Rocky Flats Environmental Technology Site

PRE-DEMOLITION SURVEY REPORT (PDSR)

BUILDING 903A CLOSURE PROJECT

REVISION 0

August 17, 2004

CLASSIFICATION REVIEW NOT REQUIRED PER EXEMPTION NUMBER CEX-005-02

1/31

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REVISION 0

August 17, 2004

Reviewed by: _____ Date: 8/17/04
Don Risoli, Quality Assurance

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Approved by: _____ Date: 8/18/04
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ATTACHMENTS

ABBREVIATIONS/ACRONYMS

ACM	Asbestos Containing Material
Be	Beryllium
CDPHE	Colorado Department of Public Health and the Environment
$DCGL_{EMC}$	Derived Concentration Guideline Level – elevated measurement comparison
$DCGL_W$	Derived Concentration Guideline Level – Wilcoxon Rank Sum Test
D&D	Decontamination and Decommissioning
DDCP	Decontamination and Decommissioning Characterization Protocol
DOE	U.S. Department of Energy
DPP	Decommissioning Program Plan
DQA	Data quality assessment
DQOs	Data quality objectives
EPA	U.S. Environmental Protection Agency
FDPM	Facility Disposition Program Manual
HVAC	Heating, ventilation, air conditioning
HSAR	Historical Site Assessment Report
HEUN	Highly Enriched Uranyl Nitrate
IHSS	Individual Hazardous Substance Site
IWCP	Integrated Work Control Package
K-H	Kaiser-Hill
LBP	Lead-based paint
LLW	Low-level waste
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
NORM	Naturally occurring radioactive material
NRA	Non-Rad-Added Verification
OSHA	Occupational Safety and Health Administration
PARCC	Precision, accuracy, representativeness, comparability and completeness
PCBs	Polychlorinated Biphenyls
PDS	Pre-demolition survey
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSA	Removable Surface Activity
RSP	Radiological Safety Practices
SVOCs	Semi-volatile organic compounds
TCLP	Toxicity Characteristic Leaching Procedure
TSA	Total surface activity
VOCs	Volatile organic compounds

EXECUTIVE SUMMARY

A Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Building 903A. Because this Type 2 building will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). Building surfaces characterized as part of this PDS included the floors, walls and ceiling. Environmental media beneath and surrounding the facility was not within the scope of this PDS and will be addressed in accordance with the Soil Disturbance Permit process and in compliance with RFCA.

The PDS encompassed both radiological and chemical characterization to enable compliant disposition and waste management pursuant to the D&D Characterization Protocol (MAN-077-DDCP). The characterization built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report.

Results indicate that no radiological or chemical contamination exists in excess of the PDSP unrestricted release limits. Asbestos abatement was not required per Colorado Department of Public Health and Environment (CDPHE) Regulation 8. Beryllium sample results were below the investigative level of 0.1 $\mu g/100cm^2$. In 2004, prior to PDS activities, RCRA Closure of Unit 18.01 was initiated in accordance with the Closure Plan For Interim Status Units At RFETS. Final analyses are pending to demonstrate RCRA Clean Closure of the concrete pad and sump. RCRA Unit 18.01 will be closed prior to demolition in accordance with the Closure Description Document For Partial Closure Of RCRA Interim Status Unit 18.01, DOE Letter 04-DOE-00081, dated March 11, 2004. Any potentially PCB-containing fluorescent light ballasts and hazardous waste items (e.g., mercury thermostats, fluorescent light bulbs, mercury vapor light bulbs, mercury-containing gauges, circuit boards, leaded glass, and lead-acid batteries) were previously removed from the building and therefore, do not impact demolition activities.

Based upon the PDSR, Building 903A can be demolished and the waste managed as sanitary waste. To ensure that the facility remains free of contamination and PDS data remain valid, Level 2 isolation controls have been established and the area posted accordingly.

1 INTRODUCTION

A Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Building 903A. Because this Type 2 building will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). Building surfaces characterized as a part of this PDS included floors, walls, ceilings and roof. Environmental media beneath and surrounding the facilities were not within the scope of this PDS and will be addressed in accordance with the Soil Disturbance Permit process and in compliance with RFCA.

An RLCR was not performed for this facility. Instead a RFCA Contact Record was written (*Building 903A and 903B Reconnaissance Level Characterization*, dated 6/30/04), that discusses the process history of the facility. Based on the process history, the facility was classified as a Type 2 RFCA facility and recorded as such in the Contact Record.

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed, among these is Building 903A. The location of this facility is shown in Attachment A, Facility Location Map. This facility no longer supports the RFETS mission and will be removed to reduce Site infrastructure, risks and/or operating costs.

Before this Type 2 facility can be demolished, the Data Quality Objectives (DQOs) for a Pre-Demolition Survey (PDS) must be satisfied; this document presents the PDS results for Building 903A. The PDS was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). The PDS is built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report and Reconnaissance Level Characterization Report for Building 903A, dated April 23, 2003, Revision 0.

1.1 Purpose

The purpose of this report is to communicate and document the results of the Building 903A PDS effort. A PDS is performed prior to building demolition to define the final radiological and chemical conditions of a facility. Final conditions are compared with the release limits for radiological and non-radiological contaminants. PDS results will enable project personnel to make final disposition decisions, develop related worker health and safety controls, and estimate waste volumes by waste types.

1.2 Scope

This report presents the final radiological and chemical conditions of Building 903A. Environmental media beneath and surrounding the facilities are not within the scope of this PDSR and will be addressed in accordance with the Soil Disturbance Permit process and in compliance with RFCA.

1.3 Data Quality Objectives

The Data Quality Objectives (DQOs) used in designing this PDS were the same DQOs identified in the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). Refer to section 2.0 of MAN-127-PDSP for these DQOs.

