes

Description\Location
PRS70 100405-3 34 B Center of Trench
Long Count

Collector: 4992 [redacted]
Date Received: 10/4/05
Date Collected: 10/4/05

Radionuclide		Activity (pCi/g)	MDA
Co-60		0.04	0.04
Cs-137	*	0.01	0.04
Pb-210		0.98	0.52
Ra-226		1.5	0.64
Ac-227 (D)	*	0	0.2
Th-230	*	0.3	5.65
Th-232 (D)		0.67	0.18
Pu-238	*	0	12.6
Am-241	*	0.02	0.06

Other Nuclides

Radionuclide	Activity (pCi/g)	MDA

Σ_{DOT} 0.02 nCi/g -

Instrument type: High Purity Germanium

Σ_{DOT} 2nCi/g limit, total activity.

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

* Indicates activity < MDA. MDA used in limits calculation

Comments:

Date: 10/5/05 Counted By: 5288 Analyzed By: 5288 Initials [redacted]

SOIL ANALYSIS REPORT

Field Sample ID:
Lab Sample ID: GL07765
File ID: 2SC03030.s0
Priority: Yes

Description\Location
PRS70 100405-4 34 B East I/S Pipe
Long Count

Collector: 4992[redacted]
Date Received: 10/04/05
Date Collected: 10/04/05

Radionuclide		Activity (pCi/g)	MDA
Co-60		0.04	0.01
Cs-137		0.05	0.03
Pb-210		0.89	0.61
Ra-226		2.42	0.69
Ac-227 (D)	*	0.04	0.2
Th-230	*	0	6.49
Th-232 (D)		0.59	0.13
Pu-238	*	4.24	13.94
Am-241	*	0.02	0.07

Other Nuclides

Radionuclide	Activity (pCi/g)	MDA
U-238D	6.09	0.73

Σ_{DOT} 0.03 nCi/g

Instrument type: High Purity Germanium

Σ_{DOT} 2nCi/g limit, total activity.

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

* Indicates activity < MDA. MDA used in limits calculation

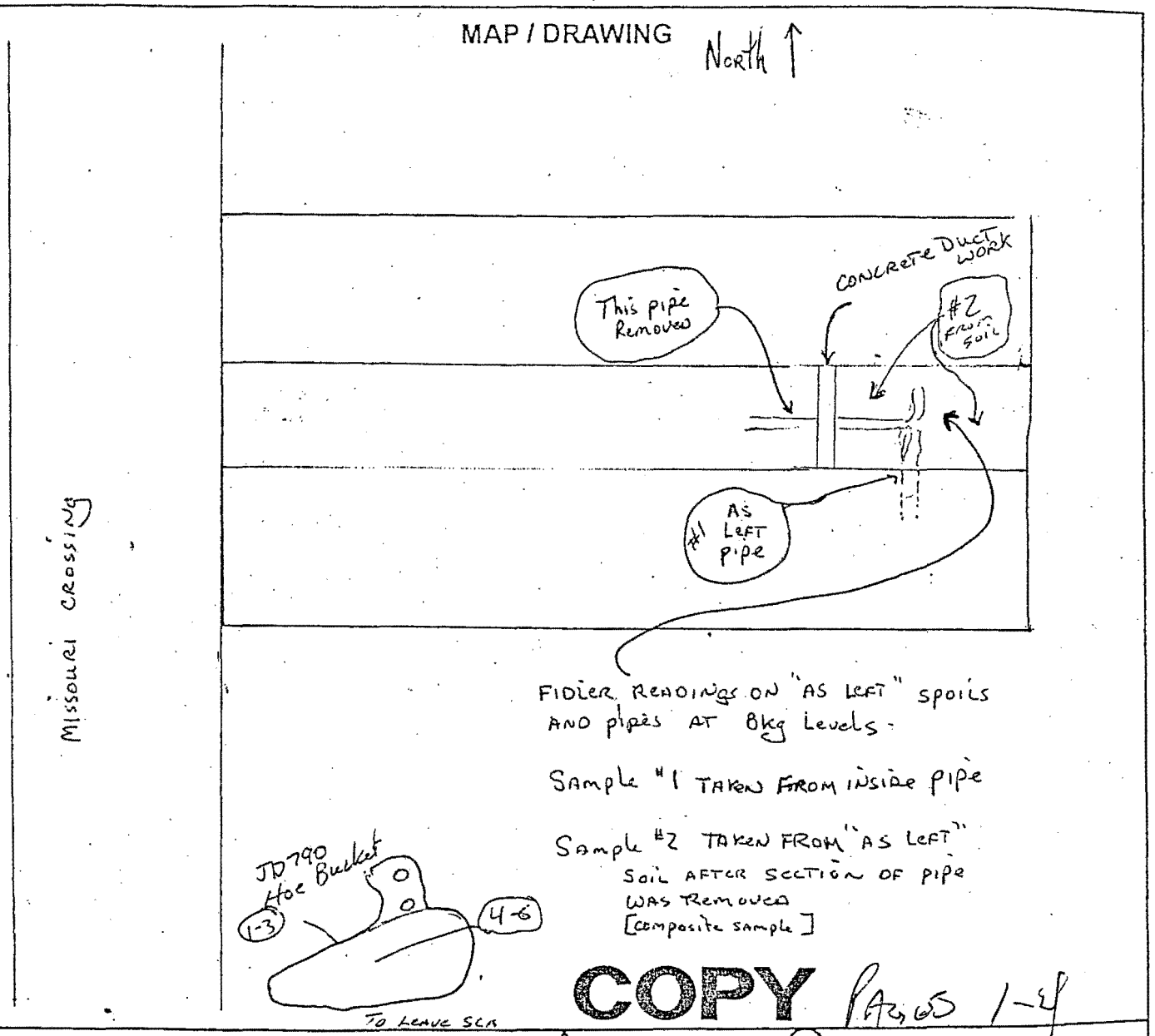
Comments:

