



Rocky Flats Environmental Technology Site

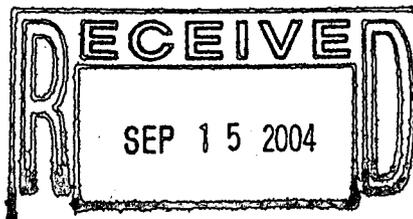
TYPE 2 RECONNAISSANCE LEVEL CHARACTERIZATION REPORT (RLCR) AND PRE-DEMOLITION SURVEY REPORT (PDSR)

Building 964 Closure Project

REVISION 0

August 19, 2004

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



ADMIN RECORD

IA-A-002313

57

**TYPE 2
RECONNAISSANCE LEVEL CHARACTERIZATION
REPORT (RLCR) AND PRE-DEMOLITION SURVEY
REPORT (PDSR)**

Building 964 Closure Project

REVISION 0

August 19, 2004

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ABBREVIATIONS/ACRONYMS

ACM	Asbestos containing material
Be	Beryllium
CDPHE	Colorado Department of Public Health and the Environment
CERCLA	Comprehensive Emergency Response, Compensation and Liability Act
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
IHSS	Individual Hazardous Substance Site
IWCP	Integrated Work Control Package
K-H	Kaiser-Hill
LBP	Lead-based paint
LLW	Low-level waste
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
NORM	Naturally occurring radioactive material
NRA	Non-Rad-Added Verification
OSHA	Occupational Safety and Health Administration
PARCC	Precision, accuracy, representativeness, comparability and completeness
PCBs	Polychlorinated Biphenyls
PDS	Pre-demolition Survey
PDSR	Pre-demolition Survey Plan
PDSR	Pre-demolition Survey Report
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
RLCP	Reconnaissance Level Characterization Plan
RLCR	Reconnaissance Level Characterization Report
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 Reconnaissance Level Characterization (RLC) was performed to enable facility "Typing" per the DPP (10/8/98) and compliant disposition and waste management of Building 964. Because this facility was an anticipated Type 1 facility, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP) requirements. However, during this anticipated Type 1 facility characterization, plutonium contamination was identified on the outside surfaces of the building and on the interior concrete slab. Therefore, this facility has been re-typed as a Type 2 RFCA facility. This characterization report satisfies both the Type 2 facility Reconnaissance Level Characterization Report (RLCR) and the Pre-Demolition Survey Report (PDSR) requirements. All facility surfaces were characterized in this RLC/PDS, including the interior and exterior surfaces (i.e., floor, walls, ceiling and roof). Environmental media beneath and surrounding the facility were not within the scope of this RLCR and will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA.

The RLC/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.

Asbestos abatement was not required per Colorado Department of Public Health and Environment (CDPHE) Regulation 8. All beryllium sample results for Building 964 were less than $0.1 \mu\text{g}/100\text{cm}^2$. The RCRA Unit in 964 (Permitted Storage Area, Unit 24) will be closed prior to demolition in accordance with the Facility Component Removal, Size Reduction, and Decontamination Activities RSOP. Building 964 was not served by utilities, so products such as PCB ballasts, fluorescent lamps, and mercury switches were never present.

Results indicate that radiological contamination exists in excess of the PDSP unrestricted release limits of DOE Order 5400. The exterior west wall (including plywood), interior concrete slab, and portions of the exterior south wall and gutter system contained elevated transuranic contamination and will be managed as LLW during demolition in accordance with the Building 964 Facility Disposition RSOP Notification. All other surfaces met the PDSP unrestricted release limits.

Based upon this RLCR/PDSR, Building 964 is considered a Type 2 facility and can be demolished. To ensure this facility remains free of further contamination and RLC/PDS data remain valid, Level 2 Isolation Controls have been established and the facility posted accordingly.

1 INTRODUCTION

A Reconnaissance Level Characterization (RLC) was performed to enable compliant disposition and waste management of Building 964. Because this facility was an anticipated Type 1 facility, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP) requirements. However, during this anticipated Type 1 facility characterization, plutonium contamination was identified on the outside surfaces of the building and on the interior concrete slab. Therefore, this facility has been re-typed as a Type 2 RFCA facility. All facility surfaces were characterized in this RLC/PDS, including the interior and exterior surfaces of the facilities (i.e., floor, walls, ceiling and roof). Environmental media beneath and surrounding the facility were not within the scope of this RLC/PDS Report and will be addressed at a future date 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 964. 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 facility can be removed, an RLC and PDS must be conducted; this document presents the RLC and PDS results. The RLC/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 RLC/PDS built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report (HSAR).

1.1 Purpose

The purpose of this report is to communicate and document the results of the RLC/PDS effort. An RLC and PDS is performed before a Type 2 building demolition to define the pre-demolition radiological and chemical conditions of a facility. Pre-demolition conditions are compared with the unrestricted release limits for radiological and non-radiological contaminants. RLC/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 for Building 964. Environmental media beneath and surrounding this facility were not within the scope of this RLCR/PDSR and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA.

1.3 Data Quality Objectives

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

2 HISTORICAL SITE ASSESSMENT

A Facility-specific Historical Site Assessment (HSA) was conducted to understand the facility histories and related hazards. The assessment consisted of facility walk-downs, interviews, and document review, including review of the Historical Release Report (refer to the D&D Characterization Protocol, MAN-077-DDCP). Results were used to identify data gaps and needs, and to develop radiological and chemical characterization plans. Results of the facility-specific HSA were documented in a facility-specific *Historical Site Assessment Report (HSAR) for the Area 2-Group 1 Facilities*, dated April 2003, Revision 1 (refer to Attachment B, *Historical Site Assessment Report*). In summary, the HSAR identified a low potential for radiological and/or chemical hazards.

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

Building 964 was characterized for radiological hazards per the PSDP. Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on the facility surfaces. Measurements were performed to evaluate the contaminants of concern. Based upon a review of historical and process knowledge, building walk-downs, and MARSSIM guidance, a Radiological Characterization Plan was developed during the planning phase that describe the minimum survey requirements (refer to the RISS Characterization Project files).