2 HISTORICAL SITE ASSESSMENT

A Facility-specific Historical Site Assessment (HSA) was conducted to understand the facility history and related hazards. The HSA consisted of facility walkdowns, interviews, and document review, including review of the Historical Release Report. A RLCR was not performed for Building 903A – refer to RFCA Contact Record, DAP-024, dated June 30, 2004, for a discussion and approval for not performing the Building 903A RLCR. Based on the HSA and Contact Record, Building 903A was classified as a Type 2 Facility. The HSA results were used to identify PDS data gaps and needs, and to develop radiological and chemical PDS characterization packages. HSA documentation is located in the RISS Characterization Project files.

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

Building 903A was characterized for radiological hazards per the PDSP. Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on the facility surfaces. Measurements were performed to evaluate the contaminants of concern. Based upon a review of historical and process knowledge, building walk-downs, and MARSSIM guidance, a Radiological Characterization Plan was developed during the planning phase that describes the minimum survey requirements (refer to the RISS Characterization Project files for the Building 903A Radiological Characterization Plan). Individual radiological survey unit packages are maintained in the RISS Characterization Project files.

Radiological survey unit package 903A02 was developed for Building 903A in accordance with Radiological Safety Practices (RSP) 16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure*. Total surface activity (TSA), removable surface activity (RSA), and scan measurements were collected in accordance with RSP 16.02 *Radiological Surveys of Surfaces and Structures*. Radiological survey data were verified, validated and evaluated in accordance with RSP 16.04, *Radiological Survey/Sample Data Analysis*. Quality control measures were implemented relative to the survey process in accordance with RSP 16.05, *Radiological Survey/Sample Quality Control*. Radiological survey data, statistical analysis results, survey locations, and radiological scan maps are presented in Attachment B, Radiological Data Summary and Survey Maps.

Building 903A was classified as a MARSSIM Class 2 Survey Unit because this building was not expected to contain residual radioactivity greater than the $DCGL_W$, but had a potential for low levels of contamination. A total of 44 TSA measurements (31 systematically grid, 10 biased and 3 QC) and 41 RSA measurements (31 systematically grid and 10 biased) were taken and scan surveys performed. Alpha scan surveys of 100% of the floor (216 m^2 minimum) and 25% of the remaining accessible surfaces (474 m^2 minimum) at biased locations were performed. None of the measurements or scans indicated elevated activity above applicable transuranic DCGL values. Radiological survey data, statistical analysis results, survey locations, and radiological scan maps are presented in Attachment B, *Radiological Data Summary and Survey Maps.*

4 CHEMICAL CHARACTERIZATION AND HAZARDS

Building 903A was characterized for chemical hazards per the PDSP. Chemical characterization was performed to determine the nature and extent of chemical contamination that may be present on, or in the facility. Based upon a review of historical and process knowledge, visual inspections, and PDSP DQOs, additional sampling needs were determined. A Chemical Characterization Plan was developed during the planning phase that describes sampling requirements and the justification for the sample locations and estimated sample numbers. The contaminants of concern were asbestos and beryllium. Refer to Attachment C, Chemical Summary Data and Sample Maps, for details on sample results and sample locations. Isolation control postings are displayed on affected structures to ensure no hazardous materials are introduced.

4.1 Asbestos

A survey of building materials suspected of containing asbestos was conducted in Building 903A during the PDS. A CDPHE-certified asbestos inspector conducted the inspections, and suspect materials were identified for sampling at the discretion of the inspector. No suspect materials were identified, therefore no asbestos sampling was required or performed as part of the PDS.

4.2 Beryllium (Be)

Six (6) biased beryllium smear samples were collected on the interior and exterior surfaces of Building 903A in accordance with the PDSP and the *Beryllium Characterization Procedure,* PRO-536-BCPR, Revision 0, September 9, 1999. All beryllium PDS smear sample results for Building 903A were less than the investigative limit of 0.1 $\mu g/100cm^2$. PDS beryllium laboratory sample data and location maps are contained in Attachment C, *Beryllium Data Summaries and Sample Maps.*

4.3 RCRA/CERCLA Constituents [including metals and volatile organic compounds (VOCs)]

Based on the HSAR, facility walk-downs and a review of RFETS waste management databases, Building 903A functioned as an equipment decontamination facility since it was constructed in 1993. The decontamination facility was also known as RCRA Unit 18.01, the Remedial Action Decontamination Pad (RADP). In 1996, partial closure of this unit was completed in accordance with "debris rule" decontamination. In 2004, prior to PDS activities, RCRA Closure of Unit 18.01 was initiated in accordance with the Closure Plan For Interim Status Units At RFETS. Final analyses are pending to demonstrate RCRA Clean Closure of the concrete pad and sump. On this basis, sampling was not performed as part of this PDS. However, RCRA Unit 18.01 will be closed prior to demolition in accordance with the Closure Description Document For Partial Closure Of RCRA Interim Status Unit 18.01, DOE Letter 04-DOE-00081, dated March 11, 2004.

Painted surfaces were not sampled for lead. Environmental Waste Compliance Guidance #27, *Lead-based Paint (LBP) and Lead-based paint Debris Disposal*, states that LBP debris generated outside of currently identified High Contamination Areas shall be managed as non-hazardous (solid) wastes, and additional analysis for characteristics of hazardous waste derived from LBP is not a requirement for disposal. There were no High Contamination Areas associated with Building 964.

The building may have contained some RCRA regulated items, such as mercury thermostats, fluorescent light bulbs, mercury vapor light bulbs, mercury containing gauges, circuit boards, and lead-acid batteries. These items have been removed and managed in accordance with the Colorado Hazardous Waste Act. Additionally, the curtains from the RADP were characterized and managed as RCRA hazardous based on analyses performed on similar curtains at the B966 Decontamination Pad.

4.4 Polychlorinated Biphenyls (PCBs)

Based on the HSAR, interviews, facility walkdowns and a review of historical WSRIC processes, PCBs were not introduced into the facility, therefore, sampling for PCBs was not conducted as part of this PDS.