Date: 10/05/05 Counted By: 5288 Analyzed By: 5288 Initials [redacted]

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG. / ROOM / AREA) PRS70 - Building 34B	SURVEY NO. 05 ER - 630
PURPOSE: Job coverage	RWP NO. 16161
	DATE: 10-6-05
	TIME: 1030 hrs

MAP / DRAWING



COPY Pages 1-4

LEGEND:
= mrem/hr (γ) whole body
#E = mrem/hr (β+η+γ) extremity on contact
K = factor of 1000
— · — · — = radiological boundary
△# = mrem/hr neutron
= air sample number
(#) = swipe number
(#/α) or /β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
FIDLER	3815/3968	4-13-06
3030	5822	7-19-06
	N/A	

Completed by: (Signature)	HP#	Date:
[redacted]	5520	10-10-05
	HP# 5520	Date: 10-6-05
	HP# 7248	Date: 10/21/05
		A32/46

Survey No.
05 ER-630

DIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm²)				
ple #	β/γ	Alpha		Comments
	<DL	0	JD 790	1/5 Bucket
	<DL	0	Bucket	1/5
	<DL	0	Cungozen	1/5
	<DL	0	Survey	0/5
	<DL	0	To Lenive	0/5
	<DL	0	SCA	0/5
			N/A	

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha		Comments
			N/A	

COPY

ation
100 cm²

le: 9-10-05

le: 9-6-05

le: 10/31/05

A32/46

MMENTS: 3030# 5822- Bkg α 0.0 ct 0.5 DL 0.0 MDA 15.3
Bkg β 26.4 ct 0.5 DL 39.8 MDA 95.4

ES:
See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
To request RO Count Room analysis for β/γ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If needed, mark N/A.

A33/46

9620A (4-98)

05 ER - 630
P3 of 4
RW

SOIL ANALYSIS REPORT

Field Sample ID:
Lab Sample ID: GL07791
File ID: 2SC03047.s0
Priority: Yes

Description\Location
PRS70 1006-1 In Pipe 34B
Long Count

Collector: 5520
Date Received: 10/06/05
Date Collected: 10/06/05

Radionuclide		Activity (pCi/g)	MDA
Co-60	*	0	0.06
Cs-137	*	0.02	0.03
Pb-210		0.58	0.44
Ra-226		1.37	0.54
Ac-227 (D)	*	0.06	0.18
Th-230	*	0.8	4.69
Th-232 (D)		0.26	0.2
Pu-238	*	0	11.65
Am-241	*	0.01	0.05

Other Nuclides

Radionuclide	Activity (pCi/g)	MDA

Σ_{DOT} 0.02 nCi/g

Instrument type: High Purity Germanium

Σ_{DOT} 2nCi/g limit, total activity.

