Rocky Flats Environmental Technology Site

PRE-DEMOLITION SURVEY REPORT (PDSR)

Building 879 Closure Project

VERSION 0

January 3, 2005

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

1/48

PRE-DEMOLITION SURVEY REPORT (PDSR)

Building 879 Closure Project

VERSION 0

January 3, 2005

Reviewed by: _____ Date: 1/5/05
Don Risoli, Quality Assurance

Reviewed by: _____ Date: 1/5/05
D.P. Snyder, RISS ESH&Q Manager

Approved by: _____ Date: 1.24.05
Mike Swartz, K-H D&D Project Manager

TABLE OF CONTENTS

ATTACHMENTS

3

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 complzeteness
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 879. Because this Type 2 facility will be decommissioned, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP) to supplement the Reconnaissance Level Characterization of this Type 2 facility. Building surfaces characterized as part of this PDS included the floor, walls, ceiling and roof. Environmental media beneath and surrounding the facility was not within the scope of this PDS and will be addressed using the Soil Disturbance Permit process and in compliance with Rocky Flats Cleanup Agreement (RFCA).

This PDS encompassed both radiological and chemical characterization to enable the 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 and Reconnaissance Level Characterization Report (RLCR).

PDS results indicate that radiological contaminates exist in excess of the Pre-Demolition Survey Plan (PDSP) unrestricted release limits. Surfaces within the Building 879 plenum could not be decontaminated below the PDSP radiological unrestricted release limits without compromising the structural integrity of the building, or were too difficult to decontaminate. Therefore, the plenum side of the structure will be removed and managed as low level radiological waste (LLW) during demolition. The fan room side of the structure met PDSP unrestricted release limits and will be removed and managed as sanitary waste during demolition.

There is no beryllium or hazardous waste in excess of the PDSP unrestricted release limits. However, fixatives were used to immobilize beryllium contamination. All PCB 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) have been removed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations. Asbestos abatement was not required in Building 879 since all in-process asbestos sample results were non-detect. PCBs (polychlorinated biphenyls) in paint meet the unrestricted release criteria of the RSOP for Facility Disposition (specific to 40CFR 761.62c).

Based upon this PDSR, Building 879 can be demolished and the waste managed as LLW and sanitary waste as applicable. To ensure the facility remains free of further contamination and PDS data remain valid, Level 2 Isolation Controls have been established and the areas posted accordingly.

1 INTRODUCTION

A Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Building 879. Because this Type 2 facility will be decommissioned, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP) to supplement the Reconnaissance Level Characterization of this Type 2 facility. Building surfaces characterized as a part of this PDS included floor, walls, ceiling and roof. Environmental media beneath and surrounding the facility was not within the scope of this PDS and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA.

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed, among these is Building 879. The location of this facility is shown in Attachment A, *Facility Location Map*. This facility no longer supports the RFETS mission and will be decommissioned to reduce Site infrastructure, risks and/or operating costs.

Before this Type 2 facility can be decommissioned, the Data Quality Objectives (DQOs) for a Pre-Demolition Survey (PDS) must be satisfied; this document presents the PDS results for Building 879. 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, Reconnaissance Level Characterization Report, and in-process survey and sample data.

1.1 Purpose

The purpose of this report is to communicate and document the results of the Building 879 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 879. Environmental media beneath and surrounding the facility is not within the scope of this PDSR and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA.

6

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), with the exception of the plenum radiological surveys. Refer to section 2.0 of MAN-127-PDSP for these DQOs. The plenum radiological survey Data Quality Objectives (DQOs) were met by following Radiological Safety Practice procedures 3-PRO-165-07.02, *Contamination Monitoring Requirements*, and PRO-267-RSP-09.05, *Radiological Characterization for Surface Contaminated Objects.*

2 HISTORICAL SITE ASSESSMENT

A Facility-specific Historical Site Assessment (HSA) and a Reconnaissance Level Characterization (RLC) was conducted to understand the facility history and related hazards. The HSA consisted of facility walk-downs, interviews, and document review, including review of the Historical Release Report, and were used to design the RLC. The RLC for Building 879 was performed in FY 2001 as part of the Building 883 Cluster RLCR (refer to *Reconnaissance Level Characterization Report For The Building 883 Cluster,* dated July 2001). Based on the RLC results, Building 879 was classified as a Type 2 facility, therefore, PDS characterization was required before decommissioning of the facility. The HSA, RLC and in-process results were used to identify PDS data gaps and needs, and to develop radiological and chemical PDS characterization packages. The RLCR showed radiological contamination inside Building 879. The HSA and RLC documentation are located in the RISS Characterization Project files.

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

Radiological contamination was identified during the RLC, as well as, during the in-process stripout and decontamination phases in Building 879. Thus, stripout and decontamination was required prior to the PDS. All potentially contaminated equipment and system piping were removed from the building prior to PDS. Fixed radiological contamination could not be decontaminated below the PDS unrestricted release criteria without compromising the structural integrity of the building or was too difficult to decontaminate. Radiological contamination was embedded into the structure such that if the decontamination effort chased the contamination into the cracks and joints, the structural integrity of the facility would be compromised to the point of being unsafe for human occupancy. Therefore, the plenum portion of the building will be removed and managed as LLW during demolition. Plenum surfaces were decontaminated in order to remove as much removable contamination as practical, and then fixatives were applied to immobilize any remaining loose contamination. The plenum was then re-surveyed for waste disposal and LLW demolition planning purposes.

No removable radiological or beryllium contamination existed above the unrestricted release criteria after fixative application. Appropriate controls will be incorporated into the demolition work packages to control these hazards during demolition. The plenum in-process radiological waste disposal and LLW demolition planning surveys are contained in Attachment B-1, *In-Process Radiological Survey Forms.* The following bullets summarize the results of the in-process surveys:

7

- Interior plenum surfaces

  Pre-fixative: 150,000 dpm/100cm^2 fixed, 10,000 dpm/100cm^2 loose

  Post-fixative: <150,000 dpm/100cm^2 fixed, <1,000 dpm/100cm^2 loose

The Fan Room portion of Building 879 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 Fan Room 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).

Radiological survey unit package 879001 was developed for all the Fan Room surfaces. The survey package was developed 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*.

Twenty seven (27) TSA measurements (15 random, 10 biased and 2 QC) and twenty (25) RSA measurements (15 random and 10 biased) were performed; and a minimum 10% of the Fan Room surfaces were scanned. The PDS data confirmed that the Fan Room surfaces do not contain radiological contamination above the surface contamination guidelines provided in the PDSP. Fan Room radiological survey data, statistical analysis results, and survey locations are presented in Attachment B-2, *Fan Room Radiological Data Summary and Survey Maps*. The radiological survey unit package is maintained in the RISS Characterization Project files. Level 2 Isolation Control postings are displayed on the facility to ensure no radioactive materials are inadvertently introduced.

Building 879 exterior was surveyed per PDS requirements as part of the *Reconnaissance Level Characterization Report for the Building 883 Cluster,* dated July 2001, and met PDS unrestricted release levels. Additional random confirmatory swipe surveys of wall and roof surfaces of the Building 879 exterior were performed during the PDS survey, and all results were less than the PDS unrestricted release levels. Refer to Attachment B-3, *879 Confirmatory Exterior Survey* for the building exterior confirmatory radiological survey.

4 CHEMICAL CHARACTERIZATION AND HAZARDS

Building 879 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, beryllium, and RCRA constituents. Isolation control postings are displayed at building entrances to ensure no hazardous materials are introduced.

4.1 Asbestos

A survey of building materials suspected of containing asbestos was conducted during in-process stripout of the facility. A CDPHE-certified asbestos inspector conducted the inspections and sampling in accordance with the *Asbestos Characterization Protocol, PRO-563-ACPR, Revision 1.* Building materials suspected of containing asbestos were identified for sampling at the discretion of the inspector. All in process asbestos samples were non-detect, therefore, asbestos abatement was not required in Building 879 and no further asbestos sampling was performed as part of this PDS.

4.2 Beryllium (Be)

During the in-process stripout and decontamination phase of the Building 879 project, all areas containing loose beryllium contamination were decontaminated to below the unrestricted release limit of 0.2 $\mu g/100cm^2$. The use of fixatives was necessary to decontaminate some areas below the unrestricted release limit. Levels up to 0.665 $\mu g/100cm^2$ were immobilized using fixative. Since Building 879 was on the list of Known Beryllium Areas, both random and biased PDS sampling was required. Once the plenum was isolated from Building 883, random and biased beryllium PDS swipes were collected and analyzed.

Random and biased beryllium smear samples were collected in Building 879 in accordance with the PDSP and the *Beryllium Characterization Procedure,* PRO-536-BCPR, Revision 0, September 9, 1999. The table in Attachment C summarizes the PDS beryllium swipe data for Building 879. All final "as left" beryllium PDS swipe results were less than the action levels of 0.2 $\mu g/100cm^2$ and investigative levels of 0.1 $\mu g/100cm^2$. Detailed PDS beryllium laboratory swipe data and location maps are contained in Attachment C, *Chemical Data Summaries and Sample Maps.*

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

Based on a review of the HSAR, RLCR, interviews and facility walk-downs, Building 879 functioned as the HEPA Filter Ventilation Plenum building for Building 883. Although RCRA/CERCLA products were used in the facility, there is no evidence of RCRA/CERCLA contamination. Also, the filter plenum that directly served machining equipment in Building 865 was sampled and determined to be free of RCRA/CERCLA constituents. On this basis, it is very unlikely that Building 879 (a general building filter plenum) became contaminated with RCRA/CERCLA constituents. Therefore, sampling was not performed as part of this PDSR.

The facility 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. However, these items have been removed and managed in accordance with the Colorado Hazardous Waste Act.

Sampling for lead in paint in this facility was not performed. 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.

4.4 Polychlorinated Biphenyls (PCBs)

Based on a review of the HSAR and facility walk-downs, there is no history of PCB use or evidence of PCB contamination in this facility. On this basis, no PCB sampling was performed. Based on the age of Building 879 (constructed before 1980), paints used are assumed to contain PCBs, and painted surfaces will be managed as PCB Bulk Product Waste. The facility may have contained PCB fluorescent light ballasts, however, all leaking PCB ballasts, and those greater than 9 pounds have been removed from the facility and managed appropriately.