Based on the age of Building 903A, paints used on the facility did not contain PCBs; and therefore, painted surfaces will not be managed as PCB Bulk Product Waste. Painted concrete surfaces can be used as backfill on site in accordance with approval received from EPA in November 2001 (letter from K. Clough, US EPA Region 8, to J. Legare, DOE RFFO, 8EPR-F, Approval of the Risk-Based Approach for Polychlorinated Biphenyls (PCB)-Based Painted Concrete), provided the concrete meets the unrestricted-release criteria outlined in the Concrete Recycling RSOP.

5 PHYSICAL HAZARDS

Physical hazards associated with Building 903A consists of those common to standard industrial environments, and include hazards associated with energized systems, utilities, and trips and falls. There are no other unique hazards associated with the facility. The facility has been relatively well maintained and is in good physical condition, and therefore, does not present hazards associated with building deterioration. Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practices.

6 DATA QUALITY ASSESSMENT

Data used in making management decisions for decommissioning of Building 903A, and consequent waste management, are of adequate quality to support the decisions documented in this report. The data presented in this report (Attachments B and C) were verified and validated relative to DOE quality requirements, applicable EPA guidance, and original project DQOs.

In summary, the Verification and Validation (V&V) process corroborates that the following elements of the characterization process are adequate:

- the *number* of samples and surveys;
- the *types* of samples and surveys;
- the sampling/survey process as implemented "in the field"; and
- the laboratory analytical process, relative to accuracy and precision considerations.

Details of the DQA are provided in Attachment D.

7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES

The demolition and disposal of Building 903A will generate sanitary waste. Estimated waste volumes are presented below. PCB ballast and hazardous waste items have been removed and managed pursuant to Site PCB and waste management procedures.

WASTE TYPES AND VOLUME ESTIMATES

Facility	Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM (cu ft)	Other Waste (cu ft)
903A	800	200	800	500	0	0	None

8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the PDS analysis of radiological, chemical and physical hazards, Building 903A meets PDSP unrestricted release criteria. RCRA Closure of Unit 18.01 was initiated in accordance with the Closure Plan For Interim Status Units At RFETS. Final analyses are pending to demonstrate RCRA Clean Closure of the concrete pad and sump. RCRA Unit 18.01 will be closed prior to demolition in accordance with the Closure Description Document For Partial Closure Of RCRA Interim Status Unit 18.01, DOE Letter 04-DOE-00081, dated March 11, 2004. PCB ballast and hazardous waste items have been removed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations.

The PDS for Building 903A was performed in accordance with the DDCP and PDSP, all PDSP DQOs were met, and all data satisfied the PDSP DQA criteria. Environmental media beneath and surrounding the facilities will be addressed at a future date in accordance with the Soil Disturbance Permit process and in compliance with RFCA. To ensure that Building 903A remains free of contamination and PDS data remain valid, Level 2 Isolation Controls have been established and the facility posted accordingly.

9 REFERENCES

DOE/RFFO, CDPHE, EPA, 1996. *Rocky Flats Cleanup Agreement (RFCA)*, July 19, 1996.

DOE Order 5400.5, *Radiation Protection of the Public and the Environment*

DOE Order 414.1A, *Quality Assurance*

EPA, 1994. *The Data Quality Objective Process,* EPA QA/G-4.

K-H, 1999. *Decommissioning Program Plan*, June 21, 1999.

MAN-131-QAPM, *Kaiser-Hill Team Quality Assurance Program*, Rev. 1, November 1, 2001.

MAN-076-FDPM, *Facility Disposition Program Manual*, Rev. 3, January 1, 2002.

MAN-077-DDCP, *Decontamination and Decommissioning Characterization Protocol*, Rev. 4, July 15, 2002.

MAN-127-PDSP, *Pre-Demolition Survey Plan for D&D Facilities*, Rev. 1, July 15, 2002.

MARSSIM - *Multi-Agency Radiation Survey and Site Investigation Manual* (NUREG-1575, EPA 402-R-97-016).

PRO-475-RSP-16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation, and Closure,* Rev. 1, May 22, 2001.

PRO-476-RSP-16.02, *Pre-Demolition (Final Status) Radiological Surveys of Surfaces and Structures*, Rev. 1, May 22, 2001.

PRO-477-RSP-16.03, *Radiological Samples of Building Media*, Rev. 1, May 22, 2001.

PRO-478-RSP-16.04, *Radiological Survey/Sample Data Analysis for Final Status Survey*, Rev. 1, May 22, 2001.

PRO-479-RSP-16.05, *Radiological Survey/Sample Quality Control for Final Status Survey*, Rev. 1, May 22, 2001.

PRO-563-ACPR, *Asbestos Characterization Procedure,* Revision 0, August 24, 1999.

PRO-536-BCPR, *Beryllium Characterization Procedure*, Revision 0, August 24, 1999.

RFETS, Environmental Waste Compliance Guidance #25, Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition.

RFETS, Environmental Waste Compliance Guidance #27, Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal.

RFETS, RFCA RSOP for Recycling Concrete, September 28, 1999

Historical Site Assessment Report for the Area 5 – Group 14 Facilities, dated December 2002, Revision 0.

RFCA Contact Record, *Building 903A and 903B Reconnaissance Level Characterization*, dated 6/30/04.

Closure Description Document For Partial Closure Of RCRA Interim Status Unit 18.01, DOE Letter 04-DOE-00081, Dated March 11, 2004.