Radiological survey unit package 964002 was developed for the interior and exterior surfaces of Building 964 (excluding the floor and west wall). 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), media samples, 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*.

Building 964 was classified as MARSSIM Class 2 survey unit because it was not expected to contain residual radioactivity greater than the DCGL_w, but had a potential for low levels of contamination. Initially, the slab of Building 964 was broken out as a separate Class 2 survey unit (964001), but during PDS surveys, the slab was found to be contaminated above the PSDP unrestricted release criteria. As a result, the slab will be managed and removed as LLW during demolition. Consequently, survey unit package 964001 was deleted and is not reported as part of this PDS.

Fixed transuranic contamination levels of up to 600 dpm/100cm² were identified on the exterior west and south walls, and south wall gutter system; and up to 251.3 dpm/100cm² was identified in the concrete slab paint, thus, these areas will be managed and disposed of as LLW during demolition. No removable contamination above the PDSP unrestricted release criteria was identified in or on the rest of Building 964. Refer to the survey unit map in Attachment C, *Radiological Data Summary and Survey Maps*, for the LLW locations within Building 964. Documented radiological surveys of these elevated areas are maintained in the RISS Characterization Project files.

The remaining surfaces of the building were surveyed as part of survey unit 964002 (i.e., interior and exterior surfaces of the north and east walls, the ceiling and roof, and portions of the south wall). Sixty-four (64) TSA measurements (14 random, 47 biased and 3 QC) and sixty-one (61) RSA measurements (14 random and 47 biased) were performed on the interior and exterior surfaces as part of survey unit package 964002. A minimum of a 100% scan of the walls 2 meters and below (interior and exterior) and 50% scan of the facility interior and exterior walls above 2 meters (including the ceiling and roof surfaces) were scanned. The RLC/PDS data confirmed that this survey unit does not contain radiological contamination above the PDSP unrestricted release criteria (except for the LLW areas discussed above).

Radiological survey data, statistical analysis results, and survey locations are presented in Attachment C, *Radiological Data Summary and Survey Maps*. The radiological survey unit packages are maintained in the RISS Characterization Project files. Level 2 Isolation Control postings are displayed on the building to ensure no further radioactive materials are not inadvertently introduced.

4 CHEMICAL CHARACTERIZATION AND HAZARDS

Building 964 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 this facility. Based upon a review of historical and process knowledge, visual inspections, and PDSP DQOs, additional sampling needs were determined. A Chemical Characterization Plan (refer to RISS Characterization Project files) was developed during the planning phase that describes sampling requirements, the justification for the sample locations and estimated number of samples. Contaminants of concern included asbestos, beryllium, RCRA/CERCLA constituents, lead and PCBs. Refer to Attachment D, *Chemical Data Summaries and Sample Maps*, for details on sample results and sample locations.

4.1 Asbestos

A survey of building materials suspected of containing asbestos was conducted in Building 964 in accordance with the RLCP & PDSP. A CDPHE-certified asbestos inspector conducted the inspection 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.

A comprehensive, invasive asbestos inspection was conducted to determine the presence of friable and non-friable asbestos containing building materials. The interior of the building is wood, concrete and metal. Records indicate that the roof patching material applied in 2003 contains 0.5% non-friable encapsulated asbestos. The roofing material is a composite roof and when analyzed, was determined to be "None Detected". Because it is less than 1%, it is not considered ACM. Asbestos laboratory analysis data and sample location maps are contained in Attachment D, *Chemical Data Summaries and Sample Maps*.

4.2 Beryllium (Be)

Based on the HSAR and personnel interviews, Building 964 was an anticipated Type 1 facility. Per the HSAR, waste drums stored inside Building 964 contained beryllium waste. Therefore, random beryllium sampling was performed in accordance with the PDSP and the *Beryllium Characterization Procedure, PRO-536-BCPR, Revision 0, September 9, 1999*. The random samples were in areas with the most probable areas of dust accumulation (including beryllium dust), assuming airborne deposition.

All beryllium surface smear sample results for Building 964 were less than 0.1 $\mu\text{g}/100\text{cm}^2$ (33 random samples). Since the random samples covered all areas of concern and there were no biased locations, biased beryllium sampling was not performed. Beryllium laboratory sample data and location maps are contained in Attachment D, *Chemical Data Summaries and Sample Maps*.

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

Based on the HSAR, facility walk-downs and a review of RFETS waste management databases, Building 964 functioned as a waste storage facility since the late 1980's. Prior to being a waste storage facility, the building was used for general equipment and materials storage. Although wastes managed in Building 964 included RCRA/CERCLA regulated materials, there is no record of spills or evidence of RCRA/CERCLA contamination. However, inspection records are only available beginning in 1995, and waste was stored in the building as early as 1989, meaning numerous years of inspection records are missing. As a result, administrative closure of RCRA Unit 24 is unacceptable in accordance with the Facility Component Removal, Size Reduction, and Decontamination Activities RSOP. Consequently, closure of Unit 24 involved abrasively cleaning the entire floor of Building 964 with a high-pressure water spray and performing a visual verification that stains or residues from RCRA/CERCLA constituents did not exist (Clean Closure Option #3 of the Facility Component Removal, Size Reduction, and Decontamination Activities RSOP). Based on the subject RCRA closure activities, RCRA/CERCLA sampling was not performed as part of this RLC/PDS.

However, as part of the RCRA closure planning process, the floor coatings were sampled for RCRA metals, VOCs and SVOCs, and determined to not contain any RCRA/CERCLA constituents above regulatory limits. No other painted surfaces were sampled. A summary of RCRA metals, VOCs and SVOCs sample data and location maps are contained in Attachment D, *Chemical Data Summaries and Sample Maps*.