5 PHYSICAL HAZARDS

Physical hazards associated with Building 879 are 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, 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 the decommissioning of Building 879, 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 decommissioning of the plenum portion of Building 879 will generate LLW and will be removed and sent to an offsite LLW landfill. The decommissioning of the Fan Room of Building 879 will generate sanitary waste and will be removed and sent to an offsite sanitary waste landfill. Estimated waste types and volumes are presented below. All ballasts 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)
879	3,000 – sanitary	0	1,300 – LLW 1,000 - sanitary	950 – sanitary	0	0	Roofing buildup - 400 sanitary Insulation - 1,300 sanitary

8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, Building 879 is ready for demolition. PDS results indicate that radiological contaminates exist in excess of the PDSP unrestricted release limits. Surfaces within the Building 879 plenum could not be decontaminated below the PDSP radiological unrestricted release limits without compromising the structural integrity of the building, or were too difficult to decontaminate. Therefore, the plenum side of the structure will be removed and managed as low level radiological waste (LLW) during demolition. The fan room side of the structure met PDSP unrestricted release limits and will be removed and managed as sanitary waste during demolition.

Building 879 does not possess beryllium or chemical contamination in excess of the PDSP unrestricted release limits. However, fixatives were used to immobilize beryllium contamination. All PCB 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) have been removed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations. In process asbestos sampling was conducted and all asbestos samples were non-detect, therefore, asbestos abatement was not required in Building 879 and no further asbestos sampling was performed as part of this PDS.

The PDS for Building 879 was performed in accordance with the DDCP and PDSP, all PDSP DQOs were met, and all data satisfied the PDSP DQA criteria, with the exception of the plenum radiological surveys. The plenum radiological survey Data Quality Objectives (DQOs) were met by following Radiological Safety Practice procedures 3-PRO-165-07.02, *Contamination Monitoring Requirements*, and PRO-267-RSP-09.05, *Radiological Characterization for Surface Contaminated Objects*. Environmental media beneath and surrounding the facility will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA. To ensure Building 879 remains free of further contamination and PDS data remain valid, Level 2 Isolation Controls have been established and the facility posted accordingly.

12

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.*

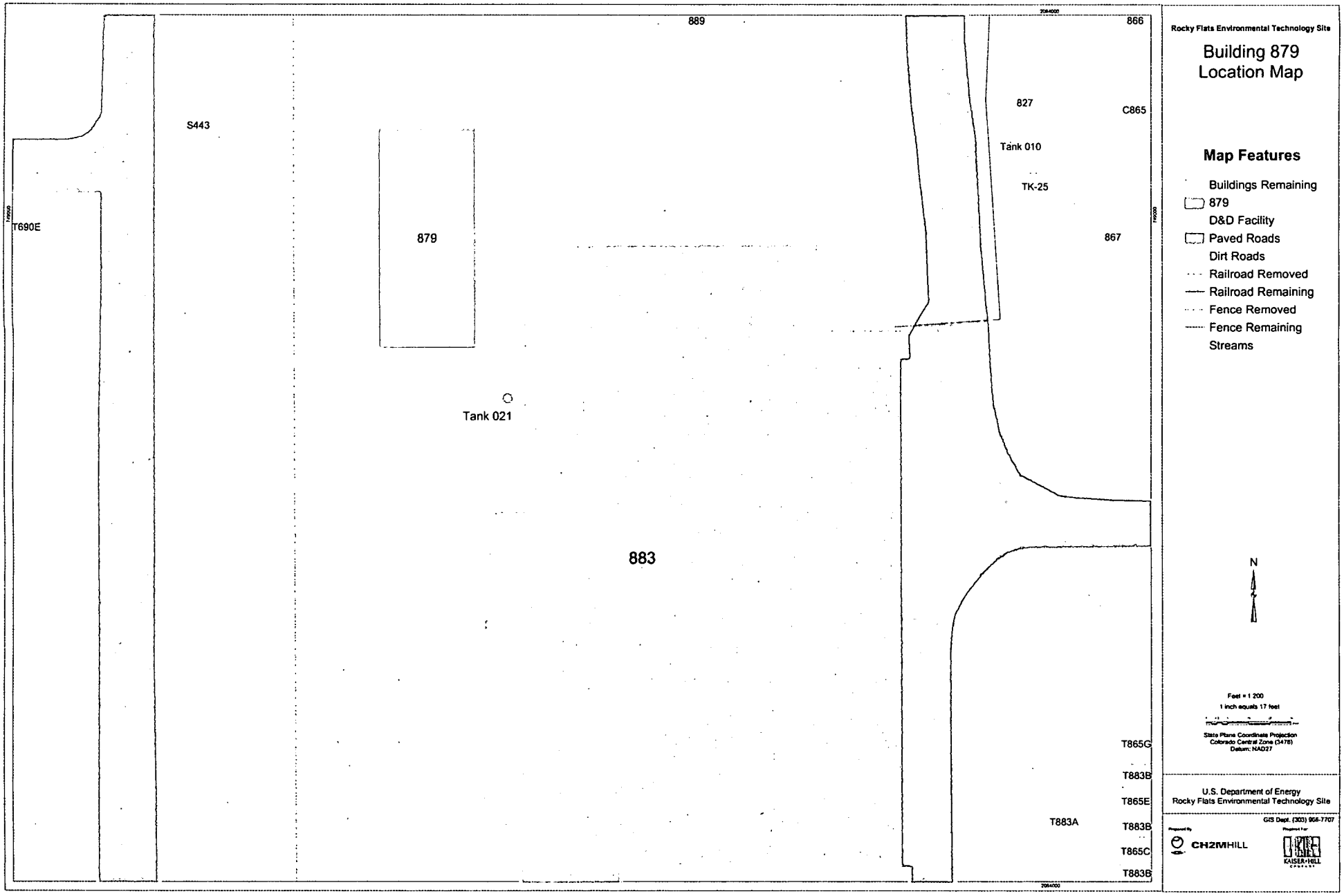
RFETS, *Environmental Waste Compliance* Guidance #27, Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal.

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

Reconnaissance Level Characterization Report for Building 883 Cluster, dated July 2001

ATTACHMENT A

Facility Location Map


889
866
827
C865
S443
Tank 010
TK-25
T690E
879
867
Tank 021
883
T865G
T883B
T865E
T883A
T883B
T865C
T883B
Rocky Flats Environmental Technology Site
Building 879
Location Map
Map Features
Buildings Remaining
879
D&D Facility
Paved Roads
Dirt Roads
Railroad Removed
Railroad Remaining
Fence Removed
Fence Remaining
Streams
N
Feet = 1 200
1 inch equals 17 feet
State Plane Coordinate Projection
Colorado Central Zone (3476)
Datum: NAD27
U.S. Department of Energy
Rocky Flats Environmental Technology Site
GIS Dept. (303) 966-7707
CH2MHILL
KAIRSER-HILL
W:\Bldg_chart\Project\JSA 883Cluster\B879_LoPlan.mxd

ATTACHMENT B-1

In-process Radiological Survey Forms

Building 879 Main Plenum, North Duct, and Airbox Contamination Data Summary

Survey Point	Approximate Location (See Attached Map)	Beta Accessible Removable dpm/100cm^2	Beta Accessible Fixed dpm/100cm^2
1	879 SOUTH Plenum Demister Wall	2,500	5,000
2	Demister Wall	10,000	25,000
3	Demister Wall	3,000	5,000
4	Demister Floor	6,000	20,000
5	Demister Floor	5,000	20,000
6	Demister Floor	10,000	150,000
7	Demister Rack	5,000	6,500
8	Demister Rack	10,000	10,000
9	Demister Rack	2,500	8,000
10	1st Stage Floor	8,000	20,000
11	1st Stage Floor	2,000	6,000
12	1st Stage Floor	2,000	5,000
13	1st Stage Overhead	2,000	10,000
14	1st Stage Rack	5,000	20,000
15	1st Stage Rack	5,000	20,000
16	1st Stage Rack	3,000	8,000
17	2nd Stage Floor	1,500	4,000
18	2nd Stage Floor	2,000	10,000
19	2nd Stage Floor	2,000	10,000
20	2nd Stage Overhead	2,000	5,000
21	2nd Stage Rack	2,000	8,000
22	2nd Stage Rack	3,000	8,000
23	2nd Stage Rack	6,000	20,000
24	3rd Stage/Fan Room Area	*170*	*551*
25	3rd Stage/Fan Room Area	*170*	*551*
26	3rd Stage/Fan Room Area	*170*	*551*
27	879 NORTH Plenum Demister Wall	2,000	3,000
28	Demister Wall	2,000	8,000
29	Demister Wall	3,000	10,000
30	Demister Floor	1,116	20,000
31	Demister Floor	10,000	20,000
32	Demister Floor	8,000	12,000
33	Demister Rack	10,000	100,000
34	Demister Rack	6,190	125,000
35	Demister Rack	10,000	100,000
36	1st Stage Floor	5,000	10,000
37	1st Stage Floor	5,000	1,000
38	1st Stage Floor	2,000	2,000
39	1st Stage Overhead	2,000	3,000
40	1st Stage Rack	10,000	40,000
41	1st Stage Rack	7,600	20,000
42	1st Stage Rack	2,268	4,400
43	2nd Stage Floor	2,000	10,000
44	2nd Stage Floor	10,000	40,000
45	2nd Stage Floor	2,000	3,000

