



Rocky Flats Environmental Technology Site

PRE-DEMOLITION SURVEY REPORT (PDSR)

BUILDING 866 CLOSURE PROJECT

REVISION 0

September 23, 2003



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

ADMIN RECORD

1/39 DOCUMENT CLASSIFICATION
REVISED BY PER PER
CIA
CEX-005-02

B865-A-000083

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REVISION 0

September 23, 2003

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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
LLMW	Low-level mixed 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
RFEO	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 866. Because this Type 2 Facility 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 Building 866 floor, walls, ceiling and equipment. Building 866 was characterized in accordance with Pre-Demolition Survey Plan (MAN-127-PDSP) requirements as part of the Building 865 High Bay RLCR, completed September 17, 2001. Environmental media beneath and surrounding Building 866 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 and Reconnaissance Level Characterization Report for the Building 865 Cluster.

Except for the floor and process waste sump, PDS results indicated that no radiological, beryllium, or PCBs contaminants exist in excess of the PDSP unrestricted release limits. The Building 866 floor contains radiological contaminants in excess of the PDSP unrestricted release limits. Prior to fixatives being applied, Building 866 process waste sump contained beryllium contaminants in excess of the PDSP unrestricted release limits. The only RCRA concern is the process waste sump that will be removed and managed as low-level mixed waste (LLMW). The Building 866 floor will be managed as low-level waste (LLW) during demolition.

Asbestos abatement was conducted in the Building 866 prior to the PDS. Friable and non-friable asbestos containing building materials were removed per CDPHE, Regulation No. 8, Part B, *Emission Standards for Asbestos*. On this basis, no additional bulk sampling was required as part of this PDS. Any potential PCB-containing fluorescent light ballast 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 do not impact demolition activities. Based on the age of Building 866, paints used on the facility may contain PCBs, therefore, painted surfaces will be managed as PCB Bulk Product Waste.

Based upon this PDSR, Building 866 can be demolished. None of the concrete will be used for backfill on-site per the RFCA RSOP for Recycling Concrete. To ensure that the facility remains free of further contamination and PDS data remain valid, Level 1 Isolation Controls have been established and the area posted accordingly.

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1 INTRODUCTION

A Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Building 866. 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 Building 866 floor, walls, ceiling and equipment. Building 866 exterior was characterized in accordance with Pre-Demolition Survey Plan (MAN-127-PDSP) requirements as part of the Building 865 Cluster RLCR, completed September 17, 2001. Environmental media beneath and surrounding Building 866 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.

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed, among these is Building 866. 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 866. 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 Building 866 PDS built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report and Reconnaissance Level Characterization Report for Building 865 Cluster, dated July 2001, Revision 0.

1.1 Purpose

The purpose of this report is to communicate and document the results of the Building 866 PDS effort. A PDS is performed prior to building demolition to define the pre-demolition radiological and chemical conditions of the facility. The pre-demolition 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 pre-demolition radiological and chemical conditions of Building 866. 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) and 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. Building 866 RLC was performed in September 2001, as part of the Building 865 Cluster RLCR (refer to *Reconnaissance Level Characterization Report for Building 865 Cluster*, dated September 17, 2001, Revision 0). Based on the RLC results, beryllium and radiological contamination were identified, and Building 866 was classified as a Type 2 facility. Therefore, a PDS characterization was required before demolition of the facility. The HSA and RLC results were used to identify PDS data gaps and needs, and to develop radiological and chemical PDS characterization packages. HSA and RLC documentation are located in the RISS Characterization Project files.

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

Building 866 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 the RLC, 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 866 Radiological Characterization Plan). Based on RLC data, and historical and process knowledge, transuranic activity was not a concern inside Building 866. On this basis, Building 866 PDS was performed to the uranium PDS unrestricted release criteria. Radiological survey unit package 866-1-001 was developed for the Building 866 interior. Individual radiological survey unit packages are maintained in the RISS Characterization Project files.

Building 866 survey unit packages were 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*. Radiological survey data, statistical analysis results, survey locations, and radiological scan maps are presented in Attachment B, *Radiological Data Summary and Survey Maps*.

Survey Unit 866-1-001

Building 866 interior was classified as a MARSSIM Class 1 Survey Unit. A total of twenty-two (22) TSA measurements (20 systematically grid, 2 QC) and twenty (20) RSA measurements (20 systematically grid) were taken. Surface scan surveys of 100% of all accessible wall and ceiling surfaces (530 m²) were also performed. Additionally, five (5) TSA and RSA measurements of the floor and process waste sump are also included in this report for waste characterization purposes. One of the process waste sump locations (#24) had a high beta background value (15,044 dpm/100cm²) that was determined to be an instrument malfunction. Therefore, Location #24 was removed from the PDS data set.

All wall and ceiling survey results were less than the applicable PDS uranium DCGL values. Although the PDS data of the floor and process waste sump were less than the applicable PDS uranium DCGL values, in-process survey data identified radiological contamination on the floor up to 48,500 dpm/100cm² fixed, and in the process waste sump up to 60,000 dpm/100cm² fixed. Consequently, the floor and process waste sump will be managed as LLW (floor) and LLMW (sump) during demolition activities. Radiological survey data, statistical analysis results, survey locations, and radiological scan maps for survey unit 866-1-001 are presented in Attachment B-1, *Radiological Data Summary and Survey Maps*. Refer to Attachment B-3, *Building 866 In-process Radiological Characterization Surveys, Radiological Survey Data and Map* for the in-process characterization radiological survey data, survey locations and maps.

Although the wall and ceiling survey TSA results were skewed negatively (i.e., the mean TSA results were -151 dpm/100cm²), the most negative value of the data set (Location #2, -374 dpm/100cm²) was still within normal expected variations. When background subtraction is used to determine a net activity, it is not uncommon to have negative net values. As long as the net values are not excessively negative relative to the applicable DCGL (e.g., more than 20% negative of the DCGL_w value, (-1,000 dpm/100cm² for uranium)), the negative data set is still valid.

Building 866 exterior was characterized in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP) requirements as part of the Building 865 Cluster RLCR, completed September 17, 2001. All of Building 866 exterior surveys performed during the Building 865 Cluster RLCR were less than the applicable PDS transuranic and uranium DCGL values. An additional five (5) confirmatory RSA measurements of Building 866 exterior were performed during the Building 866 interior PDS, and all results were less than the applicable PDS transuranic and uranium DCGL values. Refer to Attachment B-2, *Building 866 Exterior Confirmatory Survey, Radiological Data and Survey Maps* for the radiological survey data, statistical analysis results, survey locations and maps.

To ensure the facility remains free of further contamination and PDS data remain valid, Level 1 Isolation Controls have been established and the areas posted accordingly.