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

4.4 Polychlorinated Biphenyls (PCBs)

Based on a review of the HSAR and facility walk-downs, there is no history of PCB storage or evidence of PCB contamination in this facility. Building 964 was not served by utilities, therefore, PCB-containing products such as PCB ballasts, were never present. Based on the age of the building (constructed prior to 1980), non-sampled paints are assumed to contain PCBs and all non-sampled painted surfaces will be managed as PCB Bulk Product Waste. The paint on the floor was sampled and determined to not contain PCBs above regulatory limits. A summary of PCB laboratory sample data and location maps are contained in Attachment D, *Chemical Data Summaries and Sample Maps*.

5 PHYSICAL HAZARDS

Physical hazards associated with Building 964 are those common to standard industrial environments and include hazards associated with systems, utilities, and trips and falls. There are no unique physical hazards associated with this building. This building has been relatively well maintained and is in good physical condition, therefore, does not present hazards associated with building deterioration. However, care should be taken during demolition activities as Building 964 is near IHSS 900-176 "S&W Contractor Yard-Active" and IHSS 000-101 "Solar Evaporation Ponds-Active." Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practice.

6 DATA QUALITY ASSESSMENT

Data used in making management decisions for decommissioning of Building 964 and consequent waste management are of adequate quality to support the decisions documented in this report. The data presented in this report (Attachments C and D) were verified and validated relative to DOE quality requirements, applicable EPA guidance, and original DQOs of the project.

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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 E.

7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES

The demolition and disposal of Building 964 will generate a variety of wastes. Estimated waste types and waste volumes are presented below. Waste can be disposed of as low-level radioactive waste (LLW) or sanitary waste, except non-LLW painted surfaces, which will be managed as PCB Bulk Product Waste. The RCRA Unit in 964 (Permitted Storage Area, Unit 964.1) will be closed prior to demolition in accordance with the Facility Component Removal, Size Reduction, and Decontamination Activities RSOP. Concrete from this facility will not be recycled for use at RFETS.

Waste Volume Estimates and Material Types							
Facility	Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM (cu ft)	Other Waste
Building 964	2,500 – LLW (slab)	600 – sanitary 200- LLW (west wall)	250 – sanitary 50 – LLW (south gutters)	2,200 – sanitary 200 – LLW (west and south walls)	0	0	None

8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, Building 964 is classified as a RFCA Type 2 facility pursuant to the RFETS Decommissioning Program Plan (DPP; K-H, 1999) and can be demolished. The Type 2 classification is based on a review of historical and process knowledge, and newly acquired RLC/PDS data.

The RLC/PDS of Building 964 was performed in accordance with the DDCP and PDSP. All PDSP DQOs were met, and all data satisfied the PDSP DQA criteria. This facility does not contain beryllium or asbestos wastes, and "clean closure" of RCRA Unit 24 will be completed prior to demolition. Achieving "clean closure" in accordance with the Facility Component Removal, Size Reduction, and Decontamination Activities RSOP will characterize the slab as non-hazardous. The RCRA Unit in 964 (Permitted Storage Area, Unit 964.1) will be closed prior to demolition in accordance with the Facility Component Removal, Size Reduction, and Decontamination Activities RSOP. There are no hazardous waste concerns with the above-slab structure, and the building never contained hazardous waste producing products such as mercury switches, fluorescent lamps, or PCB ballasts. Demolition debris will be managed in compliance with regulations governing PCB Bulk Product Waste (40 CFR 761), and Environmental Compliance Guidance #27, *Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal*, as applicable.

Results indicate that radiological contamination exists in excess of the PDSP unrestricted release limits of DOE Order 5400. The exterior west and portions of the south walls, south wall gutters, and the interior concrete slab contained fixed transuranic contamination above the PDSP unrestricted release limits. These areas will be managed as LLW during demolition. All other surfaces meet the PDSP unrestricted release limits.

Environmental media beneath and surrounding the facilities will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA. Concrete from this facility will not be recycled for use at RFETS. To ensure this Type 2 facility remains free of further contamination and RLC/PDS data remain valid, Level 2 Isolation Controls have been established and the facility posted accordingly.

9 REFERENCES

- DOE/RFFO, CDPHE, EPA, 1996. *Rocky Flats Clean-up Agreement (RFCA)*, July 19, 1996.
- DOE Order 5400.5, *"Radiation Protection of the Public and the Environment"*
- 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. 3, 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*, December 1997 (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*.
- RFCA *Standard Operation Protocol for Recycling Concrete*, September 28, 1999.
- RFCA *Standard Operation Protocol for Facility Component Removal, Size Reduction, and Decontamination Activities*, February 4, 2001.
- Historical Site Assessment Report (HSAR) for the Area 2-Group 1 Facilities*, Dated April, 2003, Revision 1.

ATTACHMENT A

Facility Location Map

ATTACHMENT B

Historical Site Assessment Report

**D&D RISS Facility Characterization
Historical Site Assessment Report
April, 2003 Rev. 1**

Facility ID: Area 2 - Group 1 Facilities- Buildings 705, 964, 308B, and 308D.

Anticipated Facility Type (1, 2, or 3): Buildings 705, 308B, and 308D are anticipated Type 2 facilities, and 964 is an anticipated Type 1 facility.

This facility-specific Historical Site Assessment (HSA) has been performed in accordance with:

*D&D Characterization Protocol, RFETS MAN-077-DDCP, latest version, and
Facility Disposition Program Manual, RFETS MAN-076-FDPM, latest version*

Physical Description

Building 964

Building 964 is a 5000 sq. ft. building and is currently identified as RCRA Unit 24. Building 964 was originally constructed in the mid 1960s and was used for general storage by a variety of site construction contractors. In 1986 the structure was modified for use as RCRA permitted Unit 24. These modifications include the installation of a spill containment system and the application of an epoxy concrete sealant. Ramps were installed to allow movement of containers in and out of the secondary containment system. Building 964 is a non-insulated corrugated metal structure mounted to a wooden frame. The structure has an asphalt shingle roof and is built on a concrete slab poured on grade.