17

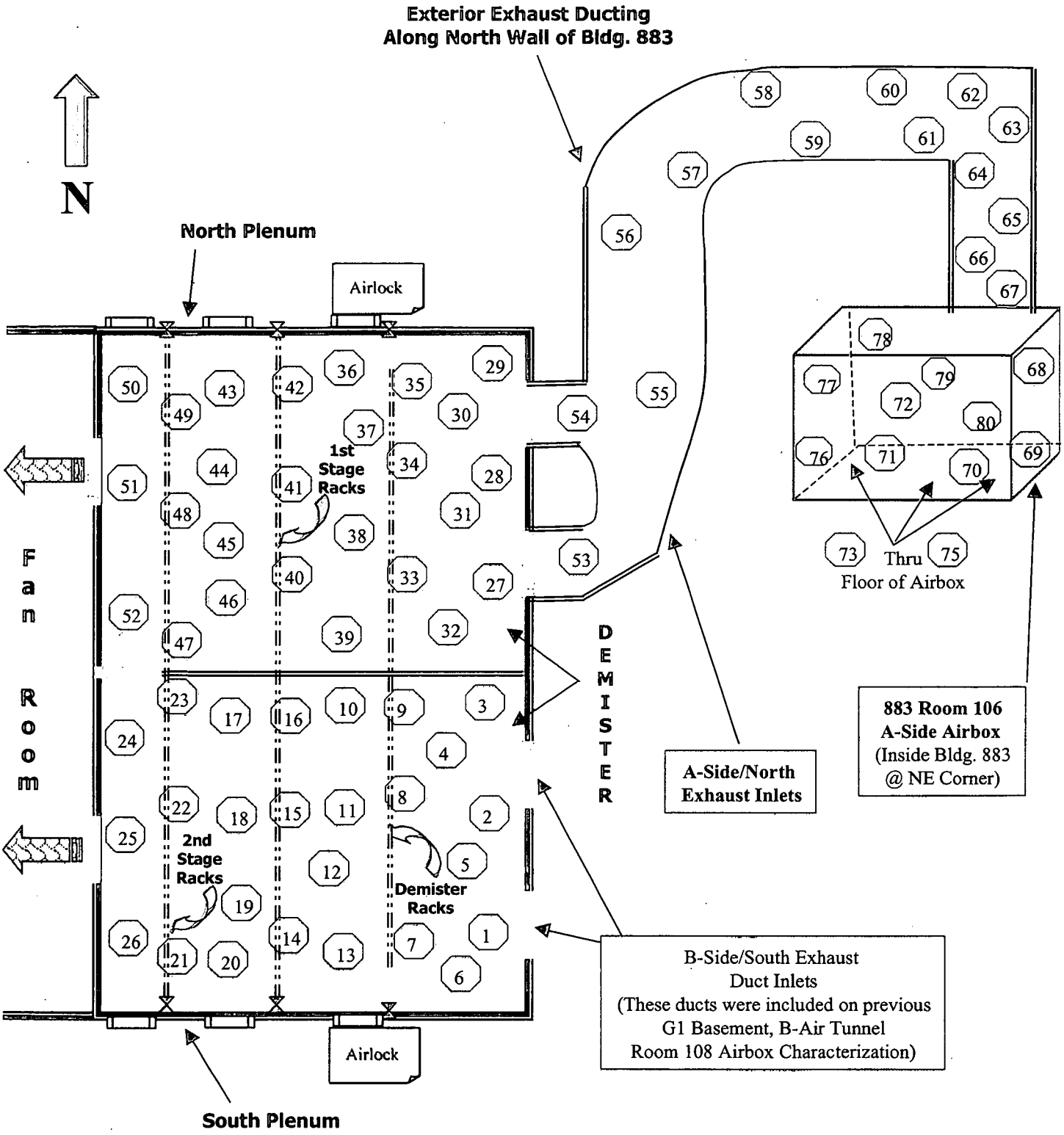
Building 879 Main Plenum, North Duct, and Airbox Contamination Data Summary

Survey Point	Approximate Location (See Attached Map)	Beta Accessible Removable dpm/100cm^2	Beta Accessible Fixed dpm/100cm^2
46	2nd Stage Overhead	2,000	2,000
47	2nd Stage Rack	2,000	3,000
48	2nd Stage Rack	3,000	4,000
49	2nd Stage Rack	2,500	5,000
50	3rd Stage/Fan Room Area	*170*	*551*
51	3rd Stage/Fan Room Area	*170*	*551*
52	3rd Stage/Fan Room Area	*170*	*551*
53	North Plenum Duct Inlet Floor	1,225	10,000
54	North Plenum Duct Inlet Floor	8,000	12,000
55	North Plenum Duct Inlet Wall	*173*	3,500
56	North Plenum Duct Wall	1,225	10,000
57	North Plenum Duct Floor	1,055	10,000
58	North Plenum Duct Floor	1,725	10,000
59	North Plenum Duct Floor @ multiple points	*205*	4,225
60	North Plenum Duct Wall @ multiple points	*205*	3,045
61	North Plenum Duct Floor	1,463	3,770
62	North Plenum Duct Floor	2,845	8,800
63	North Plenum Duct Wall	280	24,310
64	North Plenum Duct Floor	1,463	12,630
65	North Plenum Duct Wall	500	8,665
66	North Plenum Duct Floor	2,845	26,225
67	North Plenum Duct Wall	2,500	8,215
68	Room 106 Airbox East Wall	1,224	2,000
69	Room 106 Airbox East Wall	750	12,630
70	Room 106 Airbox South Wall	350	8,800
71	Room 106 Airbox South Wall	1,130	4,500
72	Room 106 Airbox South Wall	2,845	7,550
73	Room 106 Airbox Floor	500	60,000
74	Room 106 Airbox Floor	500	60,000
75	Room 106 Airbox Floor	1,463	8,800
76	Room 106 Airbox West Wall	350	2,000
77	Room 106 Airbox West Wall	1,130	3,025
78	Room 106 Airbox North Wall	500	3,045
79	Room 106 Airbox North Wall	602	4,225
80	Room 106 Airbox North Wall	500	8,665

Statistical Summary	Beta Accessible Removable dpm/100cm^2	Beta Accessible Fixed dpm/100cm^2
Maximum	10,000	150,000
Mean (Average)	3,097	16,160
n	80	80
Standard Deviation	3,032	26,646

RE Comments	
G. M. Aldrich, X7175	Readings were taken after pressure-washing inside Bldg. 879 Plenum, North Duct and Airbox. Refer to the map for approximate survey locations. Readings were generally "biased", and reflect highest levels seen around the location. Italicised readings were at MDA.

Bldg. 879 Plenum & North Exhaust Internals
Post Pressure Wash Characterization Map



Swipe & direct surveys taken at approximate locations shown. See the attached Contamination Data Summary sheets for activity levels seen and components surveyed. Airlock removable levels were < MDA.

19

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg.	Ludlum	Mfg.	Eberline	Mfg.	NE Electra
Model	2929	Model	SAC-4	Model	DP-6
Serial #	143866	Serial #	N/A	Serial #	N/A
Cal Due	2/16/05	Cal Due	N/A	Cal Due	N/A
Bkg	0.1 cpmα	Bkg	N/A cpmα	Bkg	N/A cpmα
Efficiency	34.80 %	Efficiency	%	Efficiency	N/A %
MDA	18 dpmα	MDA	20 dpmα	MDA	####### dpmα

Mfg.	Ludlum	Mfg.	Eberline	Mfg.	NE Electra
Model	2929	Model	BC-4	Model	DP-6
Serial #	143866	Serial #	N/A	Serial #	N/A
Cal Due	2/16/05	Cal Due	N/A	Cal Due	N/A
Bkg	65.0 cpmβ	Bkg	N/A cpmβ	Bkg	N/A cpmβ
Efficiency	25.00 %	Efficiency	%	Efficiency	N/A %
MDA	161 dpmβ	MDA	200 dpmβ	MDA	####### dpmβ

Survey Tracking # 883-04-S1186
Survey Type: Contamination
Building: 883
Location: 879 Plenum
Purpose: Deposting verification

RWP #: N/A

Date: 12/21/04 **Time:** 0900

[redacted]

	Print name	Signature	Emp. #
RCT:	NA	NA	NA
	Print name	Signature	Emp. #

PRN/REN #: N/A
Comments: Nuclides of concern are from Depleted Uranium only. Beta dpm CF Applied. Survey performed

SURVEY RESULTS

		ALPHA			BETA		
#	LOCATION	Swipe dpm/100cm2	Direct dpm/100cm2	Wipe dpm/wipe	Swipe dpm/100cm2	Direct dpm/100cm2	Wipe dpm/wipe
1	Wall South side	<18	N/A	N/A	<161	N/A	N/A
2	Floor South side	<18	N/A	N/A	<161	N/A	N/A
3	Wall South side	<18	N/A	N/A	<161	N/A	N/A
4	Wall South side	<18	N/A	N/A	<161	N/A	N/A
5	Rack South side	<18	N/A	N/A	<161	N/A	N/A
6	Floor South side	<18	N/A	N/A	<161	N/A	N/A
7	Wall South side	<18	N/A	N/A	<161	N/A	N/A
8	Floor South side	<18	N/A	N/A	<161	N/A	N/A
9	Rack South side	<18	N/A	N/A	<161	N/A	N/A
10	Floor South side	<18	N/A	N/A	<161	N/A	N/A
11	Wall South side	<18	N/A	N/A	<161	N/A	N/A
12	Rack South side	<18	N/A	N/A	<161	N/A	N/A
13	Floor South side	<18	N/A	N/A	<161	N/A	N/A
14	Wall South side	<18	N/A	N/A	<161	N/A	N/A
15	Floor South side	<18	N/A	N/A	<161	N/A	N/A
16	Rack North side	<18	N/A	N/A	<161	N/A	N/A
17	Floor North side	<18	N/A	N/A	<161	N/A	N/A
18	Wall North side	<18	N/A	N/A	<161	N/A	N/A
19	Floor North side	<18	N/A	N/A	<161	N/A	N/A
20	Floor North side	<18	N/A	N/A	<161	N/A	N/A

Date Reviewed: 12/22/04 **RS Supervision:** [redacted]

20

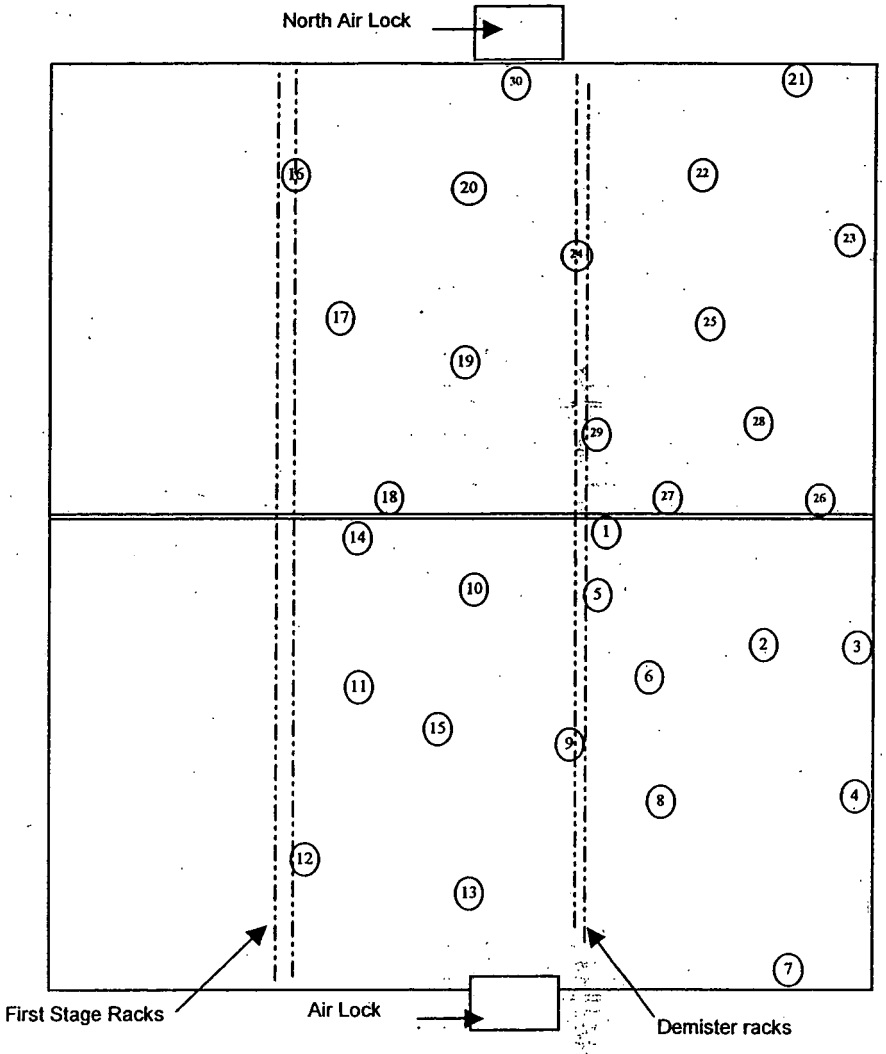
ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