4 CHEMICAL CHARACTERIZATION AND HAZARDS

Building 866 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 Building 866. 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, the justification for the sample locations and estimated number of samples. The contaminants of concern were asbestos, beryllium, metals, RCRA/CERCLA constituents and polychlorinated biphenyls (PCBs). Refer to Attachment C, *Chemical Summary Data and Sample Maps*, for details on sample results and sample locations. Level 1 Isolation Control postings are displayed on affected structures to ensure no hazardous materials are introduced.

4.1 Asbestos

Prior to the PDS, asbestos abatement was conducted in the Building 866 to remove and dispose of asbestos containing building materials. Friable and non-friable asbestos containing building materials were removed per CDPHE, Regulation No. 8, Part B, *Emission Standards for Asbestos*. On this basis, no additional asbestos bulk sampling was performed as part of this PDS.

4.2 Beryllium (Be)

Based on the HSAR and personnel interviews, Building 866 was an anticipated Type 2 facility. There was adequate historical and process knowledge to conclude that beryllium was used or stored in this building. Therefore, random and biased beryllium sampling was performed in accordance with the PDSP and the *Beryllium Characterization Procedure, PRO-536-BCPR, Revision 0, September 9, 1999*. Biased sample locations corresponded with the most probable areas of dust accumulation (including beryllium dust), assuming airborne deposition.

Ten (10) random and seventeen (17) biased beryllium smear samples were collected on the interior of Building 866 in accordance with the PDSP and the *Beryllium Characterization Procedure, PRO-536-BCPR, Revision 0, September 9, 1999*. Except for the process waste sump, all beryllium PDS smear sample results for Building 866 were less than the investigative limit of $0.1 \mu\text{g}/100\text{cm}^2$. Two beryllium smears in the process waste sump were above the unrestricted release level of $0.2 \mu\text{g}/100\text{cm}^2$ (Map Location #1 = $29.6 \mu\text{g}/100\text{cm}^2$, and Map Location #12 = $6.31 \mu\text{g}/100\text{cm}^2$).

The 866 process waste sump will be sprayed with fixative and managed as LLMW during demolition. PDS beryllium laboratory sample data and location maps are contained in Attachment C-1, *Beryllium Data Summaries and Sample Maps*.

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

Based on a review of the *Reconnaissance Level Characterization Report for the Building 865 Cluster*, Dated September 17, 2001, personnel interviews, facility walk-downs and a review of historical WEMS/WSRIC processes, Building 866 contains a process waste sump that is part of the interim status RCRA unit that collected process waste from Building 889. Based on the *RSOP for Component Removal, Size Reduction, and Decontamination Activities Notification Letter for Closure of RCRA Tank Units 40 17, 40 18, and 40 19 in Building 865 and 866*, this process waste sump will be removed as low-level mixed waste (LLMW). As indicated in this same RSOP Notification Letter, all results for the secondary containment (i.e., the building slab) were less than the MCL limits during the closure activities conducted in 1998, confirming Building 866 is not contaminated by RCRA/CERCLA constituents. On this basis, additional RCRA/CERCLA sampling was not conducted as part of this PDS.

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

4.4 Polychlorinated Biphenyls (PCBs)

Based on the HSAR for the Building 865 RLCR, personnel interviews, facility walk-downs and a review of historical WSRIC processes, Building 866 did not contain machinery that used PCB oil, or any other PCB reliant process. Therefore, sampling for PCBs was not conducted as part of this PDS.

Based on the age of Building 866, paints used on the facility may contain PCBs, therefore, painted surfaces will be managed as PCB Bulk Product Waste.

5 PHYSICAL HAZARDS

Physical hazards associated with Building 866 consists of those common to standard industrial environments, and include hazards associated with energized systems, utilities, and trips and falls. There are no unique hazards associated with this 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 decommissioning of Building 866, and consequent waste management, is 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 866 will generate a variety of wastes. Estimated waste types and waste volumes are presented below. PCB ballast and hazardous waste items have been removed and managed pursuant to Site PCB and waste management procedures. Painted surfaces will be managed as PCB Bulk Product waste. The Building 866 floor will be managed as LLW and the process waste sump will be managed as LLMW during slab demolition activities. Concrete will not be used as backfill onsite in accordance with the RFCA RSOP for Recycling Concrete.

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)
866	525	0	200	0	0	0	Insulation – 230 LLW – 475 concrete LLMW – 50 concrete

8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, Building 866 is classified as a RFCA Type 2 Facility pursuant to the RFETS Decommissioning Program Plan (DPP, K-H, 1999) and is ready for demolition. The PDS for Building 866 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.

Except for the floor and process waste sump, PDS results indicated that no radiological, beryllium, or PCBs contaminants exist in excess of the PDSP unrestricted release limits. The Building 866 floor contains radiological contaminants in excess of the PDSP unrestricted release limits. Prior to fixatives being applied, the Building 866 process waste sump contained beryllium contaminants in excess of the PDSP unrestricted release limits. The only RCRA concern is the process waste sump that will be removed and will be managed as low-level mixed waste (LLMW). The Building 866 floor will be managed as low-level waste (LLW) during slab demolition.

Any potential PCB-containing fluorescent light ballast 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, therefore, do not impact demolition activities. Paints used on the facility may contain PCBs, therefore, painted surfaces will be managed as PCB Bulk Product Waste.

Based upon this PDSR, Building 866 can be demolished and the waste managed as PCB Bulk Product Waste, LLW, LLMW, and sanitary waste as identified above. To ensure that the facility remains free of further contamination and that PDS data remain valid, Level 1 Isolation Controls have been established and the area 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
- Reconnaissance Level Characterization Report For Building 865 Cluster*, Dated September 17, 2001, Revision 0
- Building 865 Cluster Historical Site Assessment Report*, incorporated as part of the Building 865 RLCR, dated July 2001