Building 964 is serviced by the following utilities: Wall-mounted fire extinguishers provide fire protection.

Building 705

Building 705 is the old R&D ceramics laboratory and coatings laboratory constructed in 1966. Building 705 is a 3700 sq. ft. single-story structure with a high bay laboratory area. Building 705 has had two additions since its original construction. The first addition, in 1969, was the addition of the measurement room (Room 103) south of the original structure. The second addition, in 1975, was the addition of the two story mechanical room east of the original structure. In 1991 the sanitary floor drains in the laboratory areas were grouted. Building 705 is not connected to the waste process system.

Building 705 is constructed with concrete block walls, a poured in place concrete slab floor and a metal roof with built-up roofing.

Building 705 is serviced by the following utilities: electric, plant sanitary, plant water, and plant steam. Fire protection is provided by overhead sprinkler system and wall mounted fire extinguishers. The building originally had hydrogen, helium, and nitrogen and oxygen gas supplied by tanks located on the exterior of the south side of the building. These tanks have been removed.

Building 308B

Building 308 is the Modular Storage Tank Pump House and was installed in 1992. Building 308B is a self contained prefabricated 65 sq. ft. metal structure, which houses two pumps used to move waste water from the Modular Storage Tanks to Building 371. Building 308B has a metal roof, floor, and walls and is a portable unit bolted to a concrete slab.

Building 308B is serviced by the following utilities; electric, and fire protection is provided by wall-mounted fire extinguishers.

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Building 308D

Building 308D is the Central Sump Pump House and was installed in 1975. Building 308D is a 65 sq. ft, self-contained fiberglass enclosure, which contains two pumps used to pump interceptor trench water from the concrete collection sump located under Building 308D to the 308B modular tanks. The pump house is a portable fiberglass unit bolted to the top of a concrete sump. The concrete sump is approximately 8 feet wide by 8 feet long by 10 feet deep and constructed with a concrete floor, roof and walls.

Building 308D is serviced by the following utilities; electric.

Historical Operations

Building 964

Building 964 was originally constructed as a general construction storage building and was used by a variety of construction contractors on site. In 1986 the building was coveted to RCRA Storage Unit 24. The building currently stores solid wastes, but on occasions liquid waste has been stored in the building and was placed in metal secondary containment pans. Building 964 primarily stores solidified bypass sludge from Building 371. There are no documented spills in Building 964.

Building 964 is located within the boundary of IHSS 000-101 and 900-176. See the Environment Restoration concerns section below for more detail.

Building 705

Building 705 was originally used as a ceramics R&D laboratory and was later used as a coating laboratory to test a variety of coating methodologies. The ceramics R & D laboratory shaped, formed and heated experimental ceramic parts. The coating R & D laboratory experimented with vapor metal deposition coatings. Building 705 was also used to train site personnel to used the waste stabilization treatment process. This was a training activity, which utilized clean glove boxes, and did not involve any radiological or hazardous material. Operation in Building 705 stopped in 1998.

As an R&D facility, several equipment changes and ventilation modification were performed on the building during its lifetime. Some of the equipment that has been used in Building 705 include vapor hoods, furnaces, ovens, and an X-ray unit.

Building 705 was originally plumbed into the sanitary waste system, in 1991 the drains in the floor of the laboratory areas were grouted to prevent any releases to the sanitary waste system. Drains outside of the laboratory area were not grouted.

In 2001 the building went through an equipment strip-out under the hazard reduction process. All equipment has been removed from the building. No evidence of building radiological contamination was found during this activity.

No internal walkdown was performed due to medical monitoring and training requirements associated with Building 705 being posted as a Beryllium controlled area.

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Building 308B

Building 308B is the pump house for the three temporary modular storage tanks associated with the OU-4 interceptor trench. Ground water contamination resulting from releases from the solar ponds are collected by the OU-4 interceptor trench and pumped to the modular storage tanks 308B-A, 308B-B, and 308B-C. The contaminated ground water is pump to Building 371 for flash evaporation treatment. In the Site SAR, Building 308B is classified as an industrial facility because the groundwater managed by the system has only trace amounts of chemical and radiological contamination. In 1996, the hillside shifted and the pipe between the tanks and the pump house broke. This incident caused the containment system in the pump house to fill with water and several hundred gallons of water was release to the ground. The release did not constitute a reportable quantity.

Building 308D

Building 308D is the Central Sump Pump House for the OU-4 interceptor trench. Ground water contamination resulting from releases from the solar ponds are collected by the OU-4 interceptor trench in the concrete sump under Building 308D the contaminated ground water is pumped to the modular storage tanks 308B-A, 308B-B, and 308B-C. In the Site SAR, Building 308D is classified as an industrial facility because the groundwater managed by the system has only trace amounts of chemical and radiological contamination. In the past, the pumps and associated piping frequently leaked both inside building 308D and the area around the Building 308D. These leaks did not constitute a reportable quantity. The 308D pump house and sump are currently inactive and the sump contains approximately 3 feet of water.

Current Operational Status

Buildings 705 is inactive and currently being prepared for D&D. Building 964 and 308B are currently operational. Building 308D is not currently operational.

Contaminants of Concern

Asbestos

Describe any potential, likely, or known sources of Asbestos:

Building 705 is posted as potentially containing asbestos. Building 308B, 308D and 964 have no asbestos postings. None of the buildings in this HSA have had a comprehensive asbestos survey.

Beryllium (Be)

Describe any potential, likely, or known Be production or storage locations:

Building 705 is posted as a beryllium control area and has several rooms listed on the List of known Beryllium areas (Rooms 100, 100A, 102, and 206). Building 964, 308B and 308D are not on the list of known Beryllium areas.

Summarize any recent Be sampling results:

No resent Be samples collected on any of these facilities.