SURVEY RESULTS

		ALPHA			BETA		
	LOCATION	Swipe	Direct	Wipe	Swipe	Direct	Wipe
#		dpm/100cm2	dpm/100cm2	dpm/wipe	dpm/100cm2	dpm/100cm2	dpm/wipe
21	Wall North side	<18	N/A	N/A	<161	N/A	N/A
22	Floor North side	<18	N/A	N/A	<161	N/A	N/A
23	Wall North side	<18	N/A	N/A	<161	N/A	N/A
24	Rack North side	<18	N/A	N/A	<161	N/A	N/A
25	Floor North side	<18	N/A	N/A	<161	N/A	N/A
26	Wall North side	<18	N/A	N/A	<161	N/A	N/A
27	Wall North side	<18	N/A	N/A	<161	N/A	N/A
28	Floor North side	<18	N/A	N/A	<161	N/A	N/A
29	Rack North side	<18	N/A	N/A	<161	N/A	N/A
30	Floor North side	<18	N/A	N/A	<161	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

Drawing Showing Survey Points



879 Plenum

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg.	Ludlum	Mfg.	Eberline	Mfg.	N/A
Model	2929	Model	SAC-4	Model	N/A
Serial #	143866	Serial #	N/A	Serial #	N/A
Cal Due	2/16/05	Cal Due	N/A	Cal Due	N/A
Bkg	0.7 cpmα	Bkg	N/A cpmα	Bkg	N/A
Efficiency	34.80 %	Efficiency	33.00 %	Efficiency	N/A
MDA	18 dpmα	MDA	20 dpmα	MDA	N/A

Mfg.	Ludlum	Mfg.	Eberline	Mfg.	N/A
Model	2929	Model	BC-4	Model	N/A
Serial #	143866	Serial #	N/A	Serial #	N/A
Cal Due	2/16/05	Cal Due	N/A	Cal Due	N/A
Bkg	67.3 cpmβ	Bkg	N/A cpmβ	Bkg	N/A
Efficiency	25.00 %	Efficiency	25.00 %	Efficiency	N/A
MDA	163 dpmβ	MDA	200 dpmβ	MDA	N/A

Survey Tracking # 883-04-S1151
Survey Type: Contamination and Radiation
Building: 879
Location: Plenum West Painting
Purpose: BE Samples (40 Samples)

RWP #: N/A

Date: 12/20/04 Time: 1300

[redacted]

RCT: N/A / N/A / N/A
Print name Signature Emp. #

PRN/REN #: 040908-ASD-001
Comments: Nuclide of concern are Depleted Uranium with a correction factor used (40 each) "Be" Swipe samples. drawing

#	Sample Number	ALPHA Swipe dpm/100cm2	BETA Swipe dpm/100cm2	#	Sample Number	ALPHA Swipe dpm/100cm2	BETA Swipe dpm/100cm2
1	879-12182004-313-001	<18	<163	20	879-12182004-313-035		
2	879-12182004-313-002	<18	<163	21	879-12182004-313-036	<18	<163
3	879-12182004-313-005	<18	<163	22	879-12182004-313-037	<18	<163
4	879-12182004-313-006	<18	<163	23	879-12182004-313-038	<18	<163
5	879-12182004-313-007	<18	<163	24	879-12182004-313-039	<18	<163
6	879-12182004-313-008	<18	<163	25	879-12182004-313-040	<18	<163
7	879-12182004-313-011	<18	<163	26	879-12182004-313-041	<18	<163
8	879-12182004-313-013	<18	<163	27	879-12182004-313-042	<18	<163
9	879-12182004-313-014	<18	<163	28	879-12182004-313-043	<18	<163
10	879-12182004-313-018	<18	<163	29	879-12182004-313-044	<18	<163
11	879-12182004-313-019	<18	<163	30	879-12182004-313-045	<18	<163
12	879-12182004-313-021	<18	<163	31	879-12182004-313-046	<18	<163
13	879-12182004-313-023	<18	<163	32	879-12182004-313-047	<18	<163
14	879-12182004-313-025	<18	<163	33	879-12182004-313-048	<18	<163
15	879-12182004-313-026	<18	<163	34	879-12182004-313-049	<18	<163
16	879-12182004-313-027	<18	<163	35	879-12182004-313-050	<18	<163
17	879-12182004-313-028	<18	<163	36	879-12182004-313-051	<18	<163
18	879-12182004-313-033	<18	<163	37	879-12182004-313-052	<18	<163
19	879-12182004-313-034	<18	<163	38	879-12182004-313-053	<18	<163

Date Reviewed: 12/20/04 **RS Supervision:** [redacted]

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

SURVEY RESULTS

#	Sample Number	ALPHA Swipe dpm/100cm2	BETA Swipe dpm/100cm2	#	Sample Number	ALPHA Swipe dpm/100cm2	BETA Swipe dpm/100cm2
39	879-12182004-313-054	<18	<163	78	N/A	N/A	N/A
40	879-12182004-313-055	<18	<163	79	N/A	N/A	N/A
41	Inner Package, External	<18	<163	80	N/A	N/A	N/A
42	Outer Package, External	<18	<163	81	N/A	N/A	N/A
43	N/A	N/A	N/A	82	N/A	N/A	N/A
44	N/A	N/A	N/A	83	N/A	N/A	N/A
45	N/A	N/A	N/A	84	N/A	N/A	N/A
46	N/A	N/A	N/A	85	N/A	N/A	N/A
47	N/A	N/A	N/A	86	N/A	N/A	N/A
48	N/A	N/A	N/A	87	N/A	N/A	N/A
49	N/A	N/A	N/A	88	N/A	N/A	N/A
50	N/A	N/A	N/A	89	N/A	N/A	N/A
51	N/A	N/A	N/A	90	N/A	N/A	N/A
52	N/A	N/A	N/A	91	N/A	N/A	N/A
53	N/A	N/A	N/A	92	N/A	N/A	N/A
54	N/A	N/A	N/A	93	N/A	N/A	N/A
55	N/A	N/A	N/A	94	N/A	N/A	N/A
56	N/A	N/A	N/A	95	N/A	N/A	N/A
57	N/A	N/A	N/A	96	N/A	N/A	N/A
58	N/A	N/A	N/A	97	N/A	N/A	N/A
59	N/A	N/A	N/A	98	N/A	N/A	N/A
60	N/A	N/A	N/A	99	N/A	N/A	N/A
61	N/A	N/A	N/A	100	N/A	N/A	N/A
62	N/A	N/A	N/A	101	N/A	N/A	N/A
63	N/A	N/A	N/A	102	N/A	N/A	N/A
64	N/A	N/A	N/A	103	N/A	N/A	N/A
65	N/A	N/A	N/A	104	N/A	N/A	N/A
66	N/A	N/A	N/A	105	N/A	N/A	N/A
67	N/A	N/A	N/A	106	N/A	N/A	N/A
68	N/A	N/A	N/A	107	N/A	N/A	N/A
69	N/A	N/A	N/A	108	N/A	N/A	N/A
70	N/A	N/A	N/A	109	N/A	N/A	N/A
71	N/A	N/A	N/A	110	N/A	N/A	N/A
72	N/A	N/A	N/A	111	N/A	N/A	N/A
73	N/A	N/A	N/A	112	N/A	N/A	N/A
74	N/A	N/A	N/A	113	N/A	N/A	N/A
75	N/A	N/A	N/A	114	N/A	N/A	N/A
76	N/A	N/A	N/A	115	N/A	N/A	N/A
77	N/A	N/A	N/A	116	N/A	N/A	N/A

24

JK 12/22/04

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

Rad 12/22/04

INSTRUMENT DATA					
Mfg.	Ludlum	Mfg.	Eberline	Mfg.	NE Electra
Model	2929	Model	SAC-4	Model	DP-6
Serial #	143866	Serial #	N/A	Serial #	N/A
Cal Due	2/16/05	Cal Due	N/A	Cal Due	N/A
Bkg	0.7 cpmα	Bkg	N/A cpmα	Bkg	N/A cpmα
Efficiency	34.80 %	Efficiency	33.00 %	Efficiency	22.80 %
MDA	18 dpmα	MDA	20 dpmα	MDA	####### dpmα
Mfg.	Ludlum	Mfg.	Eberline	Mfg.	NE Electra
Model	2929	Model	BC-4	Model	DP-6
Serial #	143866	Serial #	N/A	Serial #	N/A
Cal Due	2/16/05	Cal Due	N/A	Cal Due	N/A
Bkg	67.0 cpmβ	Bkg	N/A cpmβ	Bkg	N/A cpmβ
Efficiency	25.00 %	Efficiency	14.00 %	Efficiency	22.00 %
MDA	163 dpmβ	MDA	200 dpmβ	MDA	####### dpmβ

Survey Tracking # 883-04-S 1190
Survey Type: Contamination
Building: 883
Location: B883 106 Air Duct
Purpose: Post painting

RWP #: 04-880-0002

Date: 12/22/04 Time: 0800

[redacted]