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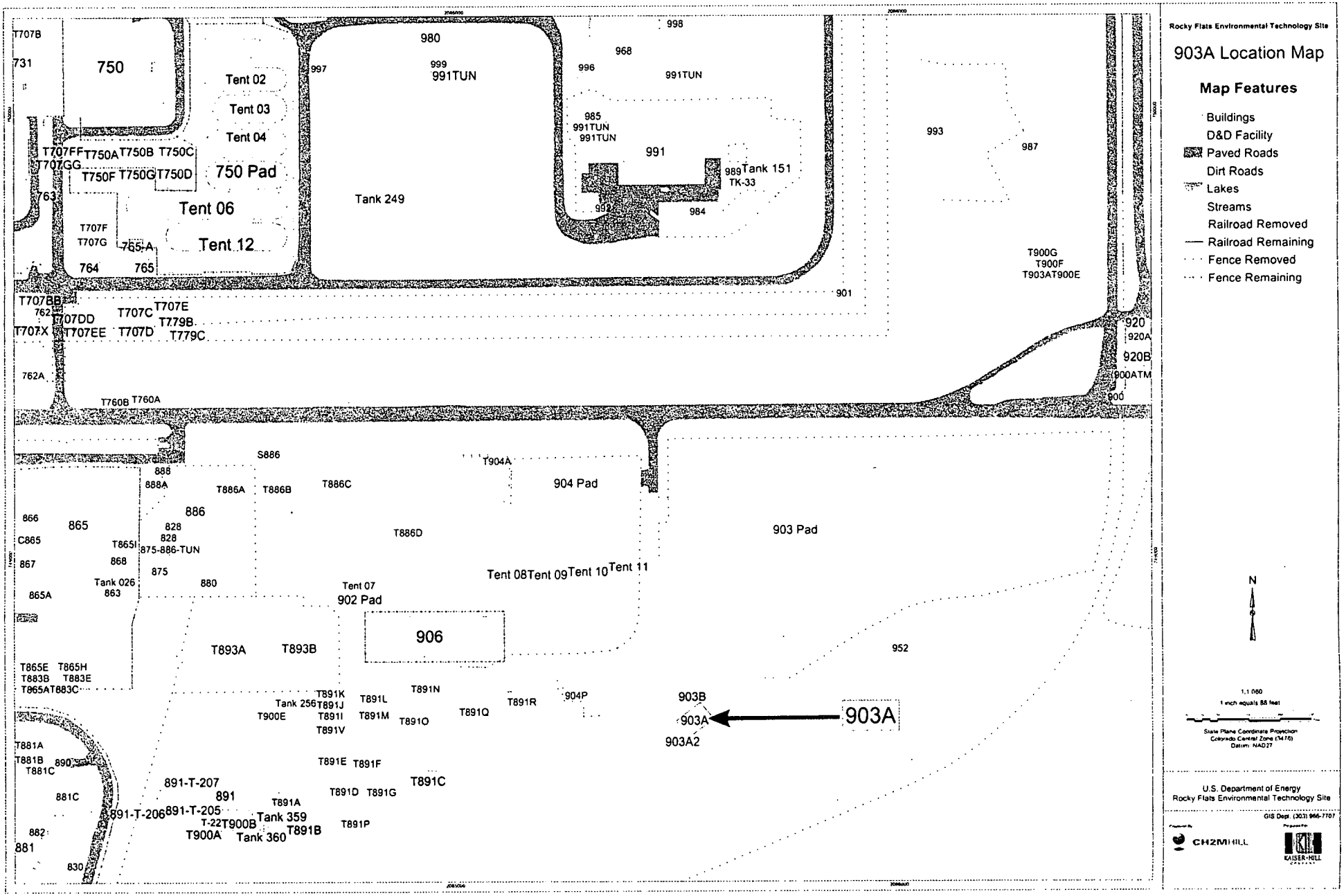
ATTACHMENT A

Facility Location Map


Rocky Flats Environmental Technology Site
903A Location Map
Map Features
Buildings
D&D Facility
Paved Roads
Dirt Roads
Lakes
Streams
Railroad Removed
Railroad Remaining
Fence Removed
Fence Remaining
750
750 Pad
Tent 02
Tent 03
Tent 04
Tent 06
Tent 12
Tank 249
Tank 151
TK-33
904 Pad
903 Pad
902 Pad
906
Tent 07
Tent 08
Tent 09
Tent 10
Tent 11
Tank 026
Tank 256
Tank 359
Tank 360
903A
903B
903A2
N
1 inch equals 88 feet
State Plane Coordinate Projection
Colorado Central Zone (5476)
Datum: NAD27
U.S. Department of Energy
Rocky Flats Environmental Technology Site
GIS Dept. (303) 966-7707
CH2MHILL
KAISER-HILL

ATTACHMENT B

Radiological Data Summaries and Survey Maps

Survey Area: 5	Survey Unit: 903A02	Building: 903A
Description: Building 903A Decon Pad (Interior and Exterio)		

Rocky Flats Environmental Technology Site
Final Radiological Survey Summary Results

Total Surface Activity Measurements

Nbr Random Measurements Required: 15 | Nbr Biased Measurements Required: 0 | Nbr QC Required: 2

Nbr Random Measurements Performed: 31 | Nbr Biased Measurements Performed: 10 | Nbr QC Performed: 3

Alpha

Maximum:	72.8 dpm/100cm²
Minimum:	-7.1 dpm/100cm²
Mean:	23.4 dpm/100cm²
Standard Deviation:	20.1
QC Maximum:	39.0 dpm/100cm²
QC Minimum:	16.3 dpm/100cm²
QC Mean:	31.1 dpm/100cm²
Transuranic $DCGL_W$:	100.0 dpm/100cm²
Transuranic $DCGL_{EMC}$:	300.0 dpm/100cm²

Removable Surface Activity Measurements

Nbr Random Measurements Required: 15 | Nbr Biased Measurements Required: 0

Nbr Random Measurements Performed: 31 | Nbr Biased Measurements Performed: 10

Alpha

Maximum:	2.9 dpm/100cm²
Minimum:	-1.2 dpm/100cm²
Mean:	-0.3 dpm/100cm²
Standard Deviation:	1.1
Transuranic $DCGL_W$:	20.0 dpm/100cm²

Media Sample Results

Nbr Random Required: 0 | Nbr Biased Required: 0

Nbr Random Collected: 0 | Nbr Biased Collected: 0

Conclusion - A comparison of the random, biased and QC measurement results against the PDSP Table 7-1 Surface Contamination Guideline limits was conducted; the comparison demonstrates that this survey unit passes the criterion specified in the PDSP.