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

* Indicates activity < MDA. MDA used in limits calculation

Comments:

Date: 10/10/05 Counted By: 5288 Analyzed By: 5288 Initials [redacted]

A34/46

05CR-630
p 4 of 4
RM

SOIL ANALYSIS REPORT

Field Sample ID:
Lab Sample ID: GL07792
File ID: 2SC03048.s0
Priority: Yes

Description\Location
PRS70 1006-2 As Left Soil
Long Count

Collector: 5520
Date Received: 10/06/05
Date Collected: 10/06/05

Radionuclide		Activity (pCi/g)	MDA
Co-60		0.07	0.04
Cs-137	*	0.01	0.05
Pb-210		1.01	0.76
Ra-226		2.48	0.84
Ac-227 (D)	*	0	0.28
Th-230	*	3.59	7.71
Th-232 (D)		0.83	0.26
Pu-238	*	0	16.12
Am-241	*	0	0.07

Other Nuclides

Radionuclide	Activity (pCi/g)	MDA

Σ_{DOT} 0.03 nCi/g

Instrument type: High Purity Germanium

Σ_{DOT} 2nCi/g limit, total activity.

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

* Indicates activity < MDA. MDA used in limits calculation

Comments:

Date: 10/10/05 Counted By: 5288 Analyzed By: 5288 Initials [redacted]

A35/46

APPENDIX F

DATA REVIEW & VALIDATION

1.0 Introduction

Analytical data assessment can be performed on many quality control levels. On the most basic level the data can be reviewed for completeness. Does the reported data cover the intended samples? Were the samples analyzed for the planned analyses? Does the data package contain all the information called for by the SOW and/or SAP?

The next level, a Data Review, involves an assessment of the quality controls used by the laboratory during the performance of the analysis. These include such things as laboratory blanks, system monitoring compound (surrogate) recoveries, matrix spike recoveries, etc. Which quality controls are assessed and what criteria are applied depend on the analysis performed. Were the correct QC controls used, and does the QC data indicate the analyses were performed acceptably? The results of field quality control measures such as field duplicates and trip blanks may also be evaluated. Data Review is normally performed on 100% of the analytical data.

A full Data Validation is a much more detailed review of the entire laboratory data package. It includes all the elements of the Data Review plus verification of such things as proper instrument calibration, proper use of standards and correct performance of data calculations. Data Validation is used to identify systemic problems with the way the laboratory performs and reports analyses.

2.0 Description of the Data Set

The data being evaluated are for 6 soil sample locations in the vicinity of Building 34 collected on January 26, 2006.

Contaminants of concern were Uranium and Ra-226 based upon process knowledge and previous sampling performed in the area.

Samples were collected by the Mound Sample Management Office and were submitted to Severn Trent Laboratory, St. Louis for analysis of Uranium by Alpha Spectrometry. Gamma Spectrometry was used to assess Ra-226.

One field duplicates was collected for this sampling event.

Samples were collected from all locations as planned.

Equipment rinsates were not collected. The purpose of equipment rinsates are to indicate that field decontamination of the sample equipment was adequate to prevent cross contamination between samples. No field decontamination of equipment was performed. Each location was sampled with virgin equipment.

Trip Blanks were not packaged and analyzed with the samples. The purpose of trip blanks is to indicate whether cross contamination of the samples occurred during transport of the samples from the field to the laboratory. Trip blanks are normally only employed with volatile samples.

A 37/46

The laboratory received no open or broken sample containers.

There were no problems associated with the documentation, shipment, or chain of custody of the samples. There were no problems in achieving the analyte detection goals.

Table 1. Sample Identification

Sample Date	LSDG	Laboratory Samples ID	Mound Sample IDs
1/26/06	F6A270189	HWENC-001	BD34-SU1-1
1/26/06		HWEN9-002	BD34-SU1-2
1/26/06		HWEPC-003	BD34-SU1-2FD
1/26/06		HWEPD-004	BD34-SU1-3
1/26/06		HWEPF-005	BD34-SU1-4
1/26/06		HWEPK-006	BD34-SU1-5
1/26/06		HWEPM-007	BD34-SU1-6

LSDG – Laboratory Sample Delivery Group

3.0 Data Completeness

The correct samples were submitted and analyzed for the analyses requested. The data package received back from the laboratory was complete.