RCT: NA / NA / NA
Print name Signature Emp. #

PRN/REN #: N/A
Comments: Nuclide of concern is Depleted Uranium only. Beta dpm CF Applied. Survey performed post painting of the north to south section of the duct work

SURVEY RESULTS

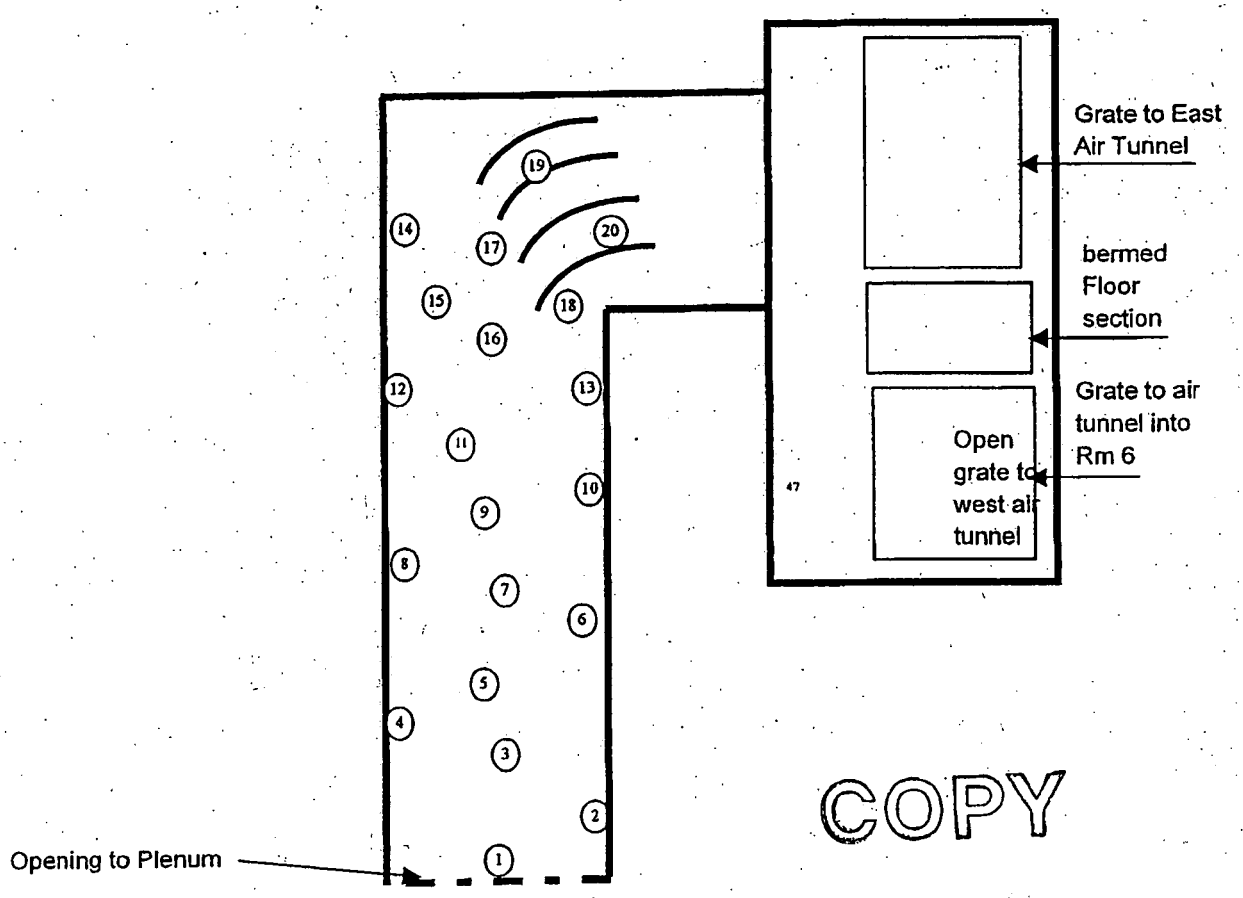
		ALPHA			BETA		
#	LOCATION	Swipe dpm/100cm2	Direct dpm/100cm2	Wipe dpm/wipe	Swipe dpm/100cm2	Direct dpm/100cm2	Wipe dpm/wipe
1	Wall	<18	N/A	N/A	<163	N/A	N/A
2	Wall	<18	N/A	N/A	<163	N/A	N/A
3	Ceiling	<18	N/A	N/A	<163	N/A	N/A
4	Wall	<18	N/A	N/A	<163	N/A	N/A
5	Floor	<18	N/A	N/A	<163	N/A	N/A
6	Wall	<18	N/A	N/A	<163	N/A	N/A
7	Ceiling	<18	N/A	N/A	<163	N/A	N/A
8	Wall	<18	N/A	N/A	<163	N/A	N/A
9	Floor	<18	N/A	N/A	<163	N/A	N/A
10	Wall	<18	N/A	N/A	<163	N/A	N/A
11	Ceiling	<18	N/A	N/A	<163	N/A	N/A
12	Wall	<18	N/A	N/A	<163	N/A	N/A
13	Wall	<18	N/A	N/A	<163	N/A	N/A
14	Wall	<18	N/A	N/A	<163	N/A	N/A
15	Floor	<18	N/A	N/A	<163	N/A	N/A
16	Ceiling	<18	N/A	N/A	<163	N/A	N/A
17	Floor	<18	N/A	N/A	<163	N/A	N/A
18	Floor	<18	N/A	N/A	<163	N/A	N/A
19	Wall	<18	N/A	N/A	<163	N/A	N/A
20	Wall	<18	N/A	N/A	<163	N/A	N/A

Date Reviewed: 12/22/04 RS Supervision: [redacted]

25

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

Drawing Showing Survey Points



Attachment #1
A SIDE 883 Air Duct and
106 air box

ATTACHMENT B-2

Fan Room Radiological Data Summary and Survey Maps

Survey Area: 1	Survey Unit: 879001	Building: 879
Description: Building 879 Interior, Floor, Walls and Ceiling		

Rocky Flats Environmental Technology Site
Final Radiological Survey Summary Results

Total Surface Activity Measurements

Nbr Random Measurements Required: 15
Nbr Random Measurements Performed: 15

Nbr Biased Measurements Required: 0
Nbr Biased Measurements Performed: 10

Nbr QC Required: 2
Nbr QC Performed: 2

Beta

Maximum:	2,797.2 dpm/100cm²
Minimum:	-316.4 dpm/100cm²
Mean:	710.0 dpm/100cm²
Standard Deviation:	976.6
QC Maximum:	1,825.0 dpm/100cm²
QC Minimum:	1,775.0 dpm/100cm²
QC Mean:	1,800.0 dpm/100cm²
Uranium DCGL$_W$:	5,000.0 dpm/100cm²
Uranium DCGL$_{EMC}$:	15,000.0 dpm/100cm²

Removable Surface Activity Measurements

Nbr Random Measurements Required: 15
Nbr Random Measurements Performed: 15

Nbr Biased Measurements Required: 0
Nbr Biased Measurements Performed: 10

Beta

Maximum:	67.1 dpm/100cm²
Minimum:	-104.3 dpm/100cm²
Mean:	-17.7 dpm/100cm²
Standard Deviation:	48.0
Uranium DCGL$_W$:	1,000.0

Media Sample Results

Nbr Random Required: 0
Nbr Random Collected: 0

Nbr Biased Required: 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.

Survey Area: 1 **Survey Unit:** 879001 **Building:** 879

Description: Building 879 Interior, Floor, Walls and Ceiling

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	700831	12/13/04	Electra	1235	DP-6	03/16/05	NA	0.220	NA	745.0	T/S
2	711447	12/13/04	Electra	1379	DP-6	05/09/05	NA	0.220	NA	745.0	T/S
3	511390	12/13/04	Electra	662	DP-6	03/30/05	NA	0.220	NA	745.0	Q
4	700831	12/13/04	BC-4	843	NA	10/04/05	NA	0.140	NA	258.0	R

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

Survey Area: 1	Survey Unit: 879001	Building: 879
Description: Building 879 Interior, Floor, Walls and Ceiling		

Random Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
879001PRP-N001	4	N/A	-61.5	
879001PRP-N002	4	N/A	45.7	
879001PRP-N003	4	N/A	-82.9	
879001PRP-N004	4	N/A	52.8	
879001PRP-N005	4	N/A	-18.6	
879001PRP-N006	4	N/A	-61.5	
879001PRP-N007	4	N/A	-11.5	
879001PRP-N008	4	N/A	-4.3	
879001PRP-N009	4	N/A	31.4	
879001PRP-N010	4	N/A	-18.6	
879001PRP-N011	4	N/A	31.4	
879001PRP-N012	4	N/A	-4.3	
879001PRP-N013	4	N/A	45.7	
879001PRP-N014	4	N/A	67.1	
879001PRP-N015	4	N/A	-61.5	

Survey Area: 1	Survey Unit: 879001	Building: 879
Description: Building 879 Interior, Floor, Walls and Ceiling		

Biased Removable Surface Activity Data Sheet

Biased Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
879001PBP-N016	4	N/A	-104.3	
879001PBP-N017	4	N/A	-47.2	
879001PBP-N018	4	N/A	-82.9	
879001PBP-N019	4	N/A	-25.7	
879001PBP-N020	4	N/A	-47.2	
879001PBP-N021	4	N/A	-25.7	
879001PBP-N022	4	N/A	2.8	
879001PBP-N023	4	N/A	31.4	
879001PBP-N024	4	N/A	-75.7	
879001PBP-N025	4	N/A	-18.6	

Comments:

Survey Area: 1	Survey Unit: 879001	Building: 879
Description: Building 879 Interior, Floor, Walls and Ceiling		

Random/QC Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
879001PRP-N001	1	N/A	69.1	
879001PRP-N002	1	N/A	210.0	
879001PRP-N003	1	N/A	2,023.6	
879001QRP-N003	3	N/A	1,825.0	
879001PRP-N004	1	N/A	-112.7	
879001PRP-N005	1	N/A	-8.2	
879001PRP-N006	1	N/A	2,128.2	
879001QRP-N006	3	N/A	1,775.0	
879001PRP-N007	1	N/A	255.5	
879001PRP-N008	1	N/A	482.7	
879001PRP-N009	2	N/A	-149.1	
879001PRP-N010	2	N/A	846.4	
879001PRP-N011	2	N/A	432.7	
879001PRP-N012	2	N/A	455.5	
879001PRP-N013	2	N/A	482.7	
879001PRP-N014	2	N/A	-212.7	
879001PRP-N015	2	N/A	246.4	