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Lead

Describe any potential, likely, or known sources of Lead (e.g., paint, shielding, etc.):

Due to the age of construction of some of the facilities in this HSA, lead in paint and lead in electrical equipment may be a concern. Lead shielding was used in Building 705, but was removed during hazard reduction activities in 2001. Building 308B, 308D and 964 were not known to have used lead shielding.

See the section below for RCRA/CERCLA constituents for any lead in waste stream references related to these buildings.

RCRA/CERCLA Constituents

Describe any potential, likely, or known sources of RCRA/CERCLA constituents (e.g., chemical storage, waste storage, and processes):

Building 964 is RCRA Unit 24 and will be closed in accordance with the RCRA Part B Permit. This unit primarily stores solidified bypass sludge from building 371. There are no documented releases from this storage unit. Building 308B, 308D and 705 are not associated with any RCRA Unit. Building 308B and 308 D pumped OU-4 groundwater. This groundwater had very low levels of contamination, primarily nitrates, metals and some uranium.

The Building 705 coatings laboratory primarily performed research with beryllium, but also used a variety of other metals in a more limited extent (i.e. chromium, cadmium, hafnium, lead, lutetium, nickel, magnesium, and molybdenum, silver). Miscellaneous laboratory chemicals were also used (i.e. acids, bases, solvents)

Building 308B and 308D pump houses were used to pump ground water from the trenches to the 308B modular storage tanks and eventually to Building 371 for flash evaporation treatment. The water handled by these buildings contained trace amounts of chemical contamination (mostly nitrates and some metals).

See the Building specific WSRIC for a more detailed listing of the waste streams associated with each building addressed in this HSA.

Describe any potential, likely, or known spill locations (and sources, if any):

Building 964 has no documented spills, but is located within the boundary of two IHSS. (See the Environmental Restoration Concerns section below). Building 705 has no documented spills. Building 308B has had one release in 1996 (see process history section). Building 308D frequently had small volume leaks from its piping and pumps (see process history section). Due to the low concentration of contamination in the water, these leaks did not constitute a reportable release. These incidents were reported to the state as a best management practice.

Describe methods in which spills were mitigated, if any:

Building 964 and 705 had no documented releases. The 1996 release from Building 308B was pumped to a portable tank and disposed of at Building 371.

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PCBs

Describe any potential, likely, or known sources of PCBs (e.g., light ballasts, paints, equipment, etc.):

Due to the age of some of these facilities, there may be a concern with PCBs in paint, light ballasts, and electrical equipment. PCBs were not known to have been regularly handled in any of these facilities.

Describe any potential, likely, or known spill locations (and sources, if any):

No known PCB spills occurred in any of the facilities addressed in this HSA.

Describe methods in which spills were mitigated, if any:

No known PCB spills occurred in any of the facilities addressed in this HSA.

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Radiological Contaminants

Describe any potential, likely, or known radiological production or storage locations:

Building 964 is the only building in this HSA that is currently radiologically posted. Building 964 is used primarily to store solidified bypass sludge (low-level mixed waste) from building 371.

Building 705 primarily performed non-radiological R&D activities. However, depleted uranium was used in a few special projects. No known building contamination resulted from these special projects. No equipment contamination or building contamination was found during the hazard reduction activities performed on Building 705 during 2001.

Building 308B and 308D were used to pump ground water from the OU-4 interceptor trench to the 308B modular storage tanks and eventually to Building 371 for flash evaporation treatment. The water contained trace amounts of radioactive contamination (mostly uranium). The water is not regulated as a radioactive material.

Describe any potential, likely, or known spill locations (e.g., known leaking sealed radioactive sources, leaking waste drums, potentially contaminated drains, etc.):

Building 964 has had no documented spills, but is located within the boundary of two IHSS. (See the Environmental Restoration Concerns section below).

Building 705 had no known spills.

Building 308B has had one release in 1996 (see process history section). Building 308D frequently had small volume leaks from its piping and pumps (see process history section). Due to the low concentration of contamination in the water, these leaks did not constitute a reportable release. These incidents were reported to the state as a best management practice.

Additional, release information is documented in the IHSS, PAC, and UBC section below.

Describe methods in which spills were mitigated, if any:

None

Describe any potential, likely, or known isotopes of concern (e.g., weapons grade plutonium, uranium isotopes, pure beta emitters, mixed fission products, etc.):

The primary Isotope of concern includes, but is not limited to depleted uranium. Other than sealed sources, there were no known mixed fission products or pure beta emitters used in any of the facilities addressed in the HSA.

Describe any potential, likely, or known external facility contamination (e.g., stack release points, unfiltered ventilation, facility's physical location to known site releases, etc.):

See section below for information on IHSSs PACs, and UBCs.

**D&D RISS Facility Characterization
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Environmental Restoration Concerns

Describe any ER concerns that could affect facility characterization (e.g., IHSSs, PACs, UBCs):

Building 308B is located near, the following active PACs;

- 1) PAC NE- 1407 "771 Hillside Sludge Release", NFA Recommendation Approved 1999.

Building 308D is located near the following PAC:

- 1) PAC NE 1409 "Modular Tanks and 910 Treatment System Spill", NFA Recommendation Approved 2001.

Building 964 is associated with or located near the following IHSSs.

- 1) IHSS 900-176 "S&W Contractor Yard", Active.
- 2) IHSS 000-101 "Solar Evaporation Ponds", Active.

Building 705 and are not associated with any IHSSs, PACs, and UBCs. None of the facilities in this HSA have UBCs.

Sanitary drains are covered, site wide, in PAC 000-500 and storm drains are covered, site wide, in PAC 000-505.

Additional Information

Describe any additional information that may be useful during facility characterization (e.g., contaminant migration routes, waste handling operations, physical hazards, Historical Release Reports, WSRIC data, etc.):

None

References

Provide all sources of information utilized to gather data for facility history (e.g., documents, files, interviews):

Sources reviewed to complete this HSA were the RFETS Facility List, the Historical Release Report, Site Master List of RCRA Units, and the Site IHSS, PAC, and UBC databases. Building 705 WSRIC, (Building 308B, 308D and 964 do not have WSRICs). In addition, a facility walkdown and interviews were performed.