4.0 Data Review

The quality control data in the analytical data package were reviewed and assessed. The results of the assessment are presented in this section. The following qualification flags are used to indicate data quality problems identified during the data review process.

Table 2. Data Review Qualifications

Flag	Description
J	Estimated sample result
U	Non-detect sample result
UJ	Estimated non-detected sample result
R	Rejected (unusable) sample result

4.1 Holding Times

There is no EPA recommended technical hold time for the analysis used for this data set. All samples were analyzed within 6 days of sampling.

4.2 Blanks

The laboratory analyzes one method blank for every 20 or less samples. Method blanks are analyzed to determine if laboratory or field processes are contributing to the detected sample contamination. Blanks are also run after calibration standards to ensure that there is no carryover from the standard. The method blank measurements should be less than the minimum detectable limit for each analyte.

The method blanks associated with these samples all met QC criteria.

4.3 Percent Tracer Yield

A known amount of U-232 tracer is added to each alpha spectrometry sample at the beginning of the sample preparation process. The final result is calculated based upon the recovery of this known amount. As a rule of thumb the tracer recovery should not be less than 20 or greater than 110%. Most often it is in the 40 to 90% range. The evaluation and review of the yield data for a specific sample result is frequently subjective and demands analytical experience and professional judgment.

All tracer recoveries (87-99%) for all samples were within QC criteria.

4.4 Laboratory Duplicates

A laboratory duplicate is run for every batch of samples as an indicator or laboratory precision. Laboratory duplicates are usually evaluated on the basis of their Relative Percent Difference (RPD) especially if significant amounts of analyte are measured. These data alone cannot be used to evaluate the precision of individual samples. However, when exercising professional judgment, this data should be used in conjunction with other QC information.

The RPD ranged from 1 to 17% for the duplicate samples largely because all of the measured results were so small. The duplicate samples run by the laboratory were in good agreement.

4.5 Laboratory Control Sample

The Laboratory Control Sample (LCS) is a standard sample with a known quantity of the analyte(s) of concern. The LCS recovery is an indication of whether the analytical process was in control during the analysis. One LCS should be analyzed for every 20 samples or less.

All LCS recoveries were within QC requirements.

4.6 Equipment Rinsates

Equipment rinsates are used to ensure efficacy of equipment field decontamination procedures, and that the sample collection process is not causing cross contamination.

No equipment rinsates were collected.

4.7 Field Duplicates

Field Duplicates give an indication of the degree of homogeneity within the sample material. As with Laboratory Duplicates they are reported as RPD.

The RPD were not used to evaluate the field duplicate because no significant amounts of analyte were measured in either sample. The field duplicate samples run by the laboratory were in good agreement.

E. Jendrek

5.0 Data Validation

The results of LSDG F6A270189 were fully data validated. In addition to the items discussed above, the following items were evaluated:

5.1 Other

The following other factors impacting sample analyses were also checked.

1. Spike recovery calculations.
2. Sample run logs
3. Compound quantification calculations
4. Daily Calibration check (gamma)
5. Monthly Calibration (alpha)
6. Monthly background measurement (alpha)

No additional qualification resulted from this assessment. There was no indication of a systemic deficiency.

6.0 Certification

Based upon this review the analysis data may be used as presented with no further qualifications than stated above.

A 40/461

E. Jendrek

Table 3 FA6270189 Analyses

	U-234	U-235	U-238		Ra-226
Sample ID	pCi/g	pCi/g	pCi/g	% yield	pCi/g
BD34-SU1-1	*0.51*	*0.05*	*0.74*	99	*0.84*
BD34-SU1-1DUP	*0.56*	*0.05*	*0.75*	88	*0.71*
BD34-SU1-2	*0.88*	< 0.05	*0.78*	92	1.40
BD34-SU1-2FD	*0.67*	*0.09*	*0.75*	87	1.18
BD34-SU1-3	*0.76*	*0.04*	*0.83*	99	*0.83*
BD34-SU1-4	*0.76*	< 0.04	1.03	87	1.14
BD34-SU1-5	*0.66*	< 0.03	*0.93*	92	*0.92*
BD34-SU1-6	*0.89*	*0.04*	*0.78*	88	1.22
Method Blank	< 0.05	< 0.03	< 0.04	90	< 0.12
LCS % recovery	85		88	91	97

Italic results are detection below the PQL
PQL – Practical Quantitation Limit
LCS – Laboratory Control Sample

A 41/46

E. Jendrek

1.0 Introduction

Analytical data assessment can be performed on many quality control levels. On the most basic level the data can be reviewed for completeness. Does the reported data cover the intended samples? Were the samples analyzed for the planned analyses? Does the data package contain all the information called for by the SOW and/or SAP?