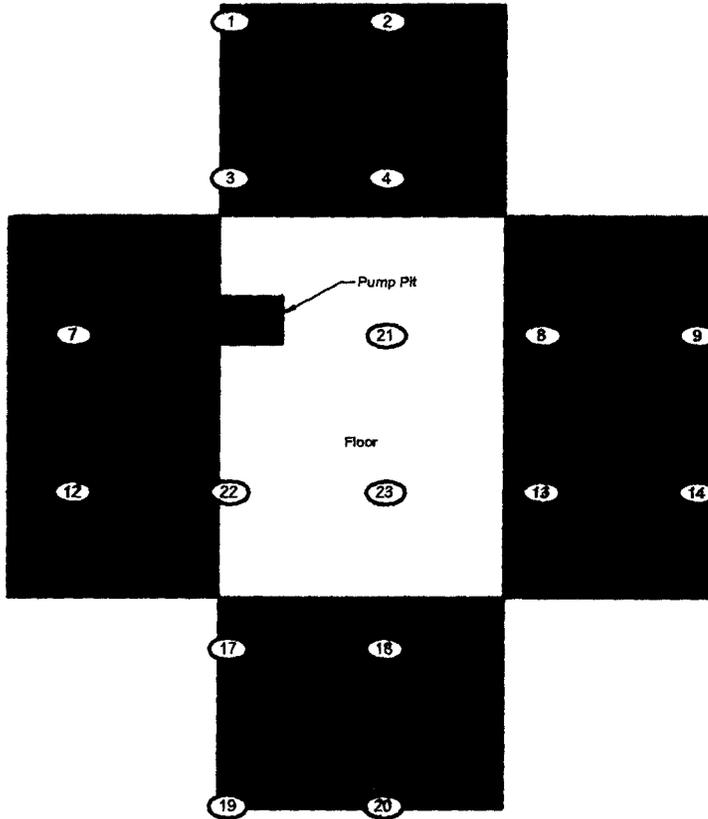
ATTACHMENT A
Facility Location Map

PRE-DEMOLITION SURVEY FOR B866

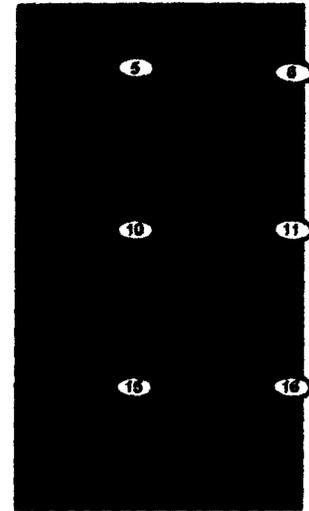
Survey Area 1 Survey Unit 866-1-001 Classification 1
 Building 866
 Survey Unit Description Building 866 Interior
 Total Area 207 sq m Total Floor Area 41 sq m
 Grid Spacing for Survey Points 3m X 3m

B866 Interior

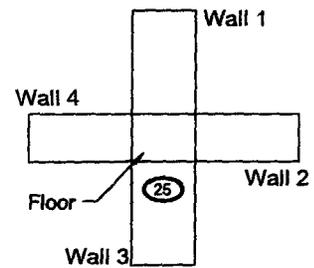
STARTING POINT
 FOR SQUARE
 SAMPLING GRID
 (X22, Y22)



Expanded Ceiling (inverted)

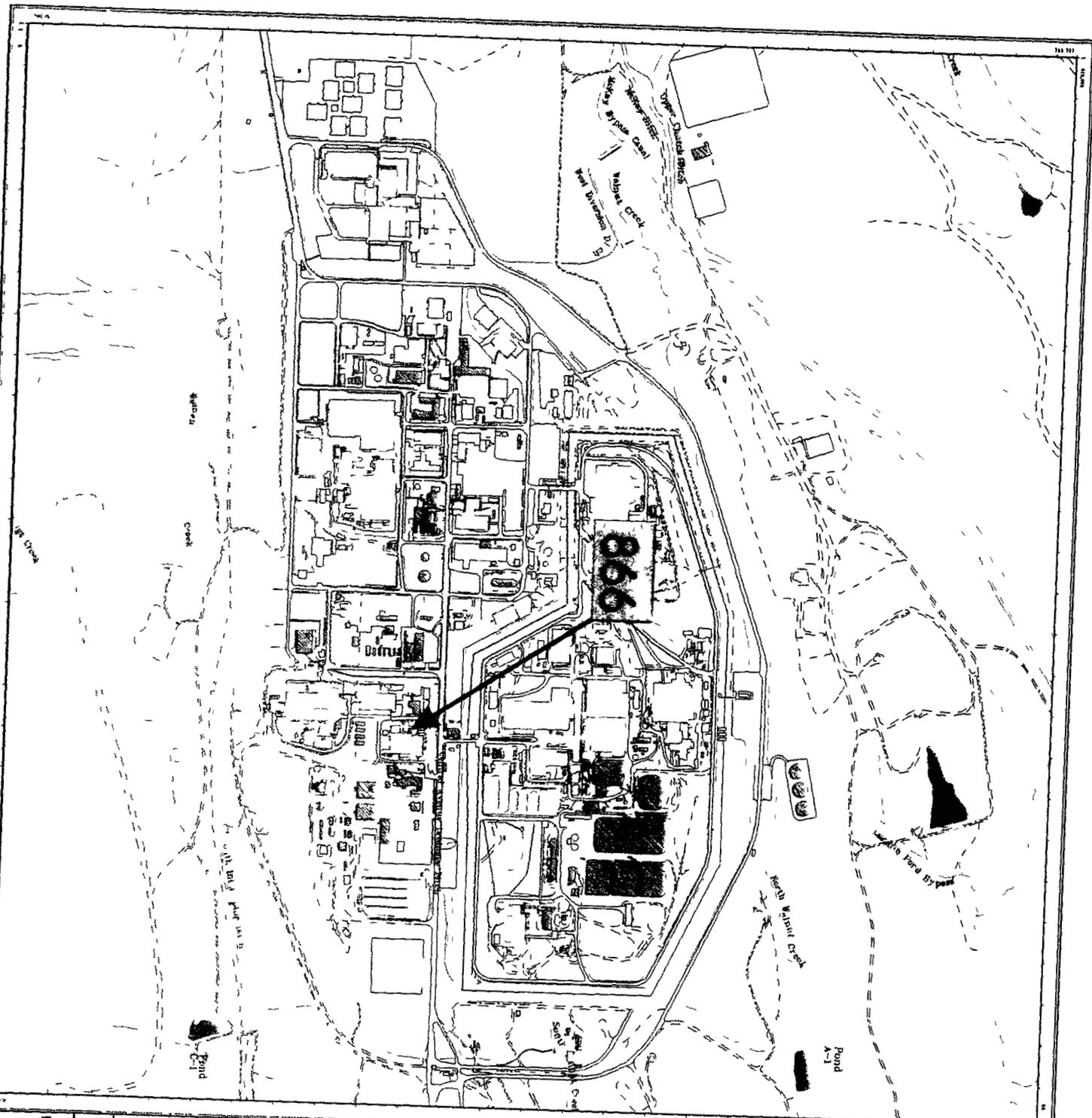


Pump Pit



<p>SURVEY MAP LEGEND</p> <ul style="list-style-type: none"> ⊙ Smear & TSA Location ⊠ Smear, TSA & Sample Location ■ Open/Inaccessible Area □ Area in Another Survey Unit 	<p>Neither the United States Government nor Kaiser Hill Co., nor CH2MHill, nor any agency thereof, nor any of their employees, makes any warranty express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights</p>	<p>N</p> <p>↑</p>	<p>0 FEET 15</p> <p>0 METERS 5</p>	<p>U S Department of Energy Rocky Flats Environmental Technology Site</p> <p>Prepared by GIS Dept 303-696-7707</p> <p>CH2MHILL Communications Group</p> <p>MAP ID 03-0096/B866-IN 1a-SC</p>	<p>Prepared for</p> <p>Sept 19, 2003</p>

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Area 1
Building 866

Standard Map Features

-  Buildings and other structures
-  Demolished buildings and other structures
-  Lakes and ponds
-  Streams, ditches or other drainage features
-  Fences and other barriers
-  Paved roads
-  Dirt roads

DATA SOURCE BASE FEATURES
Buildings, fences, hydrography, roads and other structures from 1994 aerial fly-over data captured by ES&G RSL, Las Vegas. Digitized from the orthophotographs 1/95.