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Survey Area: 5 **Survey Unit:** 903A02 **Building:** 903A

Description: Building 903A Decon Pad (Interior and Exterio)

Instrument Data Sheet

Inst/RCT Number	RCT ID	Analysis Date	Instr Model	Instru S/N	Probe Type	Calibration Due Dt	Instru Efficiency		A-Priori MDA (dpm/100cm²)		Survey Type
							Alpha	Beta	Alpha	Beta	
1	712193	08/05/04	Electra	290	DP-6	09/16/04	0.210	NA	48.0	NA	T/S
2	702575	08/05/04	Electra	672	DP-8	01/12/05	0.162	NA	48.0	NA	S
3	712193	08/05/04	Ludlum 292	99042	NA	10/26/04	0.349	NA	10.0	NA	R
4	702575	08/09/04	Electra	297	DP-6	01/27/04	0.219	NA	48.0	NA	T/S
5	712467	08/09/04	Electra	3109	DP-6	12/14/04	0.222	NA	48.0	NA	T
6	712193	08/09/04	Electra	290	DP-6	09/16/04	0.210	NA	48.0	NA	Q/S
7	711447	08/09/04	Ludlum 292	99042	NA	10/26/04	0.349	NA	10.0	NA	R
8	702575	08/12/04	Electra	1271	DP-6	01/01/05	0.227	NA	48.0	NA	T/S
9	702575	08/12/04	Ludlum 292	99042	NA	10/26/04	0.349	NA	10.0	NA	R
10	712193	08/12/04	Electra	1512	DP-6	11/10/04	0.219	NA	48.0	NA	Q

Survey Types: T = Total Surface Activity, Q = TSA QC, S = Scan, R = Removable Surface Activity, I = Investigation

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Survey Area: 5 **Survey Unit:** 903A02 **Building:** 903A

Description: Building 903A Decon Pad (Interior and Exterio)

Random Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
903A02PRP-N001	7	-1.2	N/A	
903A02PRP-N002	7	-1.2	N/A	
903A02PRP-N003	7	0.3	N/A	
903A02PRP-N004	7	-1.2	N/A	
903A02PRP-N005	7	0.3	N/A	
903A02PRP-N006	7	-1.2	N/A	
903A02PRP-N007	7	-1.2	N/A	
903A02PRP-N008	7	-1.2	N/A	
903A02PRP-N009	7	-1.2	N/A	
903A02PRP-N010	7	-1.2	N/A	
903A02PRP-N011	7	-1.2	N/A	
903A02PRP-N012	7	-1.2	N/A	
903A02PRP-N013	7	-1.2	N/A	
903A02PRP-N014	7	-1.2	N/A	
903A02PRP-N015	7	0.3	N/A	
903A02PRP-N016	7	0.3	N/A	
903A02PRP-N017	7	-1.2	N/A	
903A02PRP-N018	7	-1.2	N/A	
903A02PRP-N019	7	-1.2	N/A	
903A02PRP-N020	7	-1.2	N/A	
903A02PRP-N021	7	-1.2	N/A	
903A02PRP-N022	7	0.3	N/A	
903A02PRP-N023	7	-1.2	N/A	
903A02PRP-N034	9	2.0	N/A	
903A02PRP-N035	9	0.5	N/A	
903A02PRP-N036	9	-0.9	N/A	
903A02PRP-N037	9	-0.9	N/A	
903A02PRP-N038	9	-0.9	N/A	
903A02PRP-N039	9	0.5	N/A	

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Survey Area: 5	Survey Unit: 903A02	Building: 903A
Description: Building 903A Decon Pad (Interior and Exterio)		

Random Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
903A02PRP-N040	9	0.5	N/A	
903A02PRP-N041	9	0.5	N/A	

Biased Removable Surface Activity Data Sheet

Biased Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
903A02PBP-N024	3	1.4	N/A	
903A02PBP-N025	3	2.9	N/A	
903A02PBP-N026	3	1.4	N/A	
903A02PBP-N027	7	-1.2	N/A	
903A02PBP-N028	7	0.3	N/A	
903A02PBP-N029	7	0.3	N/A	
903A02PBP-N030	7	1.8	N/A	
903A02PBP-N031	7	-1.2	N/A	
903A02PBP-N032	7	-1.2	N/A	
903A02PBP-N033	7	0.3	N/A	

Comments:

Survey Area: 5 **Survey Unit:** 903A02 **Building:** 903A

Description: Building 903A Decon Pad (Interior and Exterio)

Random/QC Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
903A02QRP-N001	6	38.2	N/A	
903A02PRP-N001	10	29.6	N/A	
903A02PRP-N002	4	26.4	N/A	
903A02PRP-N003	4	11.3	N/A	
903A02PRP-N004	4	14.5	N/A	
903A02PRP-N005	5	41.1	N/A	
903A02PRP-N006	4	2.2	N/A	
903A02PRP-N007	4	11.3	N/A	
903A02PRP-N008	4	23.6	N/A	
903A02PRP-N009	4	8.1	N/A	
903A02PRP-N010	5	19.9	N/A	
903A02PRP-N011	4	20.4	N/A	
903A02QRP-N011	6	16.3	N/A	
903A02PRP-N012	5	14.1	N/A	
903A02PRP-N013	4	8.1	N/A	
903A02PRP-N014	5	14.1	N/A	
903A02PRP-N015	5	32.1	N/A	
903A02PRP-N016	5	-2.6	N/A	
903A02PRP-N017	5	5.1	N/A	
903A02PRP-N018	5	-7.1	N/A	
903A02PRP-N019	5	16.8	N/A	
903A02PRP-N020	5	10.9	N/A	
903A02PRP-N021	5	-3.9	N/A	
903A02PRP-N022	5	10.9	N/A	
903A02PRP-N023	5	7.8	N/A	
903A02PRP-N034	8	10.3	N/A	
903A02PRP-N035	8	46.9	N/A	