The next level, a Data Review, involves an assessment of the quality controls used by the laboratory during the performance of the analysis. These include such things as laboratory blanks, system monitoring compound (surrogate) recoveries, matrix spike recoveries, etc. Which quality controls are assessed and what criteria are applied depend on the analysis performed. Were the correct QC controls used, and does the QC data indicate the analyses were performed acceptably? The results of field quality control measures such as field duplicates and trip blanks may also be evaluated. Data Review is normally performed on 100% of the analytical data.

A full Data Validation is a much more detailed review of the entire laboratory data package. It includes all the elements of the Data Review plus verification of such things as proper instrument calibration, proper use of standards and correct performance of data calculations. Data Validation is used to identify systemic problems with the way the laboratory performs and reports analyses.

2.0 Description of the Data Set

The data being evaluated are for 6 soil sample locations in the vicinity of Building 34 collected on January 26, 2006.

Contaminants of concern were Uranium and Ra-226 based upon process knowledge and previous sampling performed in the area.

Samples were collected by the Mound Sample Management Office and were submitted to Severn Trent Laboratory, St. Louis for analysis of Uranium by Alpha Spectrometry. Gamma Spectrometry was used to assess Ra-226.

One field duplicates was collected for this sampling event.

Samples were collected from all locations as planned.

Equipment rinsates were not collected. The purpose of equipment rinsates are to indicate that field decontamination of the sample equipment was adequate to prevent cross contamination between samples. No field decontamination of equipment was performed. Each location was sampled with virgin equipment.

Trip Blanks were not packaged and analyzed with the samples. The purpose of trip blanks is to indicate whether cross contamination of the samples occurred during transport of the samples from the field to the laboratory. Trip blanks are normally only employed with volatile samples.

A 42/46

E. Jendrek

The laboratory received no open or broken sample containers.

There were no problems associated with the documentation, shipment, or chain of custody of the samples. There were no problems in achieving the analyte detection goals.

Table 1. Sample Identification

Sample Date	LSDG	Laboratory Samples ID	Mound Sample IDs
1/26/06		HWENC-001	BD34-SU1-1
1/26/06		HWEN9-002	BD34-SU1-2
1/26/06		HWEPC-003	BD34-SU1-2FD
1/26/06	F6A270189	HWEPD-004	BD34-SU1-3
1/26/06		HWEPF-005	BD34-SU1-4
1/26/06		HWEPK-006	BD34-SU1-5
1/26/06		HWEPM-007	BD34-SU1-6

LSDG – Laboratory Sample Delivery Group

3.0 Data Completeness

The correct samples were submitted and analyzed for the analyses requested. The data package received back from the laboratory was complete.

4.0 Data Review

The quality control data in the analytical data package were reviewed and assessed. The results of the assessment are presented in this section. The following qualification flags are used to indicate data quality problems identified during the data review process.

Table 2. Data Review Qualifications

Flag	Description
J	Estimated sample result
U	Non-detect sample result
UJ	Estimated non-detected sample result
R	Rejected (unusable) sample result

4.1 Holding Times

There is no EPA recommended technical hold time for the analysis used for this data set. All samples were analyzed with 6 days of sampling.

5.0 Data Review

The quality control data submitted with the analytical data packages were reviewed and assessed. The results of the assessment are presented in this section. The following qualification flags are used to indicate data quality problems identified during the data review process.

A 43/46

Table 2 Data Review Qualifications

Flag	Description
J	Estimated sample result
U	Non-detect sample result
UJ	Estimated non-detected sample result
R	Rejected (unusable) sample result

4.2 Blanks

The laboratory analyzes one blank for every 20 samples or LSDG. Laboratory blanks are analyzed to determine if laboratory processes are contributing to the detected sample activities.

There were no isotopes of interest measured in the blank associated with these samples.

4.3 Laboratory Duplicates

A laboratory duplicate (DUP) analysis is performed to assess the precision and accuracy of the laboratory analysis. One duplicate is performed for every 20 samples.