Waste Volume Estimates and Material Types

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)
Building 705	5500	0	400	0	1100	TBD	None
Building 964	2500	600	300	2400	0	TBD	None
Building 308B	100	0	100	0	0	TBD	None
Building 308D	950	0	25	0	0	TBD	Fiberglass - 100

Further Actions

Recommend any further actions, if any (e.g., characterization, decontamination, special handling, etc.):

Begin the RLC/PDS process.

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ATTACHMENT C

Radiological Data Summaries and Survey Maps

Survey Area: 2

Survey Unit: 964002

Building: 964

Description: Building 964 (Interior and Exterior, Excluding the floor)

Rocky Flats Environmental Technology Site Final Radiological Survey Summary Results

Total Surface Activity Measurements

Nbr Random Measurements Required: 15

Nbr Biased Measurements Required: 40

Nbr QC Required: 2

Nbr Random Measurements Performed: 14

Nbr Biased Measurements Performed: 47

Nbr QC Performed: 3

Alpha

Maximum: 98.8 dpm/100cm²

Minimum: -12.7 dpm/100cm²

Mean: 17.1 dpm/100cm²

Standard Deviation: 25.9

QC Maximum: 59.6 dpm/100cm²

QC Minimum: 13.6 dpm/100cm²

QC Mean: 41.3 dpm/100cm²

Transuranic DCGL_w: 100.0 dpm/100cm²

Transuranic DCGL_{EMC}: 300.0 dpm/100cm²

Removable Surface Activity Measurements

Nbr Random Measurements Required: 15

Nbr Biased Measurements Required: 40

Nbr Random Measurements Performed: 14

Nbr Biased Measurements Performed: 47

Alpha

Maximum: 13.2 dpm/100cm²

Minimum: -1.2 dpm/100cm²

Mean: 0.6 dpm/100cm²

Standard Deviation: 2.3

Transuranic DCGL_w: 20.0 dpm/100cm²

Media Sample Results

Nbr Random Required: 0

Nbr Biased Required: 0

Nbr Random Collected: 0

Nbr Biased Collected: 0

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

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Survey Area: 2

Survey Unit: 964002

Building: 964

Description: Building 964 (Interior and Exterior, Excluding the floor)

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/100cm ²)		Survey Type
							Alpha	Beta	Alpha	Beta	
1	711799	03/23/04	Electra	1833	DP-6	09/03/04	0.214	NA	48.0	NA	T
2	511390	03/23/04	Electra	1665	DP-6	08/11/04	0.213	NA	48.0	NA	S
3	512590	03/23/04	Electra	2352	DP-6	05/11/04	0.225	NA	48.0	NA	S
4	711799	03/24/04	Electra	1665	DP-6	08/11/04	0.213	NA	48.0	NA	S
5	512590	03/24/04	Electra	2352	DP-6	05/11/04	0.225	NA	48.0	NA	S
6	711799	04/01/04	Electra	1833	DP-6	09/03/04	0.214	NA	48.0	NA	T
7	711799	04/05/04	Electra	675	AP-6	06/22/04	0.164	NA	48.0	NA	S
8	512590	04/05/04	Electra	1379	DP-6	08/03/04	0.208	NA	48.0	NA	S
9	511390	04/06/04	Electra	2352	DP-6	05/11/04	0.225	NA	48.0	NA	T
10	512590	04/07/04	Electra	2352	DP-6	05/11/04	0.225	NA	48.0	NA	T
11	511390	04/07/04	Electra	632	AP-6	07/07/04	0.183	NA	48.0	NA	S
12	509231	04/12/04	Electra	632	AP-6	07/07/04	0.183	NA	48.0	NA	S
13	711799	04/12/04	Electra	675	AP-6	06/22/04	0.164	NA	48.0	NA	S
14	512590	04/12/04	Electra	1379	DP-6	08/03/04	0.208	NA	48.0	NA	S
15	511390	04/12/04	Electra	1665	DP-6	08/11/04	0.213	NA	48.0	NA	S
16	509231	04/13/04	Electra	632	AP-6	07/07/04	0.183	NA	48.0	NA	S
17	711799	04/13/04	Electra	675	AP-6	06/22/04	0.164	NA	48.0	NA	S
18	511390	04/13/04	Electra	1379	DP-6	08/03/04	0.208	NA	48.0	NA	S
19	512590	04/13/04	Electra	2352	DP-6	05/11/04	0.225	NA	48.0	NA	S
20	512590	04/15/04	Electra	2352	DP-6	05/11/04	0.225	NA	48.0	NA	T
21	711799	04/15/04	Electra	1665	DP-6	08/11/04	0.213	NA	48.0	NA	S
22	509231	04/15/04	Electra	3126	DP-6	06/17/04	0.219	NA	48.0	NA	S
23	511390	04/14/04	SAC-4	924	NA	04/27/04	0.330	NA	10.0	NA	R
24	511390	04/14/04	SAC-4	966	NA	04/23/04	0.330	NA	10.0	NA	R
25	511390	04/14/04	SAC-4	845	NA	07/26/04	0.330	NA	10.0	NA	R
26	511390	04/14/04	SAC-4	830	NA	04/22/04	0.330	NA	10.0	NA	R
27	509231	04/20/04	SAC-4	924	NA	04/27/04	0.330	NA	10.0	NA	R
28	509231	04/20/04	SAC-4	966	NA	04/23/04	0.330	NA	10.0	NA	R
29	711447	08/09/04	Electra	3105	DP-6	11/18/04	0.196	NA	48.0	NA	T
30	712193	08/09/04	Electra	2352	DP-6	11/13/04	0.224	NA	48.0	NA	Q
31	511390	08/09/04	Ludlum 292	99042	NA	10/26/04	0.349	NA	10.0	NA	R

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

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Survey Area: 2

Survey Unit: 964002

Building: 964

Description: Building 964 (Interior and Exterior, Excluding the floor)