Scale = 1:12450
1 inch represents approximately 1036 feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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

Prepared by
CH2MHILL

MAP ID: R-2003

Prepared for
MILNER HILL
Sept 19 2003

ATTACHMENT B

Radiological Data Summaries and Survey Maps

ATTACHMENT B-1
Survey Unit 866-1-001

**Radiological Data Summary
and Survey Map**

**SURVEY UNIT 866-1-001
RADIOLOGICAL DATA SUMMARY**

Survey Unit Description B866

866-1-001
Radiological Data Summary

Wall and Ceiling Results Only

<u>Total Surface Activity Measurements</u>			<u>Removable Activity Measurements</u>		
	15	20		15	20
	Number Required	Number Obtained		Number Required	Number Obtained
MIN	(374)	dpm/100 cm ²	MIN	(69)	dpm/100 cm ²
MAX *	208	dpm/100 cm ²	MAX	44	dpm/100 cm ²
MEAN	(151)	dpm/100 cm ²	MEAN	4	dpm/100 cm ²
STD DEV	147	dpm/100 cm ²	STD DEV	26	dpm/100 cm ²
Uranium DCGL _w	5,000	dpm/100 cm ²	Uranium DCGL _w	1,000	dpm/100 cm ²

**SURVEY UNIT 866-1-001
TSA DATA SUMMARY**

Manufacturer	NE Electra	NE Electra	NE Electra	NE Electra
Model	DP 6	DP 6	DP 6	DP 6
Instrument ID#	1	2	3	8
Serial #	2352	1255	3115	1260
Cal Due Date	2/8/04	11/22/03	2/27/04	1/8/04
Analysis Date	9/19/03	9/19/03	9/19/03	9/19/03
Beta Eff (c/d)	0.320	0.307	0.305	0.312
Beta Bkgd (cpm)	400.0	464.0	366.0	367.0
Sample Time (min)	1	1	1	1
LAB Time (min)	1	1	1	1
MDC (dpm/100cm ²)	599.0	599.0	599.0	599.0

Wall and Ceiling Results

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm ²)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm ²)	Sample Net Activity (dpm/100cm ²)
1	1	454	1 419	451	1 409	(192)
2	1	396	1 238	462	1 444	(374)
3	1	429	1 341	585	1 828	(270)
4	1	445	1 391	500	1 563	(220)
5	1	525	1 641	714	2 231	30
6	1	582	1 819	467	1 459	208
7	1	435	1 359	479	1 497	(252)
8	1	458	1 431	550	1 719	(180)
9	1	446	1 394	462	1 444	(217)
10	1	472	1 475	535	1 672	(136)
11	1	496	1 550	480	1 500	(61)
12	1	457	1 428	484	1 513	(183)
13	1	457	1 428	610	1 906	(183)
14	1	453	1 416	479	1 497	(195)
15	1	554	1 731	605	1 891	120
16	1	517	1 616	506	1 581	5
17	1	408	1 275	428	1 338	(336)
18	1	458	1 431	598	1 869	(180)
19	1	426	1 331	442	1 381	(280)
20	1	477	1 491	474	1 481	(120)

1 Average LAB used to subtract from Gross Sample Activity

1 611	Sample LAB Average
MIN	(374)
MAX	208
MEAN	(151)
SD	147
Uranium DCGLW	5,000

QC Measurements

6 QC	8	457	1 465	472	1 513	24
16 QC	8	470	1 506	427	1 369	66

1 Average QC LAB used to subtract from Gross Sample Activity

1 441	QC LAB Average
QC MIN	24
QC MAX	66
QC MEAN	45
Uranium DCGLW	5,000

Floor and Process Waste Sump Results (For waste characterization purposes only)

21	1	821	2,566	641	2,003	563
22	1	945	2,953	781	2,441	513
23	1	811	2,534	660	2,063	472
25	1	4361	13 628	2910	9 094	4 534

Location #24 in the process waste sump had a high beta background value (4 814 cpm 15 044 dpm/100cm²) that was determined to be an instrument malfunction. Therefore Location #24 was removed from the PDS data set

MIN	472
MAX	4 534
MEAN	1 520
SD	1 968
Uranium DCGLW	5,000

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**SURVEY UNIT 866-1-001
SMEAR DATA SUMMARY**

Manufacturer	Eberline	Eberline	Eberline	Eberline
Model	BC-4	BC-4	BC 4	BC-4
Instrument ID#	4	5	6	7
Serial #	700	702	905	911
Cal Due Date	12/19/03	4/30/04	7/30/04	10/30/03
Analysis Date	9/19/03	9/19/03	9/19/03	9/19/03
Beta Eff (c/d)	0 25	0 25	0 25	0 25
Beta Bkgd (cpm)	34 5	31 9	38 3	30 4
Sample Time (min)	1	1	1	1
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm ²)	200 0	200 0	200 0	200 0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm ²)
1	4	40	22 0
2	5	37	20 4
3	6	21	69 2
4	7	30	1 6
5	4	30	18 0
6	5	34	8 4
7	6	40	6 8
8	7	36	22 4
9	4	34	2 0
10	5	33	4 4
11	6	38	-1 2
12	7	41	42 4
13	4	36	6 0
14	5	43	44 4
15	6	36	9 2
16	7	39	34 4
17	4	39	18 0
18	5	29	11 6
19	6	29	37 2
20	7	29	5 6
		MIN	-69 2
		MAX	44 4
		MEAN	3 7
		SD	26 5
		Uranium DCGL _w	1,000

Floor and Pit Results

21	4	37	10 0
22	5	29	11 6
23	6	36	-9 2
24	7	32	6 4
25	4	35	2 0
		MIN	11 6
		MAX	10 0
		MEAN	-0 5
		SD	9 5
		Uranium DCGL _w	1,000

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**ATTACHMENT B-2
Building 866 Exterior
Confirmatory Surveys**