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Survey Area: 5	Survey Unit: 903A02	Building: 903A

Description: Building 903A Decon Pad (Interior and Exterio)

Random/QC Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
903A02QRP-N035	10	39.0	N/A	
903A02PRP-N036	8	39.8	N/A	
903A02PRP-N037	8	14.7	N/A	
903A02PRP-N038	8	16.1	N/A	
903A02PRP-N039	8	22.2	N/A	
903A02PRP-N040	8	38.1	N/A	
903A02PRP-N041	8	23.5	N/A	

Biased Total Surface Activity Data Sheet

Biased Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
903A02PBP-N024	1	72.8	N/A	
903A02PBP-N025	1	3.3	N/A	
903A02PBP-N026	1	19.0	N/A	
903A02PBP-N027	4	46.2	N/A	
903A02PBP-N028	4	3.7	N/A	
903A02PBP-N029	4	59.9	N/A	
903A02PBP-N030	4	48.0	N/A	
903A02PBP-N031	4	61.7	N/A	
903A02PBP-N032	4	59.9	N/A	
903A02PBP-N033	4	57.2	N/A	

Comments: Biased points 24, 25, & 26 taken in floor trench, 27 & 28 taken on curtain posts, 29 & 30 taken on metal platform and concrete below, 31, 32 & 33 taken on piping between 903A and 903B.

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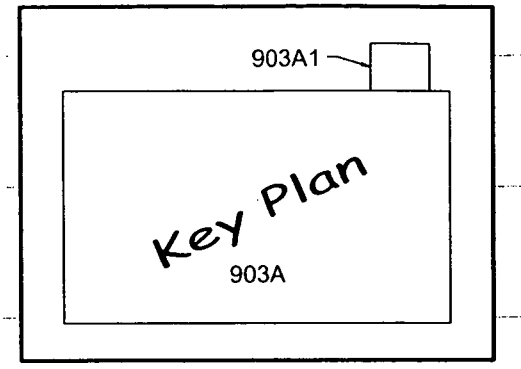
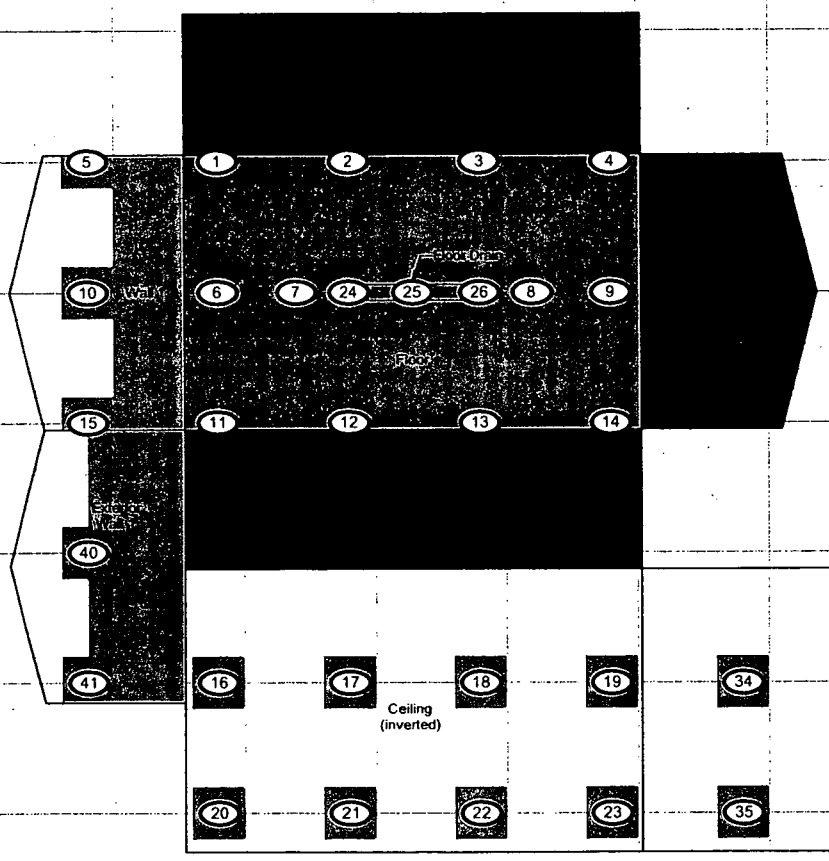
PRE-DEMOLITION SURVEY FOR B903A

Survey Area: 5 **Survey Unit: 903A02** **Classification: 2**
Building: 903A
Survey Unit Description: Building 903A Interior & Exterior
Total Area: 682 sq. m. **Total Floor Area: 183 sq. m.**
Grid Spacing for Survey Points: 5m. X 5m.



903A



Note:

Biased points 27 & 28 taken on curtain posts, 29 & 30 taken on metal platform and concrete below, 31, 32 & 33 taken on piping between 903A and 903B.