Survey Area: 1	Survey Unit: 879001	Building: 879

Description: Building 879 Interior, Floor, Walls and Ceiling

Biased Total Surface Activity Data Sheet

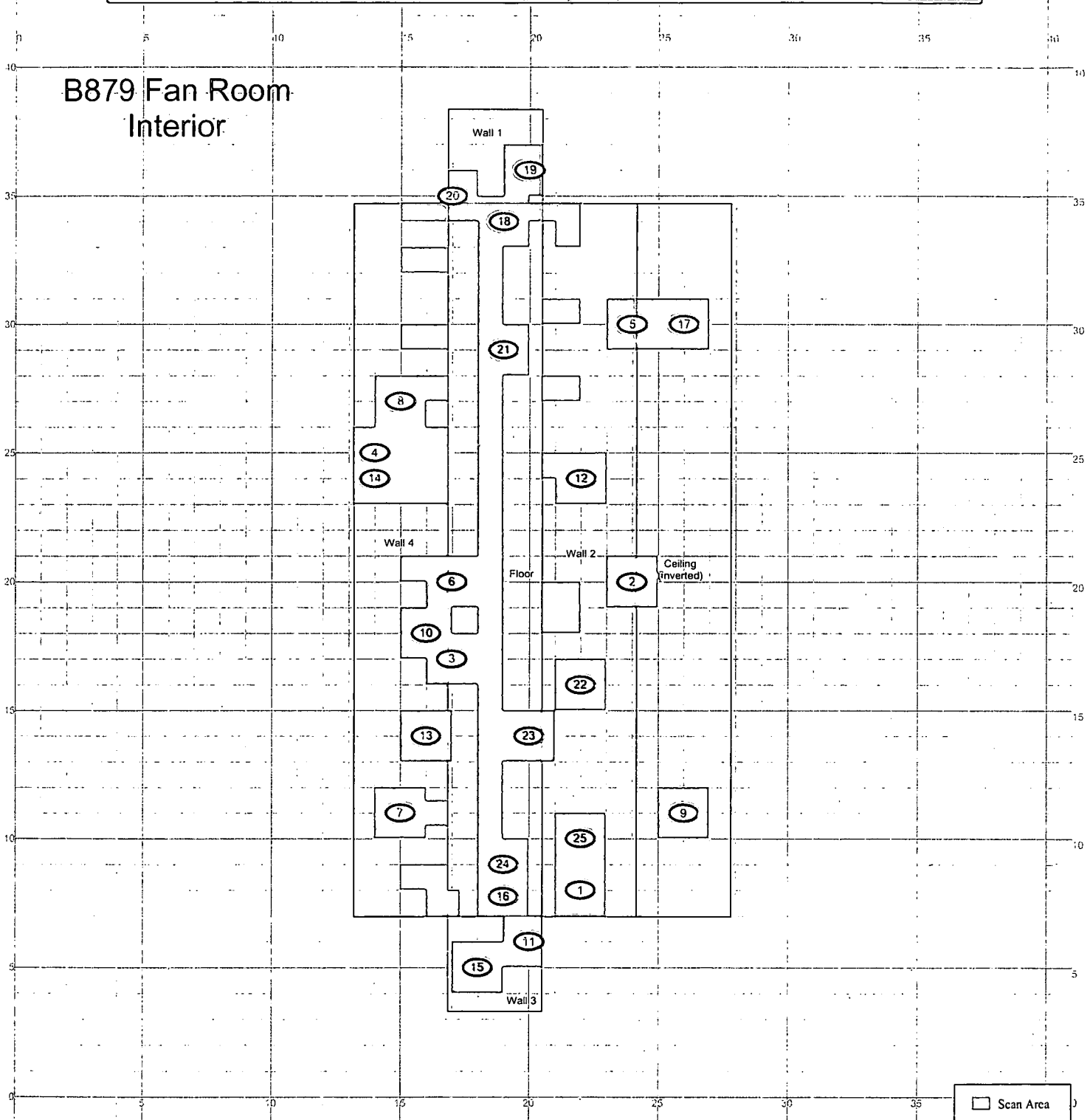
Biased Measurement Location	Inst / RCT Nbr.	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
879001PBP-N016	2	N/A	2,547.2	
879001PBP-N017	1	N/A	174.5	
879001PBP-N018	1	N/A	2,297.2	
879001PBP-N019	1	N/A	-89.1	
879001PBP-N020	2	N/A	856.3	
879001PBP-N021	2	N/A	2,110.9	
879001PBP-N022	2	N/A	-316.4	
879001PBP-N023	1	N/A	2,797.2	
879001PBP-N024	1	N/A	324.5	
879001PBP-N025	1	N/A	-102.8	

Comments:

PRE-DEMOLITION SURVEY FOR B879

Survey Area: 1 Survey Unit: 879001 Classification: 3
Building: 879
Survey Unit Description: Building 879 Interior, Floor, Walls, & Ceiling
Total Area: 433 sq. m. Floor Area: 101 sq. m.

B879 Fan Room Interior



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & 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.

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

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

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

CH2MHILL Communications Group

MAP ID: 03-JS/879FanRm_SC Dec. 16, 2004

34

ATTACHMENT B-3

879 Confirmatory Exterior Survey

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg.	Ludlum	Mfg.	Eberline	Mfg.	NE Electra
Model	2929	Model	SAC-4	Model	DP-6
Serial #	N/A	Serial #	924	Serial #	1665
Cal Due	N/A	Cal Due	2/4/05	Cal Due	4/7/05
Bkg	N/A cpmα	Bkg	0.0 cpmα	Bkg	1.0 cpmα
Efficiency	N/A %	Efficiency	33.00 %	Efficiency	21.20 %
MDA	18 dpmα	MDA	20 dpmα	MDA	35 dpmα
Mfg.	Ludlum	Mfg.	Eberline	Mfg.	NE Electra
Model	2929	Model	BC-4	Model	DP-6
Serial #	N/A	Serial #	843	Serial #	1665
Cal Due	N/A	Cal Due	10/4/05	Cal Due	4/7/05
Bkg	N/A cpmβ	Bkg	43.9 cpmβ	Bkg	616 cpmβ
Efficiency	N/A %	Efficiency	14.00 %	Efficiency	22.00 %
MDA	205 dpmβ	MDA	258 dpmβ	MDA	745 dpmβ

Survey Tracking # N/A
Survey Type: Contamination
Building: B879
Location: Inner and Exterior Walls and Floor of B879
Purpose: Pre-Demolition Verification Survey

RWP #: N/A

Date: 12/21/04 Time: 1600

RC [redacted]
RC
Print name Signature Emp. #

PRN/REN # : N/A

Comments: Nuclides of concern are Uranium and Plutonium. Survey performed to verify contamination levels prior to demolition of B879. Beta efficiencies listed reflect correction for Depleted Uranium (DU), calibrated efficiencies for Eberline BC-4 # 843 is 25.0% and for Electra # 1665 is 31.6%.

		ALPHA			BETA		
	LOCATION	Swipe	Direct	Wipe	Swipe	Direct	Wipe
#		dpm/100cm2	dpm/100cm2	dpm/wipe	dpm/100cm2	dpm/100cm2	dpm/wipe
1-12	Floor B879	<20	N/A	<35	<258	N/A	<745
13-25	Interior walls B879	<20	N/A	<35	<258	N/A	<745
26-35	Exterior Walls B879	<20	N/A	<35	<258	N/A	<745
36-50	Remaining Equipment in B879	<20	N/A	<35	<258	N/A	<745
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Date Reviewed: 12/22/04 RS Supervisio [redacted]