Random Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm ²)	Net Beta (dpm/100cm ²)	
964002PRP-N001	27	0.6	N/A	
964002PRP-N002	31	-1.2	N/A	
964002PRP-N003	31	-1.2	N/A	
964002PRP-N004	28	1.2	N/A	
964002PRP-N005	31	7.5	N/A	
964002PRP-N006	27	-0.9	N/A	
964002PRP-N007	28	-0.3	N/A	
964002PRP-N008	27	-0.9	N/A	
964002PRP-N010	28	4.2	N/A	
964002PRP-N011	27	-0.9	N/A	
964002PRP-N012	31	13.2	N/A	
964002PRP-N013	28	1.2	N/A	
964002PRP-N014	31	-1.2	N/A	
964002PRP-N015	27	-0.9	N/A	

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Survey Area: 2

Survey Unit: 964002

Building: 964

Description: Building 964 (Interior and Exterior, Excluding the floor)

Biased Removable Surface Activity Data Sheet

Biased Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm ²)	Net Beta (dpm/100cm ²)	
964002PBP-N016	26	3.0	N/A	
964002PBP-N017	24	-0.6	N/A	
964002PBP-N018	25	-0.9	N/A	
964002PBP-N019	23	-0.3	N/A	
964002PBP-N020	26	1.5	N/A	
964002PBP-N021	23	-0.3	N/A	
964002PBP-N022	24	-0.6	N/A	
964002PBP-N023	25	-0.9	N/A	
964002PBP-N024	31	-1.2	N/A	
964002PBP-N028	26	0.0	N/A	
964002PBP-N029	23	-0.3	N/A	
964002PBP-N030	24	2.4	N/A	
964002PBP-N031	25	-0.9	N/A	
964002PBP-N032	26	0.0	N/A	
964002PBP-N033	26	1.5	N/A	
964002PBP-N034	25	0.6	N/A	
964002PBP-N035	23	-0.3	N/A	
964002PBP-N036	24	3.9	N/A	
964002PBP-N037	25	-0.9	N/A	
964002PBP-N038	26	1.5	N/A	
964002PBP-N039	23	-0.3	N/A	
964002PBP-N040	24	-0.6	N/A	
964002PBP-N041	25	0.6	N/A	
964002PBP-N042	26	0.0	N/A	
964002PBP-N043	23	-0.3	N/A	
964002PBP-N044	24	2.4	N/A	
964002PBP-N045	25	2.1	N/A	

Survey Area: 2

Survey Unit: 964002

Building: 964

Description: Building 964 (Interior and Exterior, Excluding the floor)

Biased Removable Surface Activity Data Sheet

Biased Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm ²)	Net Beta (dpm/100cm ²)	
964002PBP-N046	24	2.4	N/A	
964002PBP-N047	25	-0.9	N/A	
964002PBP-N048	25	-0.9	N/A	
964002PBP-N049	23	-0.3	N/A	
964002PBP-N050	26	1.5	N/A	
964002PBP-N051	23	-0.3	N/A	
964002PBP-N052	24	-0.6	N/A	
964002PBP-N055	28	2.7	N/A	
964002PBP-N056	27	-0.9	N/A	
964002PBP-N057	28	-0.3	N/A	
964002PBP-N058	27	-0.9	N/A	
964002PBP-N059	28	1.2	N/A	
964002PBP-N060	27	-0.9	N/A	
964002PBP-N061	28	1.2	N/A	
964002PBP-N062	27	0.6	N/A	
964002PBP-N063	28	2.7	N/A	
964002PBP-N064	27	-0.9	N/A	
964002PBP-N065	28	-0.3	N/A	
964002PBP-N066	27	-0.9	N/A	
964002PBP-N067	28	-0.3	N/A	

Comments:

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Survey Area: 2

Survey Unit: 964002

Building: 964

Description: Building 964 (Interior and Exterior, Excluding the floor)

Random/QC Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm ²)	Net Beta (dpm/100cm ²)	
964002PRP-N001	20	-4.1	N/A	
964002PRP-N002	29	-5.0	N/A	
964002PRP-N003	29	-2.0	N/A	
964002PRP-N004	20	-9.9	N/A	
964002PRP-N005	29	22.0	N/A	
964002PRP-N006	20	4.8	N/A	
964002PRP-N007	20	7.9	N/A	
964002PRP-N008	20	-9.9	N/A	
964002PRP-N010	20	34.5	N/A	
964002PRP-N011	20	-9.9	N/A	
964002PRP-N012	29	15.4	N/A	
964002PRP-N013	20	19.9	N/A	
964002PRP-N014	29	16.9	N/A	
964002PRP-N015	20	4.8	N/A	
964002QRP-N022	30	59.6	N/A	
964002QRP-N034	30	50.6	N/A	
964002QRP-N037	30	13.6	N/A	

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Survey Area: 2

Survey Unit: 964002

Building: 964

Description: Building 964 (Interior and Exterior, Excluding the floor)

Biased Total Surface Activity Data Sheet

Biased Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm ²)	Net Beta (dpm/100cm ²)	
964002PBP-N016	10	88.2	N/A	
964002PBP-N017	10	37.9	N/A	
964002PBP-N018	10	64.6	N/A	
964002PBP-N019	10	70.4	N/A	
964002PBP-N020	3	34.8	N/A	
964002PBP-N021	3	43.7	N/A	
964002PBP-N022	3	52.6	N/A	
964002PBP-N023	3	29.1	N/A	
964002PBP-N024	29	98.8	N/A	
964002PBP-N028	3	25.9	N/A	
964002PBP-N029	3	17.1	N/A	
964002PBP-N030	3	40.6	N/A	
964002PBP-N031	3	58.4	N/A	
964002PBP-N032	3	37.9	N/A	
964002PBP-N033	1	53.0	N/A	
964002PBP-N034	1	71.7	N/A	
964002PBP-N035	9	2.4	N/A	
964002PBP-N036	9	17.1	N/A	
964002PBP-N037	10	25.9	N/A	
964002PBP-N038	9	5.1	N/A	
964002PBP-N039	10	13.9	N/A	
964002PBP-N040	10	5.1	N/A	
964002PBP-N041	10	29.1	N/A	
964002PBP-N042	10	25.9	N/A	
964002PBP-N043	10	8.2	N/A	
964002PBP-N044	10	-9.6	N/A	
964002PBP-N045	10	11.3	N/A	