STARTING POINT FOR SQUARE SAMPLING GRID (X39, Y5)

Scan Area

SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 30

0 METERS 10

1 inch = 24 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s) & RCT ID #(s):
1, 2, 4, 6, 8

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707 Prepared for:

CH2MHILL Communications Group

KAISER HILL

MAP ID: 03-0201/903A02-SC Aug. 11, 2004

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ATTACHMENT C

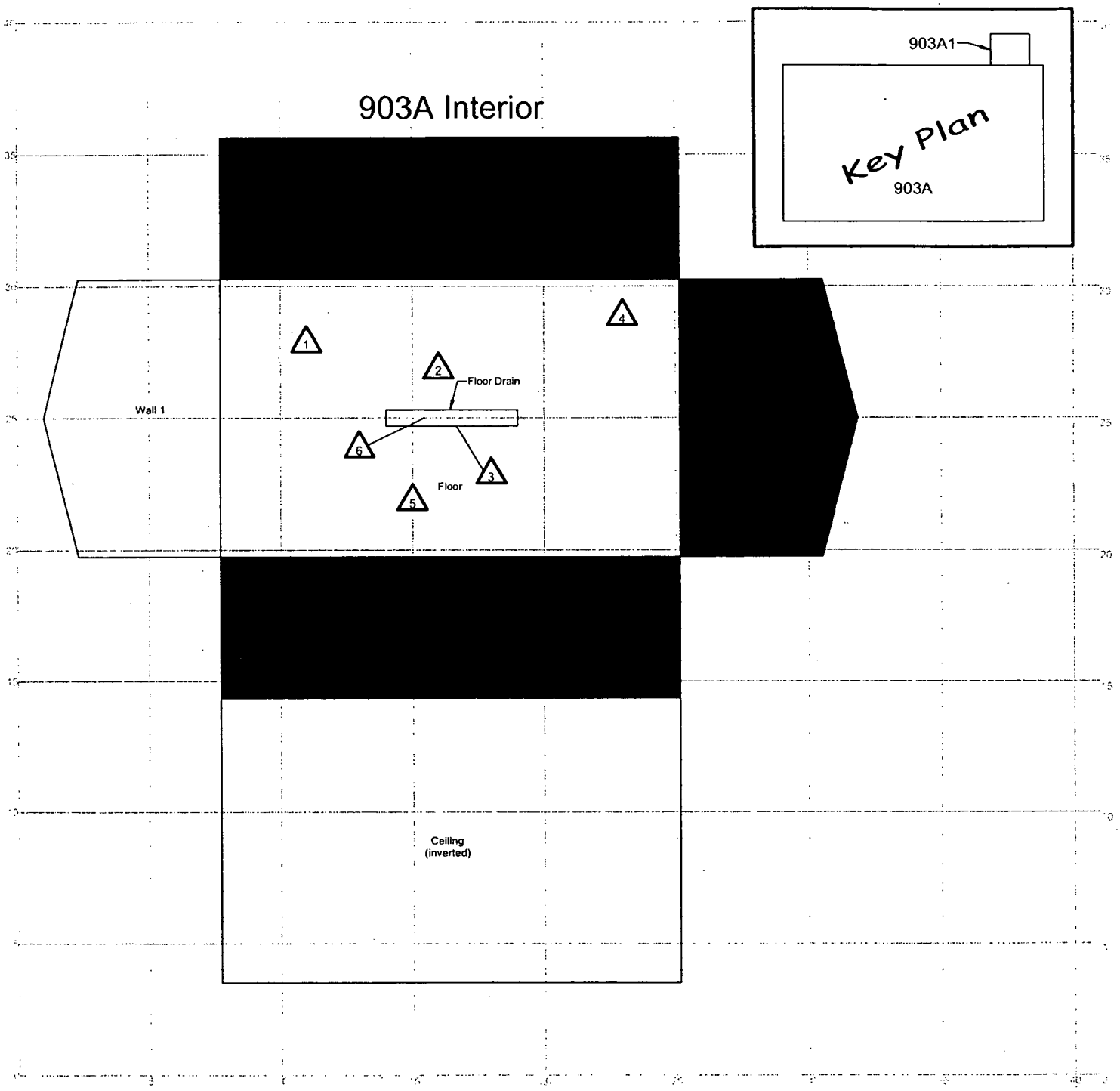
Chemical Data Summaries and Sample Maps

Beryllium Data Summary

Sample Number	Map Survey Point Location	Room	Sample Location	Result ($ug/100\ cm^2$)
Building 903A – RIN04Z2377				
903A-08052004-9-001	1	1 –Slab	Northwest corner of concrete slab floor	< 0.1
903A-08052004-9-002	2	1 –Slab	Center of concrete slab, N side of pit	< 0.1
903A-08052004-9-003	3	1 –Slab	Lip of pit, in center of concrete slab	< 0.1
903A-08052004-9-004	4	1 – Slab	Northeast corner of concrete slab floor	< 0.1
903A-08052004-9-005	5	1 –Slab	South side, near middle of concrete slab	< 0.1
903A-08052004-9-006	6	1 - Slab	Floor of concrete pit, near west end	< 0.1

CHEMICAL SAMPLE MAP

Building 903A
Beryllium



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 25

0 METERS 8

1 inch = 18 feet 1 grid sq. = 1 sq. m.

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

Prepared for:

CH2MHILL
Communications Group

KAISER HILL COMPANY

MAP ID: 03-0201\903A02-BE

Aug. 09, 2004

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ATTACHMENT D

Data Quality Assessment (DQA) Detail

DATA QUALITY ASSESSMENT (DQA)

VERIFICATION & VALIDATION (V&V) OF RESULTS

V&V of the data confirm that appropriate quality controls are implemented throughout the sampling and analysis process, and that any substandard controls result in qualification or rejection of the data in question. The required quality controls and their implementation are summarized in a tabular, checklist format for each category of data – radiological surveys and chemical analyses (specifically beryllium).

DQA criteria and results are provided in a tabular format for each suite of surveys or chemical analyses performed. The radiological survey assessment is provided in Table D-1 and beryllium in Table D-2. A data completeness summary for all results is given in Table D-3.

All relevant Quality records supporting this report are maintained in the RISS Characterization Project File. The report will be submitted to the CERCLA Administrative Record for permanent storage within 30 days of approval by the Regulators. All radiological data are organized into Survey Packages, which correlate to unique (MARSSIM) Survey Units. Chemical data are organized by RIN (Report Identification Number) and are traceable to the sample number and corresponding sample location.