**Radiological Data
and Survey Map**

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg	Eberline	Mfg	Eberline	Mfg	NE Electra
Model	SAC-4	Model	SAC-4	Model	DP-6
Serial #	1158	Serial #	1164	Serial #	2352
Cal Due	1/1/04	Cal Due	11/30/03	Cal Due	2/8/04
Bkg	0.3 cpm α	Bkg	0 cpm α	Bkg	1 cpm α
Efficiency	33.00 %	Efficiency	33.00 %	Efficiency	22.80 %
MDA	20 dpm α	MDA	20 dpm α	MDA	32 dpm α

Survey Type	Contamination
Building	B866
Location	Outside building
Purpose	Confirmatory Swipes
RWP #	NA

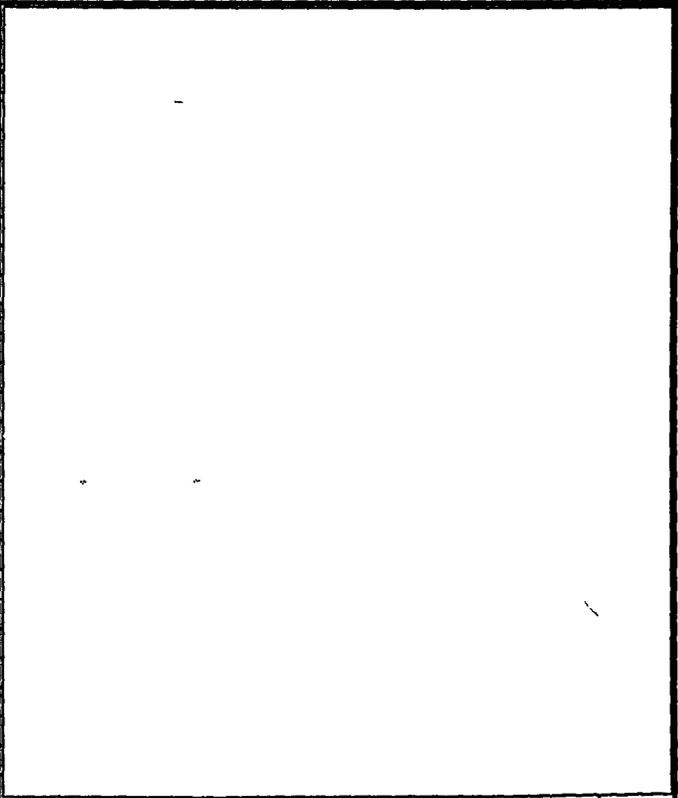
Mfg	Eberline	Mfg	Eberline	Mfg	NE Electra
Model	BC-4	Model	BC-4	Model	DP-6
Serial #	NA	Serial #	NA	Serial #	2352
Cal Due	NA	Cal Due	NA	Cal Due	2/8/04
Bkg	NA cpm β	Bkg	NA cpm β	Bkg	400 cpm β
Efficiency	NA %	Efficiency	NA %	Efficiency	32.00 %
MDA	NA dpm β	MDA	NA dpm β	MDA	299 dpm β

Date	9/19/03	Time	1300
RCT	NA	Signature	NA
RCT	NA	Signature	NA
Print name		Signature	
Emp #			

PRN/REN # _____
 Comments. _____

SURVEY RESULTS

Swipe #	Location / Description Results in DPM/100sq cm	Removable		Total	
		Alpha	Beta	Alpha	Beta
1	North Wall	<20	NA	<32	<299
2	East Wall	<20	NA	<32	<299
3	West Wall	<20	NA	<32	<299
4	South Wall	<20	NA	<32	<299
5	Roof	<20	NA	<32	<299



Date Reviewed 9-19-03 RS Supervision _____

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ATTACHMENT B-3
Building 866 In-process Radiological
Characterization Surveys

Radiological Data
and Survey Map

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SYSTEM

INSTRUMENT DATA						Survey type Contamination		
Mfg	Ludlum	Mfg	Ludlum	Mfg	NE Electra	Building	866	
Model	2929	Model	2929	Model	DP-6	Location	Interior	
Serial #	176082	Serial #	176102	Serial #	3100	Purpose	Pre-job inside sump pit	
Cal Due	11-27-03	Cal Due	11-22-03	Cal Due	12-30-03	RWP #	03-865-012	
Bkg	0.5 cpm α	Bkg	0.3 cpm α	Bkg	7 cpm α	Date	9-17-03	Time 1330
Efficiency	34.3 %	Efficiency	34.4 %	Efficiency	20.9 %	Print name: [Redacted] Signature: [Redacted] Emp. #: [Redacted]		
MDA	18 dpm α	MDA	18 dpm α	MDA	72 dpm α			
Mfg	Ludlum	Mfg	Ludlum	Mfg	NE Electra	RCT N/A / N/A / N/A Print name Signature Emp #		
Model	2929	Model	2929	Model	DP-6			
Serial #	176082	Serial #	176102	Serial #	3100			
Cal Due	11-27-03	Cal Due	11-22-03	Cal Due	12-30-03			
Bkg	82.4 cpm β	Bkg	70.3 cpm β	Bkg	449 cpm β			
Efficiency	38.0 %	Efficiency	41.2 %	Efficiency	30.1 %			
MDA	205 dpm β	MDA	205 dpm β	MDA	337 dpm β			

PRN/REN # N/A
 Comments Isotope of concern is Depleted Uranium (U-238)

SURVEY RESULTS

Swipe #	LOCATION/DESCRIPTION	ALPHA			BETA		
		Swipe	Direct	Wipe	Swipe	Direct	Wipe
		dpm/100cm ²	dpm/100cm ²	dpm/wipe	dpm/100cm ²	dpm/100cm ²	dpm/wipe
1	Inside wall of sump pit	36	320	<72	<205	11800	<337
2	Inside wall of sump pit	27	290	N/A	<205	11500	N/A
3	Inside wall of sump pit	<18	245	<72	<205	12500	<337
4	Inside wall of sump pit	42	335	N/A	<205	10200	N/A
5	Floor of sump pit	45	450	N/A	<205	60000	N/A
6	On structural steel	<18	425	N/A	<205	50500	N/A
7	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Date Reviewed 7.15.03 RS Supervision [Redacted]
 Print Name Signature EMP #