Since all of the measured activities are very small and within one or two times their uncertainties this is not an informative QC criteria.

4.4 Laboratory Control Sample

The Laboratory Control Sample (LCS) is a standard sample with a known quantity of the analytes of concern. The LCS recovery is an indication of whether the analytical process was in control during the analysis.

The recoveries of the 2 spiked isotopes in the LCS were 97%.

4.5 Equipment Rinsates

Equipment rinsates are used to ensure efficacy of equipment field decontamination procedures, and that the sample collection process is not causing cross contamination.

No equipment rinsates were submitted.

4.6 Field Duplicates

Field Duplicates give an indication of the degree of homogeneity within the sample material. As with Laboratory duplicates they are reported as RPD.

Field duplicates were in good agreement with 4.2 % RPD for the isotope of concern.

A44/46

E. Jendrek

4.7 Comparison with On Site Results

All of the samples sent off site were also run on site. As table 3 shows agreement between the off site and on site results is good.

6.0 Data Validation

The results were further validated by examination of the following items:

1. Instrument Calibration data
2. Daily Instrument performance check
3. Background measurements

No additional qualification resulted from this assessment. There was no indication of a systemic deficiency.

7.0 Certification

Based upon this review the Gamma Spectroscopy analysis data may be used as presented with no further qualifications.

E. Jendrek

A.45/46

	Co-60	Cs-137	Pb-210	Ra-226	Ac-227(D)	Th-230	Th-232(D)	Pu-238	Am-241
Sample ID	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
BD34-SU1-1	< 0.14	< 0.10	< 1.9	*0.84*	< 0.42				< 0.14
BD34-SU1-1DUP	< 0.10	< 0.13	< 2.5	*0.71*	< 0.48				< 0.22
BD34-SU1-2	< 0.12	< 0.10	< 3.4	1.40	< 0.66				< 0.26
BD34-SU1-2FD	< 0.15	< 0.16	< 2.7	1.18	< 0.59				< 0.23
BD34-SU1-3	< 0.14	< 0.10	< 2.3	*0.83*	< 0.50				< 0.19
BD34-SU1-4	< 0.16	< 0.13	< 3.5	1.14	< 0.61				< 0.23
BD34-SU1-5	< 0.11	< 0.11	< 2.0	*0.92*	< 0.41				< 0.17
BD34-SU1-6	< 0.10	< 0.16	< 3.3	1.22	< 0.58				< 0.25
Method Blank	< 0.10	< 0.05	< 1.3	< 0.12	< 0.17				< 0.06
LCS % recovery				97			97		

On Site

	Co-60	Cs-137	Pb-210	Ra-226	Ac-227(D)	Th-230	Th-232(D)	Pu-238	Am-241
Sample ID	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
BD34-SU1-1	< 0.18	< 0.07	1.25	2.29	< 0.50	< 15.9	0.53	< 30.6	< 0.15
BD34-SU1-2	< 0.19	< 0.10	1.50	2.26	< 0.68	< 15.5	1.08	< 28.2	< 0.17
BD34-SU1-2FD	< 0.15	< 0.12	1.70	2.50	< 0.58	< 14.9	0.78	< 40.8	< 0.17
BD34-SU1-3	< 0.17	< 0.09	< 1.55	1.88	< 0.57	< 15.2	0.88	< 35.6	< 0.15
BD34-SU1-4	< 0.13	< 0.07	1.52	2.25	< 0.43	< 14.3	1.06	< 30.6	< 0.17
BD34-SU1-5	< 0.09	< 0.09	< 1.00	1.87	< 0.47	< 10.8	0.49	< 21.6	< 0.11
BD34-SU1-6	< 0.13	< 0.09	1.69	2.22	< 0.53	< 13.7	0.53	< 31.7	< 0.15

"<" Quantities indicate non-detects with stated MDAs
Blank cells are non-reported, non-detects
Italic results were run on site at Mound.

ATTACHMENT B

GENERAL MEDIA INFORMATION

PUBLIC FACT SHEET

Building 34 slab

This Fact Sheet satisfies the Public Notification requirement set forth in the Contingent Action Memorandum[1].

Background. Building 34 was located as shown on Figure 1. The history and condition of Building 34 are described in the Building Data Package[5]. Building 34 was demolished in 2003. Due to a concern about fixed radiological contamination on the surface of the slab at the southeast corner of the building, it was left in place. The remainder of the structure and slab were radiologically surveyed, demolished (in June/July 2003), and disposed of as documented in the Closeout Report[6].