Beta/gamma survey designs were not implemented for Building 903A based on the conservatism of the transuranic limits used as DCGLs in the unrestricted release decision process. Survey designs were implemented based on the transuranic limits used as DCGLs in the unrestricted release decision process. All survey results were evaluated against, and were less than the Transuranic $DCGL_w$ (100 dpm/100cm^2) and the Uranium $DCGL_w$ (5,000 dpm/100cm^2) unrestricted release limits.

Consistent with EPA's G-4 DQO process, the radiological survey design for each survey unit performed per PDS requirements was optimized by checking actual measurement results acquired during pre-demolition surveys against the model output with original estimates. Use of actual sample/survey (result) variances in the MARSSIM DQO model confirms that an adequate number of surveys were acquired.

DQA SUMMARY

In summary, the data presented in this report have been verified and validated relative to the quality requirements and project decisions as stated in the original DQOs. All data are useable based on qualifications stated herein and are considered satisfactory without qualification. All media surveyed and sampled yielded results less than their associated action levels and with acceptable certainties.

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Based upon an independent review of the radiological data, it is determined that the original project DQOs satisfied MARSSIM guidance. All facility contamination levels were below applicable DCGL unrestricted release levels confirming Type 2 facility classification. Minimum survey requirements were met, sampling/survey protocol was performed in accordance with applicable RSPs, survey units were properly designed and bounded, and instrument performance and calibration were within acceptable limits. All results meet the PDS unrestricted release criteria.

Chain of Custody was intact; documentation was complete, hold times were acceptable (where applicable,) and packaging integrity/custody seals were maintained throughout the sampling/analysis process. Level 2 Isolation Controls have been posted to prevent the inadvertent introduction of contamination into the facilities. On this basis, Building 903A meets the unrestricted release criteria with the confidences stated herein.

Table D-1 V&V of Radiological Results for Building 903A

V&V CRITERIA, RADIOLGICAL SURVEYS		K-H RSP 16.00 Series MARSSIM (NUREG-1575)		
QUALITY REQUIREMENTS				
	Parameters	Measure	Frequency	COMMENTS
ACCURACY	Initial calibrations	90%<x<110%	≥1	Multi-point calibration through the measurement range encountered in the field; programmatic records.
	Daily source checks	80%<x<120%	≥1/day	Performed daily/within range.
	Local area background: Field	typically < 10 dpm	≥1/day	All local area backgrounds were within expected ranges (i.e., no elevated anomalies.)
PRECISION	Field duplicate measurements for TSA	≥5% of real survey points	≥10% of reals	N/A
REPRESENTATIVENESS	MARSSIM methodology: Survey Unit 903A02 (interior and exterior).	statistical and biased	NA	Random w/ statistical confidence.
	Survey Maps	NA	NA	Random and biased measurement locations controlled/mapped to ±1m.
	Controlling Documents (Characterization Pkg; RSPs)	qualitative	NA	Refer to the Characterization Package (planning document) for field/sampling procedures (located in Project files); thorough documentation of the planning, sampling/analysis process, and data reduction into formats.
COMPARABILITY	Units of measure	dpm/100cm^2	NA	Use of standardized engineering units in the reporting of measurement results.
COMPLETENESS	Plan vs. Actual surveys Usable results vs. unusable	>95% >95%	NA	See Table D-3 for details.
SENSITIVITY	Detection limits	TSA: ≤50 dpm/100cm^2 RA: ≤10 dpm/100cm^2	all measures	PDS MDAs ≤ 50% $DCGL_w$

Table D-2 V&V of Beryllium Results for Building 903A

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
BERYLLIUM	Prep: NMAM 7300 METHOD: OSHA ID-125G	LAB ---->	Johns Manville, Littleton, Co.	
		RIN ---->	RIN04Z2377	
QUALITY REQUIREMENTS		Measure	Frequency	COMMENTS
ACCURACY	Calibrations Initial	linear calibration	≥1	No qualifications significant enough to change project decisions. All results were below associated action levels and investigative levels.
	Continuing	80%<%R<120%	≥1	
	LCS/MS	80%<%R<120%	≥1	
	Blanks – lab & field	<MDL	≥1	
	Interference check std (ICP)	NA	NA	
PRECISION	LCSD	80%<%R<120% (RPD<20%)	≥1	
	Field duplicate	all results < RL	≥1	
REPRESENTATIVENESS	COC	Qualitative	NA	
	Hold times/preservation	Qualitative	NA	
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA	
COMPARABILITY	Measurement units	ug/100cm^2	NA	
COMPLETENESS	Plan vs. Actual samples Usable results vs. unusable	>95% >95%	NA	
SENSITIVITY	Detection limits	MDL of 0.012 ug/100cm^2	all measures	

Table D-3 Data Completeness Summary For Building 903A					
ANALYTE	**Building/Area/ Unit**	**Sample Number Planned (Real & QC)**	**Sample Number Taken (Real & QC)**	**Project Decisions (Conclusions) & Uncertainty**	**Comments (RIN, Analytical Method, Qualifications, etc.)**
Beryllium	Building 903A (interior)	5 biased	6 biased	No contamination found at any location	10CFR850; OSHA ID-125G RIN04Z2377 No results above the action level (0.2 ug/100cm^2) or investigative level (0.1 ug/100cm^2).
Radiological	Survey Area 5 Survey Unit: 903A02 Bldg. 903A Decontamination Pad (interior and exterior)	41 ά TSA (31 systematic/ 10 biased) 41 α Smears (31 systematic/ 10 biased) 3 QC TSA 100% scan of floors and 25% scan of the remaining accessible surfaces	41 ά TSA (31 systematic/ 10 biased) 41 α Smears (31 systematic/ 10 biased) 3 QC TSA 100% scan of floors and 25% scan of the remaining accessible surfaces	No contamination at any location; all values below unrestricted release levels	Transuranic DCGLs used.