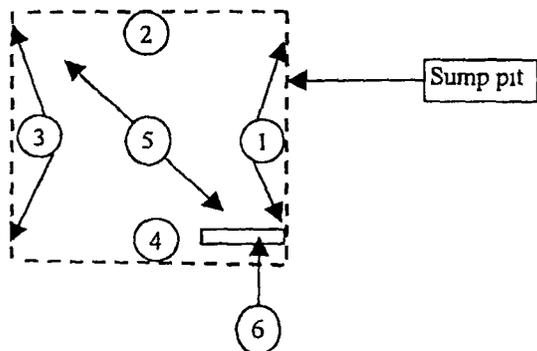
26

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

B-866

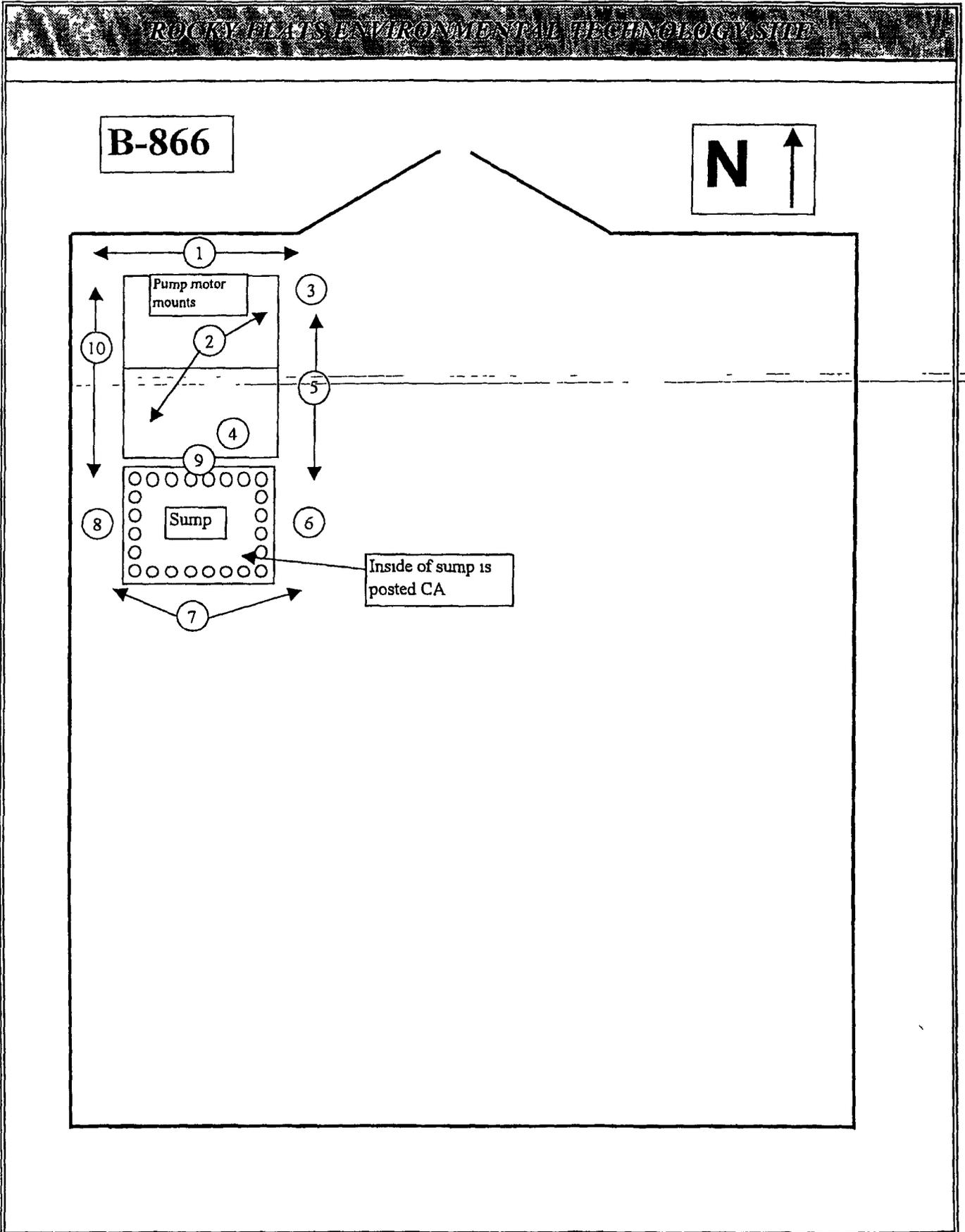


B-866 is posted as CA at doorway



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ROCKY PLATS ENVIRONMENTAL TECHNOLOGY SITE									
INSTRUMENT DATA						Survey type. Contamination			
Mfg	Ludlum	Mfg	Ludlum	Mfg	NE Electra	Building	866		
Model	2929	Model	2929	Model	DP-6	Location	Interior		
Serial #	176082	Serial #	176102	Serial #	3100	Purpose	Floor around sump		
Cal Due	11-27-03	Cal Due	11-22-03	Cal Due	12-30-03	RWP #	03-865-012		
Bkg	0.5 cpm α	Bkg	0.3 cpm α	Bkg	7 cpm α	Date	9-17-03	Time	1500
Efficiency	34.3 %	Efficiency	34.4 %	Efficiency	20.9 %				
MDA	18 dpm α	MDA	18 dpm α	MDA	72 dpm α				
Mfg	Ludlum	Mfg	Ludlum	Mfg	NE Electra				
Model	2929	Model	2929	Model	DP-6				
Serial #	176082	Serial #	176102	Serial #	3100				
Cal Due	11-27-03	Cal Due	11-22-03	Cal Due	12-30-03				
Bkg	82.4 cpm β	Bkg	70.3 cpm β	Bkg	449 cpm β				
Efficiency	38.0 %	Efficiency	41.2 %	Efficiency	30.1 %				
MDA	205 dpm β	MDA	205 dpm β	MDA	337 dpm β				
Mfg	Ludlum	Mfg	Ludlum	Mfg	NE Electra				
Model	2929	Model	2929	Model	DP-6				
Serial #	176082	Serial #	176102	Serial #	3100				
Cal Due	11-27-03	Cal Due	11-22-03	Cal Due	12-30-03				
Bkg	82.4 cpm β	Bkg	70.3 cpm β	Bkg	449 cpm β				
Efficiency	38.0 %	Efficiency	41.2 %	Efficiency	30.1 %				
MDA	205 dpm β	MDA	205 dpm β	MDA	337 dpm β				
Mfg	Ludlum	Mfg	Ludlum	Mfg	NE Electra				
Model	2929	Model	2929	Model	DP-6				
Serial #	176082	Serial #	176102	Serial #	3100				
Cal Due	11-27-03	Cal Due	11-22-03	Cal Due	12-30-03				
PRN/REN #. <u>N/A</u>									
Comments <u>Isotope of concern is Depleted Uranium (U-238)</u>									
SURVEY RESULTS									
Swipe #	LOCATION/DESCRIPTION	ALPHA			BETA				
		Swipe	Direct	Wipe	Swipe	Direct	Wipe		
		dpm/100cm ²	dpm/100cm ²	dpm/wipe	dpm/100cm ²	dpm/100cm ²	dpm/wipe		
1	Floor	<18	85	<72	<205	9050	<337		
2	On pump motor mounts	<18	73	<72	<205	8800	<337		
3	Floor	<18	<72	N/A	<205	680	N/A		
4	On pump motor mounts	<18	315	N/A	<205	47100	N/A		
5	Floor	<18	<72	<72	<205	950	<337		
6	Floor	<18	122	N/A	<205	17500	N/A		
7	Floor	<18	255	<72	<205	32500	<337		
8	Floor	<18	83	N/A	<205	8500	N/A		
9	Floor	<18	338	N/A	<205	48500	N/A		
10	Floor	<18	115	<72	<205	6500	<337		
11	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
12									
13									
14									
15									
16									
17									
18									
19	↓	↓	↓	↓	↓	↓	↓		
20	N/A								
Date Reviewed <u>7-18-03</u> RS Supervision <u>S</u>									