ATTACHMENT C

Chemical Data Summaries and Sample Maps

Building 879 Beryllium Sample Results Table

Sample Map Location #	Room	RIN	Sample Number	Sample Location	Result (ug/100 cm2)
1	Outside	05D0296	883-12112004-313-001	Inside South Duct - biased (pre fixative)	<0.1
2	Outside	05D0296	883-12112004-313-002	Inside South Duct - biased (pre fixative)	<0.1
3	Outside	05D0296	883-12112004-313-003	Inside South Duct - biased (pre fixative)	<0.1
4	Outside	05D0296	883-12112004-313-004	Inside South Duct - biased (pre fixative)	<0.1
1	Plenum	05D0298	879-12102004-313-001	Floor - random (pre fixative)	<0.1
2	Plenum	05D0298	879-12102004-313-002	Floor - random (pre fixative)	<0.1
3	Fan Room	05D0298	879-12102004-313-003	Floor - random (pre fixative)	<0.1
4	Fan Room	05D0298	879-12102004-313-004	Floor - random (pre fixative)	<0.1
5	Plenum	05D0298	879-12102004-313-005	Floor - random (pre fixative)	<0.1
6	Plenum	05D0298	879-12102004-313-006	Floor - random (pre fixative)	<0.1
7	Plenum	05D0298	879-12102004-313-007	Floor - random (pre fixative)	<0.1
8	Plenum	05D0298	879-12102004-313-008	Floor - random (pre fixative)	0.102
9	Fan Room	05D0298	879-12102004-313-009	Floor - random (pre fixative)	<0.1
10	Fan Room	05D0298	879-12102004-313-010	Floor - random (pre fixative)	<0.1
11	Plenum	05D0298	879-12102004-313-011	Floor - random (pre fixative)	<0.1
12	Fan Room	05D0298	879-12102004-313-012	Floor - random (pre fixative)	<0.1
13	Plenum	05D0298	879-12102004-313-013	Floor - random (pre fixative)	<0.1
14	Plenum	05D0298	879-12102004-313-014	Floor - random (pre fixative)	0.361
15	Fan Room	05D0298	879-12102004-313-015	Floor - random (pre fixative)	<0.1
16	Fan Room	05D0298	879-12102004-313-016	Floor - random (pre fixative)	<0.1
17	Fan Room	05D0298	879-12102004-313-017	Floor - random (pre fixative)	<0.1
18	Plenum	05D0298	879-12102004-313-018	Floor - random (pre fixative)	<0.1
19	Plenum	05D0298	879-12102004-313-019	Floor - random (pre fixative)	<0.1
20	Fan Room	05D0298	879-12102004-313-020	Floor - random (pre fixative)	<0.1
21	Plenum	05D0298	879-12102004-313-021	Floor - random (pre fixative)	<0.1
22	Fan Room	05D0298	879-12102004-313-022	Floor - random (pre fixative)	<0.1
23	Plenum	05D0298	879-12102004-313-023	Floor - random (pre fixative)	0.212
24	Fan Room	05D0298	879-12102004-313-024	Wall - biased (pre fixative)	<0.1
25	Plenum	05D0298	879-12102004-313-025	Floor - biased (pre fixative)	<0.1
26	Plenum	05D0298	879-12102004-313-026	Wall - biased (pre fixative)	<0.1
27	Plenum	05D0298	879-12102004-313-027	Floor - biased (pre fixative)	<0.1
28	Plenum	05D0298	879-12102004-313-028	Wall - biased (pre fixative)	<0.1
29	Fan Room	05D0298	879-12102004-313-029	Wall - biased (pre fixative)	<0.1
30	Fan Room	05D0298	879-12102004-313-030	Wall - biased (pre fixative)	<0.1
31	Fan Room	05D0298	879-12102004-313-031	Wall - biased (pre fixative)	<0.1
32	Fan Room	05D0298	879-12102004-313-032	Wall - biased (pre fixative)	<0.1
33	Plenum	05D0298	879-12102004-313-033	Plenum Inlet ledge - biased (pre fixative)	<0.1
34	Plenum	05D0298	879-12102004-313-034	Floor - biased (pre fixative)	<0.1
35	Plenum	05D0298	879-12102004-313-035	Plenum Inlet ledge - biased (pre fixative)	<0.1
36	Plenum	05D0298	879-12102004-313-036	1st Stage Filter Frame - biased (pre fixative)	<0.1
37	Plenum	05D0298	879-12102004-313-037	Floor - biased (pre fixative)	<0.1
38	Plenum	05D0298	879-12102004-313-038	Sub Door - biased (pre fixative)	<0.1
39	Plenum	05D0298	879-12102004-313-039	2nd Stage Filter Frame - biased (pre fixative)	0.104
40	Plenum	05D0298	879-12102004-313-040	Wall - biased (pre fixative)	<0.1
41	Plenum	05D0298	879-12102004-313-041	2nd Stage Filter Frame - biased (pre fixative)	<0.1
42	Fan Room	05D0298	879-12102004-313-042	Floor - biased (pre fixative)	<0.1
43	Fan Room	05D0298	879-12102004-313-043	Floor - biased (pre fixative)	<0.1
44	Plenum	05D0298	879-12102004-313-044	Top of vent Cover - biased (pre fixative)	0.115
45	Plenum	05D0298	879-12102004-313-045	Top of vent Cover - biased (pre fixative)	0.428
46	Plenum	05D0298	879-12102004-313-046	Demister frame - biased (pre fixative)	0.492
47	Plenum	05D0298	879-12102004-313-047	Floor - biased (pre fixative)	<0.1
48	Plenum	05D0298	879-12102004-313-048	Floor under filter frame - biased (pre fixative)	0.268
49	Plenum	05D0298	879-12102004-313-049	Filter Frame - biased (pre fixative)	0.552
50	Plenum	05D0298	879-12102004-313-050	Wall - biased (pre fixative)	<0.1
51	Plenum	05D0298	879-12102004-313-051	Demister frame - biased (pre fixative)	0.268
52	Plenum	05D0298	879-12102004-313-052	Filter Frame - biased (pre fixative)	0.665
53	Plenum	05D0298	879-12102004-313-053	Filter Frame - biased (pre fixative)	0.162
54	Plenum	05D0298	879-12102004-313-054	Wall - biased (pre fixative)	<0.1
55	Plenum	05D0298	879-12102004-313-055	Floor - biased (pre fixative)	0.123
56	Fan Room	05D0298	879-12102004-313-056	Floor - biased (pre fixative)	<0.1
1	Plenum	05D0326	879-12102004-313-001	Floor - random (post fixative)	<0.1

2	Plenum	05D0326	879-12102004-313-002	Floor - random (post fixative)	<0.1
3	Fan Room	05D0326	879-12102004-313-003	Floor - random (post fixative)	<0.1
4	Fan Room	05D0326	879-12102004-313-004	Floor - random (post fixative)	<0.1
5	Plenum	05D0326	879-12102004-313-005	Floor - random (post fixative)	<0.1
6	Plenum	05D0326	879-12102004-313-006	Floor - random (post fixative)	<0.1
7	Plenum	05D0326	879-12102004-313-007	Floor - random (post fixative)	<0.1
8	Plenum	05D0326	879-12102004-313-008	Floor - random (post fixative)	<0.1
9	Fan Room	05D0326	879-12102004-313-009	Floor - random (post fixative)	<0.1
10	Fan Room	05D0326	879-12102004-313-010	Floor - random (post fixative)	<0.1
11	Plenum	05D0326	879-12102004-313-011	Floor - random (post fixative)	<0.1
12	Fan Room	05D0326	879-12102004-313-012	Floor - random (post fixative)	<0.1
13	Plenum	05D0326	879-12102004-313-013	Floor - random (post fixative)	<0.1
14	Plenum	05D0326	879-12102004-313-014	Floor - random (post fixative)	<0.1
15	Fan Room	05D0326	879-12102004-313-015	Floor - random (post fixative)	<0.1
16	Fan Room	05D0326	879-12102004-313-016	Floor - random (post fixative)	<0.1
17	Fan Room	05D0326	879-12102004-313-017	Floor - random (post fixative)	<0.1
18	Plenum	05D0326	879-12102004-313-018	Floor - random (post fixative)	<0.1
19	Plenum	05D0326	879-12102004-313-019	Floor - random (post fixative)	<0.1
20	Fan Room	05D0326	879-12102004-313-020	Floor - random (post fixative)	<0.1
21	Plenum	05D0326	879-12102004-313-021	Floor - random (post fixative)	<0.1
22	Fan Room	05D0326	879-12102004-313-022	Floor - random (post fixative)	<0.1
23	Plenum	05D0326	879-12102004-313-023	Floor - random (post fixative)	<0.1
24	Fan Room	05D0326	879-12102004-313-024	Wall - biased (post fixative)	<0.1
25	Plenum	05D0326	879-12102004-313-025	Floor - biased (post fixative)	<0.1
26	Plenum	05D0326	879-12102004-313-026	Wall - biased (post fixative)	<0.1
27	Plenum	05D0326	879-12102004-313-027	Floor - biased (post fixative)	<0.1
28	Plenum	05D0326	879-12102004-313-028	Wall - biased (post fixative)	<0.1
29	Fan Room	05D0326	879-12102004-313-029	Wall - biased (post fixative)	<0.1
30	Fan Room	05D0326	879-12102004-313-030	Wall - biased (post fixative)	<0.1
31	Fan Room	05D0326	879-12102004-313-031	Wall - biased (post fixative)	<0.1
32	Fan Room	05D0326	879-12102004-313-032	Wall - biased (post fixative)	<0.1
33	Plenum	05D0326	879-12102004-313-033	Plenum Inlet ledge - biased (post fixative)	<0.1
34	Plenum	05D0326	879-12102004-313-034	Floor - biased (post fixative)	<0.1
35	Plenum	05D0326	879-12102004-313-035	Plenum Inlet ledge - biased (post fixative)	<0.1
36	Plenum	05D0326	879-12102004-313-036	1st Stage Filter Frame - biased (post fixative)	<0.1
37	Plenum	05D0326	879-12102004-313-037	Floor - biased (post fixative)	<0.1
38	Plenum	05D0326	879-12102004-313-038	Sub Door - biased (post fixative)	<0.1
39	Plenum	05D0326	879-12102004-313-039	2nd Stage Filter Frame - biased (post fixative)	<0.1
40	Plenum	05D0326	879-12102004-313-040	Wall - biased (post fixative)	<0.1
41	Plenum	05D0326	879-12102004-313-041	2nd Stage Filter Frame - biased (post fixative)	<0.1
42	Fan Room	05D0326	879-12102004-313-042	Floor - biased (post fixative)	<0.1
43	Fan Room	05D0326	879-12102004-313-043	Floor - biased (post fixative)	<0.1
44	Plenum	05D0326	879-12102004-313-044	Top of vent Cover - biased (post fixative)	<0.1
45	Plenum	05D0326	879-12102004-313-045	Top of vent Cover - biased (post fixative)	<0.1
46	Plenum	05D0326	879-12102004-313-046	Demister frame - biased (post fixative)	<0.1
47	Plenum	05D0326	879-12102004-313-047	Floor - biased (post fixative)	<0.1
48	Plenum	05D0326	879-12102004-313-048	Floor under filter frame - biased (post fixative)	<0.1
49	Plenum	05D0326	879-12102004-313-049	Filter Frame - biased (post fixative)	<0.1
50	Plenum	05D0326	879-12102004-313-050	Wall - biasedv	<0.1
51	Plenum	05D0326	879-12102004-313-051	Demister frame - biased (post fixative)	<0.1
52	Plenum	05D0326	879-12102004-313-052	Filter Frame - biased (post fixative)	<0.1
53	Plenum	05D0326	879-12102004-313-053	Filter Frame - biased (post fixative)	<0.1
54	Plenum	05D0326	879-12102004-313-054	Wall - biased (post fixative)	<0.1
55	Plenum	05D0326	879-12102004-313-055	Floor - biased (post fixative)	<0.1
1	Outside	05Z0306	883-11022004-313-001	Inside North Duct - biased (pre fixative)	<0.1
2	Outside	05Z0306	883-11022004-313-002	Inside North Duct - biased (pre fixative)	<0.1
3	Outside	05Z0306	883-11022004-313-003	Inside North Duct - biased (pre fixative)	<0.1
4	Outside	05Z0306	883-11022004-313-004	Inside North Duct - biased (pre fixative)	<0.1
5	Outside	05Z0306	883-11022004-313-005	Inside North Duct - biased (pre fixative)	<0.1
6	Outside	05Z0306	883-11022004-313-006	Inside North Duct - biased (pre fixative)	<0.1
7	Outside	05Z0306	883-11022004-313-007	Inside North Duct - biased (pre fixative)	<0.1
8	Outside	05Z0306	883-11022004-313-008	Inside North Duct - biased (pre fixative)	<0.1