A **Removal Action** (RA) per the Contingent Action Memo[1] is recommended for the slab left in place. Radiological contamination in soil, if present at unacceptable levels, will also be a part of the RA.

Characterization. As a part of the demolition activities, two soil samples were collected from soil below the demolished slabs and analyzed for radionuclides. All results were below current cleanup objectives (risk criteria).

Due to the uranium-238 (U-238) contamination on the structure, the soil below the slab will be sampled for U-238 as the contaminant of concern (COC). A RA will occur for soil with results above the U-238 cleanup objective (CO) of 2.2 pCi/g.

The **Work Plan** for Contingent Removal Actions[2], supplemented by the Unique Work Package, includes procedures, instructions, and applicable permits and notifications required to safely conduct the work. Erosion and runon/runoff controls will be managed per the SWP3[3].

The RA will consist of removal and disposal of the concrete slab (and associated soil with results above CO) at an approved disposal facility. Post-excavation sampling will be performed per the Core Team-approved **Verification Sampling & Analysis Plan (VSAP)**[4].

Schedule. This Fact Sheet will be in public review for 30 days, ending December 22, 2005. The sampling and RA, if necessary, is planned to begin in Fall 2005. A summary of the RA & the verification data will be included in the On-Scene Coordinator (OSC) Report. The OSC Report will be placed in the public reading room after the conclusion of the verification sampling and approval by the Core Team.

Removal of approximately 30 yd^3 (22.9 m^3) of concrete & verification of the footprint soil are expected to cost less than $20,000.

More information can be found in the public reading room, or by contacting Geoff Gorsuch at (513) 246-0066.

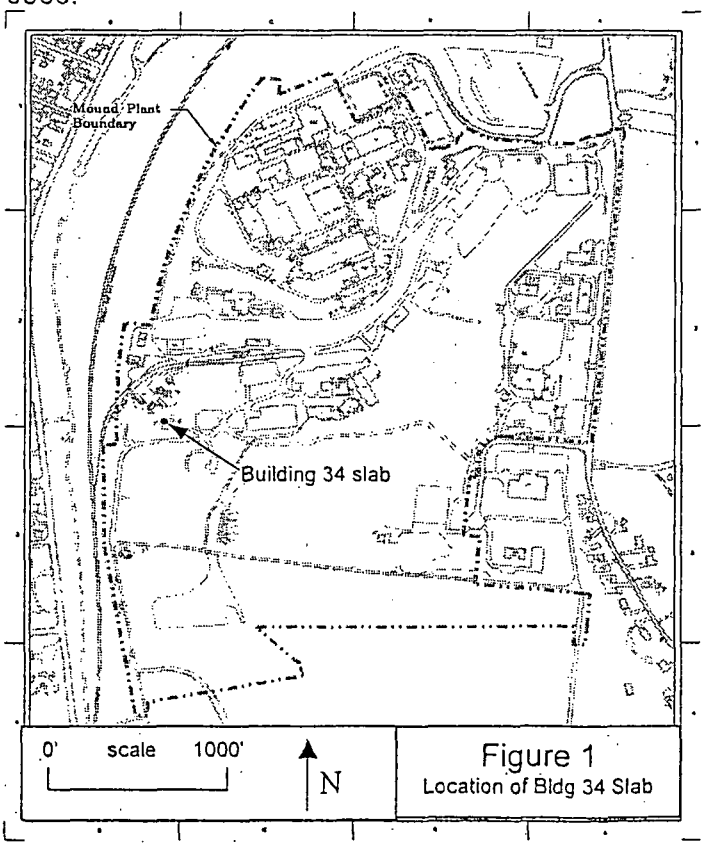


Figure 1
Location of Bldg 34 Slab

1: Action Memorandum/Engineering Evaluation/Cost Analysis, Contingent Removal Action for Contaminated Soil, June 2002, Final
2: Standard Work Package for Contingent Removal Actions, November 2001, Final
3: Storm Water Pollution Prevention Plan
4: Standard VSAP Soils Verification Sampling & Analysis Plan, Final, August 2004
5: Building Data Package, Building 34 (demolition), June 2003, Final
6: Closeout Report, Building 34 (demolition), Final, September 2003

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