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ATTACHMENT C

Chemical Data Summaries
and Sample Maps

ATTACHMENT C-1

Beryllium Data Summaries and Sample Maps

Table C-1: Building 866 Beryllium Data Summary

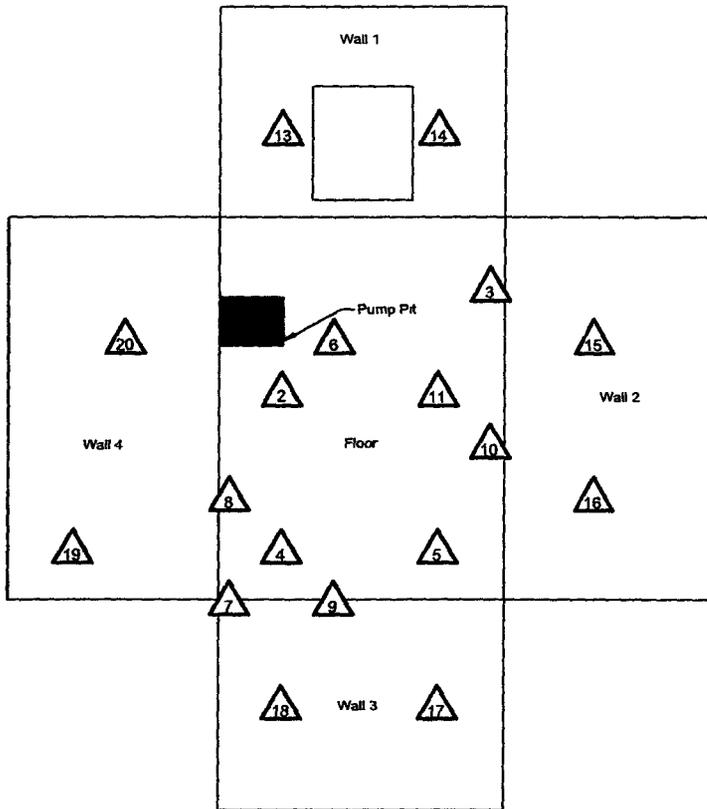
Sample Number	Map Survey Point Location	Room	Sample Location	Result (ug/100 cm ²)
866-0919003-23-001	1	Main	Building 866 - RIN 03Z2279	
866-0919003-23-002	2	Main	Process Waste Sump wall, Random	29.6
866-0919003-23-003	3	Main	On floor, Random	<0.1
866-0919003-23-004	4	Main	On floor, Random	<0.1
866-0919003-23-005	5	Main	On floor, Random	<0.1
866-0919003-23-006	6	Main	On floor, Random	<0.1
866-0919003-23-007	7	Main	On floor, Random	<0.1
866-0919003-23-008	8	Main	On floor, Random	<0.1
866-0919003-23-009	9	Main	On floor, Random	<0.1
866-0919003-23-010	10	Main	On floor, Random	<0.1
866-0919003-23-011	11	Main	On floor, Random	<0.1
866-0919003-23-012	12	Main	On floor, Biased	<0.1
866-0919003-23-013	13	Main	Process Waste Sump wall, Random	6.31
866-0919003-23-014	14	Main	Wall #1, Biased	<0.1
866-0919003-23-015	15	Main	Wall #1, Biased	<0.1
866-0919003-23-016	16	Main	Wall #2, Biased	<0.1
866-0919003-23-017	17	Main	Wall #2, Biased	<0.1
866-0919003-23-018	18	Main	Wall #3, Biased	<0.1
866-0919003-23-019	19	Main	Wall #3, Biased	<0.1
866-0919003-23-020	20	Main	Wall #4, Biased	<0.1
866-0919003-23-021	21	Main	Wall #4, Biased	<0.1
866-0919003-23-022	22	Main	North Ceiling I-beam, Biased	<0.1
866-0919003-23-023	23	Main	South Ceiling I-beam, Biased	<0.1
866-0919003-23-024	24	Main	Ceiling, Biased	<0.1
866-0919003-23-025	25	Main	Ceiling, Biased	<0.1
866-0919003-23-026	26	Main	Ceiling, Biased	<0.1
866-0919003-23-027	27	Main	Ceiling, Biased	<0.1

CHEMICAL SAMPLE MAP

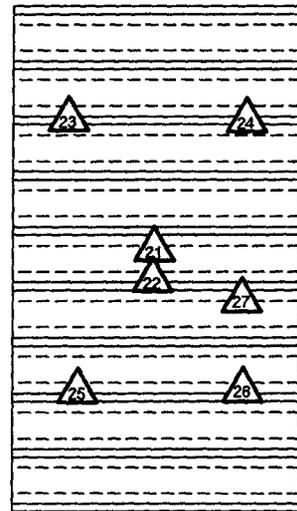
**Building: 866
Beryllium**

PAGE 1 OF 1

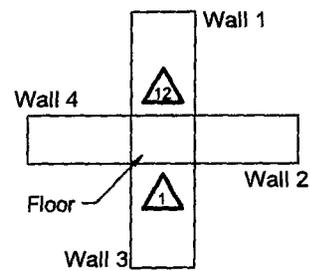
B866 Interior



Expanded Ceiling (inverted)



Pump Pit



<p><u>SURVEY MAP LEGEND</u></p> <ul style="list-style-type: none"> Asbestos Sample Location Beryllium Sample Location Lead Sample Location RCRA/CERCLA Sample Location PCB Sample Location 	<p>Neither the United States Government nor Kaiser Hill Co., nor CH2MHill, nor any agency thereof, nor any of their employees, makes any warranty express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.</p>	<p>N</p>	<p>0 FEET 15</p> <p>0 METERS 5</p> <p>1 inch = 12 feet 1 grid sq = 1 sq m.</p>	<p>U S Department of Energy Rocky Flats Environmental Technology Site</p> <p>Prepared by GIS Dept 303-866 7707 Prepared for</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: right;"> <p>CH2MHILL Communications Group</p> </div> </div> <p>MAP ID 03-0096/B866-IN-BE Sept 19, 2003</p>
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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 implemented for Building 866 based on completed RLCR data (refer to the Building 865 Cluster RLCR) and historical and process knowledge of building operations. Survey designs were implemented based on the uranium limits used as DCGLs in the unrestricted release decision process. Survey results for the Building 866 interior walls and ceiling were evaluated against, and were less than the uranium DCGLs (i.e., < 1,000 dpm/100cm² removable surface activity, < 5,000 dpm/100cm² average total surface activity, and no hot spots within 1 m² over 15,000 dpm/100cm²). Survey results for the 866 exterior were evaluated against, and were less than the transuranic DCGLs (i.e., < 20 dpm/100cm² removable surface activity, < 100 dpm/100cm² average total surface activity, and no hot spots within 1 m² over 300 dpm/100cm²).