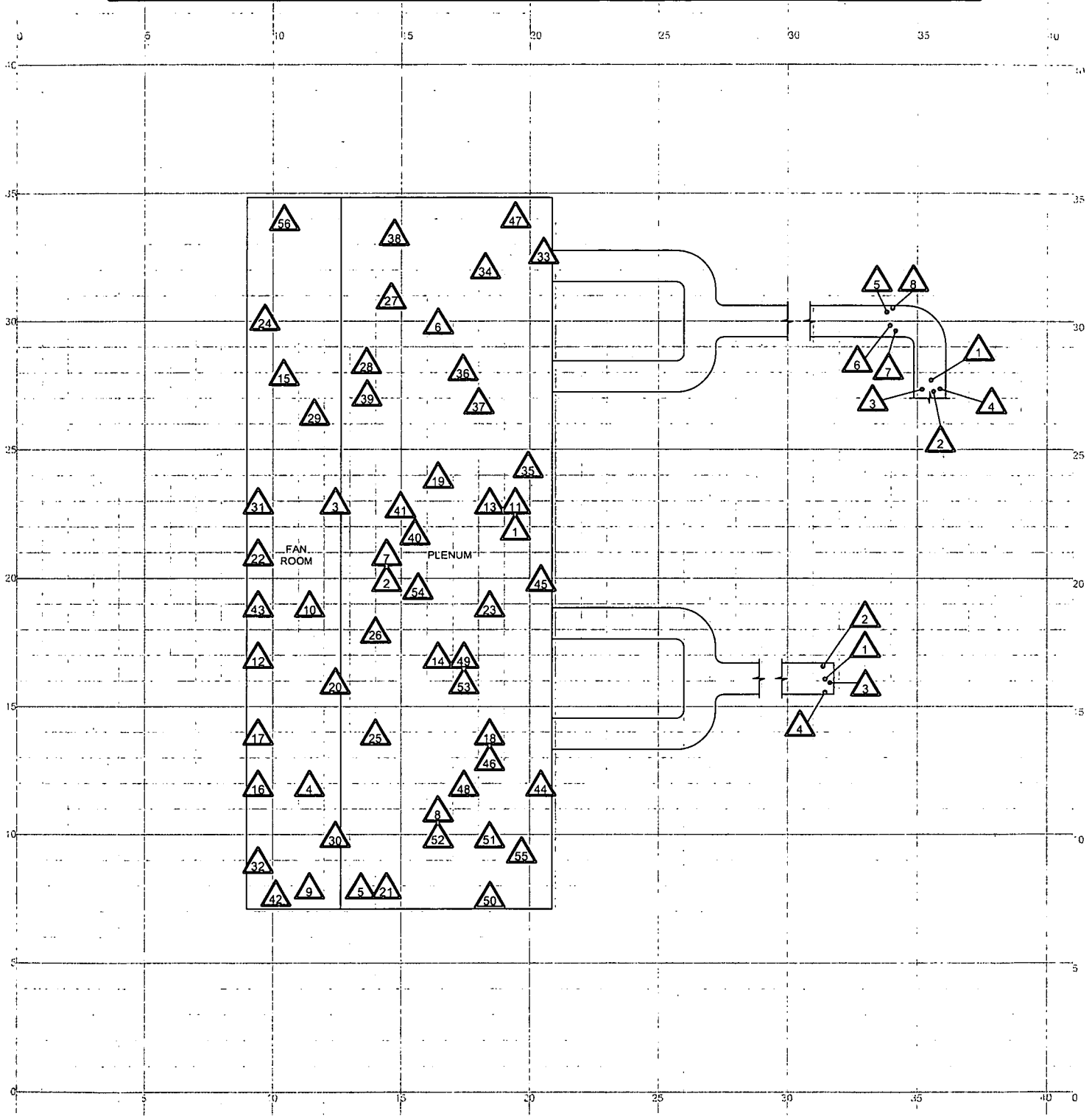
Footnotes:

Building 879 Beryllium Sample Results Table

(1) Shaded rows are beryllium results prior to the application of fixative or final decon. The unshaded rows are the final "as left" condition sample results.
Further decon or fixative was applied over all elevated locations as well as extending to the boundaries of clean sample locations surrounding the elevated locations.
All initial sample locations above 0.1 ug/100cm2 were either further deconned or had fixative applied and were then re-sampled.
Additonal biased post-fixative or post-decon samples were collected in the same general area of the initial elevated sample locations.
All final post-decon or post-fixative swipes were less than the 0.2 ug/100 cm2 beryllium limit and no further investigation sampling is required.
(2) Gaps in the sample numbering sequence are acceptable. Some sample numbers were never used and some were used more than once.
Some sample numbers were elevated, then decontaminated, and then resampled using the same initial sample number.

CHEMICAL SAMPLE MAP

Building 879
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

CH2MHILL
Communications Group

Prepared for:

KAISER-HILL COMPANY

MAP ID: 03-JS/B879_Be

January 5, 2005

41

ATTACHMENT D

Data Quality Assurance 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. The plenum radiological survey Data Quality Objectives (DQOs) were satisfied per Radiological Safety Practice procedures 3-PRO-165-07.02, *Contamination Monitoring Requirements*, and PRO-267-RSP-09.05, *Radiological Characterization for Surface Contaminated Objects*.

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. The Fan Room radiological data is organized into a Survey Package, which correlates to a unique (MARSSIM) Survey Unit. For the 879 Plenum in-process surveys were performed. Chemical data are organized by RIN (Report Identification Number) and are traceable to the sample number and corresponding sample location.

Survey designs were implemented for Building 879 based on the uranium limits (DCGLs) in the unrestricted release decision process. Fan Room survey results were evaluated against, and were less than the Uranium $DCGL_w$ (5,000 dpm/100cm^2) unrestricted release limits. Since the Plenum could not be decontaminated below the PDSP unrestricted release DCGLs, no formal PDS survey designs and sampling was performed. Instead in-process waste disposal and LLW demolition planning surveys were performed. As a result, the in-process waste disposal and LLW demolition planning surveys suffice as the PDS surveys for the Plenum, and are contained in Attachment B-1, *In-Process Radiological Survey Forms*. Additionally, the requirements of EPA's G-4 DQO process regarding radiological survey design and number of surveys required is not applicable to the plenum as the surveys were in-process.

43

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 the qualifications stated herein and are considered satisfactory without qualification. All media surveyed yielded results less than their associated action levels and with acceptable certainties except for the Plenum radiological surveys as summarized in Section 3. On this basis, Building 879 plenum will be managed and disposed of as LLW during demolition, and the Building 879 Fan Room will be managed and disposed of as sanitary waste during demolition. Appropriate controls will be incorporated into the demolition work packages to control the LLW hazards during demolition.

In addition, the use of fixatives was necessary to decontaminate some areas below the PDS unrestricted release limits for Beryllium. Levels up to 0.665 $\mu g/100cm^2$ were identified (pre fixative) during in process sampling and were immobilized using fixative. Once the plenum was isolated from Building 883, random and biased beryllium PDS swipes were collected and analyzed. All final "as left" (post fixative) beryllium PDS swipe results were less than the action levels of 0.2 $\mu g/100cm^2$ and investigative levels of 0.1 $\mu g/100cm^2$. The table in Attachment C summarizes the PDS beryllium swipe data for Building 879. Detailed PDS beryllium laboratory swipe data and location maps are contained in Attachment C, *Chemical Data Summaries and Sample Maps.*

No removable radiological or beryllium contamination existed above the unrestricted release criteria in these areas after fixative application. Minimum survey requirements were met, sampling/survey protocol was performed in accordance with applicable procedures, and instrument performance and calibrations were within acceptable limits. 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 further inadvertent introduction of contamination into Building 879. On this basis, Building 879 is ready for demolition.

Table D-1 V&V of Radiological Results - Buildings 879

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 879001 (interior).	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	(Uranium) TSA: ≤2,500 dpm/100cm^2 RSA: ≤500 dpm/100cm^2	all measures	PDS MDAs ≤ 50% $DCGL_w$

Table D-2 V&V of Beryllium Results - Building 879

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
BERYLLIUM	Prep: NMAM 7300 METHOD: OSHA ID-125G	LAB --->	Johns Manville Littleton, Colorado	
		RIN ---->	RINS: 05D0296, 05D0298, 05Z0306, 05D0326	
QUALITY REQUIREMENTS		Measure	Frequency	COMMENTS
ACCURACY	Calibrations Initial	Linear calibration	≥1	All final "as left" Beryllium PDS results were below unrestricted release 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 0.00084 ug/swipe	all measures	

Table D-3 Data Completeness Summary – Building 879

ANALYTE	Building/Area/Unit	Sample Number Planned (Real & QC)[A]	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Beryllium	Building 879 Fan Room (interior)	15 samples (10 random/5 biased)	18 samples (10 random/8 biased)	Beryllium contamination identified above associated action levels prior to fixative All final "as left" results were less than associated action levels	10CFR850; OSHA ID-125G Pre Fixative: RIN05D0296, RIN05D0298 and RIN05Z0306 Post Fixative: RIN05D0326 Beryllium contamination identified during in process sampling greater than the PDS unrestricted release levels (pre fixative). However, all final "as left" beryllium results (post fixative) were less than the associated action level (0.2ug/100cm^2) or investigative level (0.1 ug/100cm^2) after fixative was applied. Refer to Section 3 and Attachment D, DQA, for further discussion.
Beryllium	Building 879 Plenum (interior)	19 samples (13 random/5 biased)	50 samples (13 random/37 biased)	Beryllium contamination identified above associated action levels prior to fixative All final "as left" results were less than associated action levels	10CFR850; OSHA ID-125G Pre Fixative: RIN05D0296, RIN05D0298 and RIN05Z0306 Post Fixative: RIN05D0326 Beryllium contamination identified during in process sampling greater than the PDS unrestricted release levels (pre fixative). However, all final "as left" beryllium results (post fixative) were less than the associated action level (0.2ug/100cm^2) or investigative level (0.1 ug/100cm^2) after fixative was applied. Refer to Section 3 and Attachment D, DQA, for further discussion.

Table D-3 Data Completeness Summary – Building 879

ANALYTE	Building/Area/Unit	Sample Number Planned (Real & QC)[A]	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Radiological	Survey Unit: 879001 Building 879 Fan Room – Floor, Walls and Ceilings (interior)	25 β TSA (15 random/10 biased) 25 β Smears (15 random/10 biased) 2 QC TSA 10% scan	25 β TSA (15 random/10 biased) 25 β Smears (15 random/10 biased) 2 QC TSA 10% scan	No contamination at any location; all values below unrestricted release levels	Uranium DCGLs used.
Radiological	Building 879 Plenum – Floor, Walls and Ceilings (interior)	0 samples All surveys were In-Process, no survey units were developed	80 β TSA 92 β Smears	[1]Contamination identified greater than the Uranium unrestricted release limits	Uranium DCGLs used. [1]Refer to Section 3 for a detailed discussion regarding elevated results.