Although the wall and ceiling survey TSA results were skewed negatively (i.e., the mean TSA results were -151 dpm/100cm²), the most negative value of the data set (Location #2, -374 dpm/100cm²) was still within normal expected variations. When background subtraction is used to determine a net activity, it is not uncommon to have negative net values. As long as the net values are not excessively negative relative to the applicable DCGL (e.g., more than 20% negative of the DCGL_w value, (-1,000 dpm/100cm² for uranium)), the negative data set is still valid.

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, except for the following anomalous conditions:

- Scans of floor and process waste sump were not performed since it was planned to manage these as LLW/LLMW prior to PDS. Five (5) TSA and RSA measurements were taken on floor and sump for waste management purposes only. One of the process waste sump locations (#24) had a high beta background value (15,044 dpm/100cm²) that was determined to be an instrument malfunction. Therefore, Location #24 was removed from the PDS data set.
- Although the wall and ceiling survey TSA results were skewed negatively, the negative data set is still valid. Refer to the discussion in Section 3 on this anomaly.
- Two beryllium smears above associated action levels were identified (Map Location #1 = 29.6 ug/100cm², and Map Location #12 = 6.31 ug/100cm²), all other smear locations were less than 0.1 ug/100cm².
- Painted surfaces will be managed as PCB Bulk Product waste.
- The B866 floor will be managed as LLW and the process waste sump will be managed as LLMW during demolition activities.
- Concrete will not be used as backfill onsite in accordance with the RFCA RSOP for Recycling Concrete.

Based upon an independent review of the radiological data, it was determined that the original project DQOs satisfied MARSSIM guidance. Except for the floor and process waste sump, all facility contamination levels were below applicable DCGL unrestricted release levels. 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.

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 1 Isolation Controls have been posted to prevent the further inadvertent introduction of contamination into Building 866. On this basis, Building 866 is ready for demolition from a PDS standpoint.

Table D-1 V&V of Radiological Results - Building 866

V&V CRITERIA, RADIOLOGICAL SURVEYS		K-H RSP 16 00 Series MARSSIM (NUREG-1575)	
QUALITY REQUIREMENTS			
Parameters	Measure	Frequency	COMMENTS
ACCURACY	Initial calibrations	90% < x < 110%	Multi-point calibration through the measurement range encountered in the field, programmatic records
	Daily source checks	80% < x < 120%	Performed daily/within range
	Local area background Field	Typically < 2,000 dpm	Although the wall and ceiling survey TSA results were skewed negatively, due to slightly elevated local area backgrounds levels, the negative data set is still valid Refer to the discussion in Section 3 on this anomaly
PRECISION	Field duplicate measurements for TSA	≥ 10% of real survey points	N/A
REPRESENTATIVENESS	MARSSIM methodology Survey Units 866-1-001 (interior)	Statistical and biased	Random w/ statistical confidence
	Survey Maps	NA	Random and biased measurement locations controlled/mapped to ±1m
	Controlling Documents (Characterization Pkg, RSPs)	Qualitative	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	Use of standardized engineering units in the reporting of measurement results
COMPLETENESS	Plan vs Actual surveys	>95%	See Table D-3 for details
	Usable results vs unusable	>95%	
SENSITIVITY	Detection limits	TSA ≤ 2,500 dpm/100cm ²	MDAs ≤ 50% DCGI _w per MARSSIM guidelines
		RA ≤ 500 dpm/100cm ²	

Table D-2 V&V of Beryllium Results - Building 866

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE	
BERYLLIUM	Prep NMAM 7300 METHOD OSHA ID-125G	LAB ---->	Johns Manville Denver, Co RIN 03Z2279
		RIN ---->	
QUALITY REQUIREMENTS		Measure	Frequency
ACCURACY	Calibrations		
	Initial	linear calibration	≥1
	Continuing	80%≤%R<120%	≥1
	LCS/MS	80%≤%R<120%	≥1
	Blanks - lab & field	<MDL	≥1
PRECISION	Interference check std (ICP)	NA	NA
	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	>95%	NA
	Usable results vs unusable	>95%	NA
SENSITIVITY	Detection limits	MDL of	
		0 00084 ug/swipe	all measures
		COMMENTS	
		No qualifications significant enough to change project decisions, i.e. classification of a Type 2 Facility confirmed	
		Two beryllium smears above associated action levels were identified (Map Location #1 = 29 6 ug/100cm ² , and Map Location #12 = 6 31 ug/100cm ²), all other smear locations were less than 0 1 ug/100cm ²	

Table D-3 Data Completeness Summary - Building 866

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 866 (interior)	20 interior (10 random/10 biased)	27 interior (10 random/17 biased)	Contamination found greater than associated action levels (2 locations -- process waste sump)	10CFR850, OSHA ID-125G RIN03ZZ2279 Two beryllium smears above associated action levels were identified (Map Location #1 = 29.6 ug/100cm ² , and Map Location #12 = 6.31 ug/100cm ²), all other smear locations were less than 0.1 ug/100cm ²
Radiological	Survey Area 1 Survey Unit 866-1-001 Building 866 (interior)	20 β TSA (systematic) 20 β RSA (systematic) 2 QC TSA 100% scan of wall and ceiling surfaces	20 β TSA (systematic) 20 β RSA (systematic) 2 QC TSA 100% scan of wall and ceiling surfaces	No contamination found on wall or ceiling survey locations, ceiling and wall results were below PDS unrestricted release levels The floor and process waste sump will be managed as LLW/LLMW	Uranium DCGLs (1,000 dpm/100cm ² removable, 5,000 dpm/100cm ² average total fixed, 15,000 dpm/100cm ² maximum total fixed) Scans of floor and process waste sump were not performed since it was planned to manage these as LLW/LLMW prior to PDS. Five (5) TSA and RSA measurements were taken on floor and sump for waste management purposes only. One of the process waste sump locations (#24) had a high beta background value (15,044 dpm/100cm ²) that was determined to be an instrument malfunction. Therefore, Location #24 was removed from the PDS data set.