Survey Area: 2

Survey Unit: 964002

Building: 964

Description: Building 964, (Interior and Exterior, Excluding the floor)

Biased Total Surface Activity Data Sheet

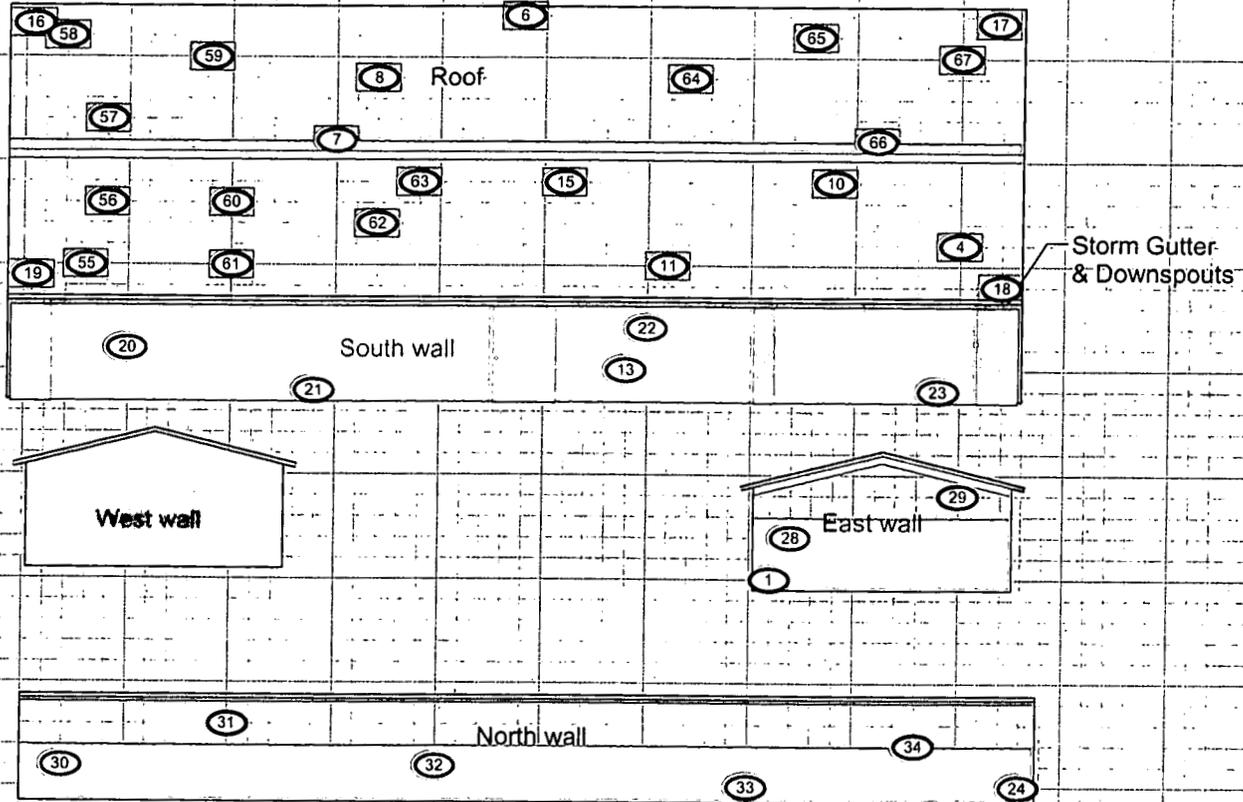
Biased Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm ²)	Net Beta (dpm/100cm ²)	
964002PBP-N046	10	17.1	N/A	
964002PBP-N047	10	-6.5	N/A	
964002PBP-N048	10	-6.5	N/A	
964002PBP-N049	10	5.1	N/A	
964002PBP-N050	10	-0.7	N/A	
964002PBP-N051	10	2.4	N/A	
964002PBP-N052	10	2.4	N/A	
964002PBP-N055	20	-3.8	N/A	
964002PBP-N056	20	-9.6	N/A	
964002PBP-N057	20	-9.6	N/A	
964002PBP-N058	20	8.2	N/A	
964002PBP-N059	20	2.4	N/A	
964002PBP-N060	20	29.1	N/A	
964002PBP-N061	20	-3.8	N/A	
964002PBP-N062	20	-0.7	N/A	
964002PBP-N063	20	2.4	N/A	
964002PBP-N064	20	-12.7	N/A	
964002PBP-N065	20	-6.5	N/A	
964002PBP-N066	20	-6.5	N/A	
964002PBP-N067	20	-3.8	N/A	

Comments: Random survey location #9 was removed from this survey unit. It was located on the west wall which is contaminated and will be managed as low level waste. Three (3) extra random locations were included in this package, therefore replacement of this survey location is not required.

PRE-DEMOLITION SURVEY

Survey Area: 2 Survey Unit: 964002 Classification: 2
 Building: 964
 Survey Unit Description: Interior and Exterior of 964, (Excluding the floor)
 Total Area: 2,695 sq. m. Total Floor Area: 591 sq. m.

964 Exterior



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Low Level Waste Areas

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Scan Survey Information
 Survey Instrument ID #(s) & RCT ID #(s):
 2-5, 7, 8, 11-19, 21, 22

N
↑

0 FEET 40

 0 METERS 10

1 inch = 30 feet 1 grid sq. = 1 sq. m.

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

Prepared by: GIS Dept. 303-986-7707 Prepared for:

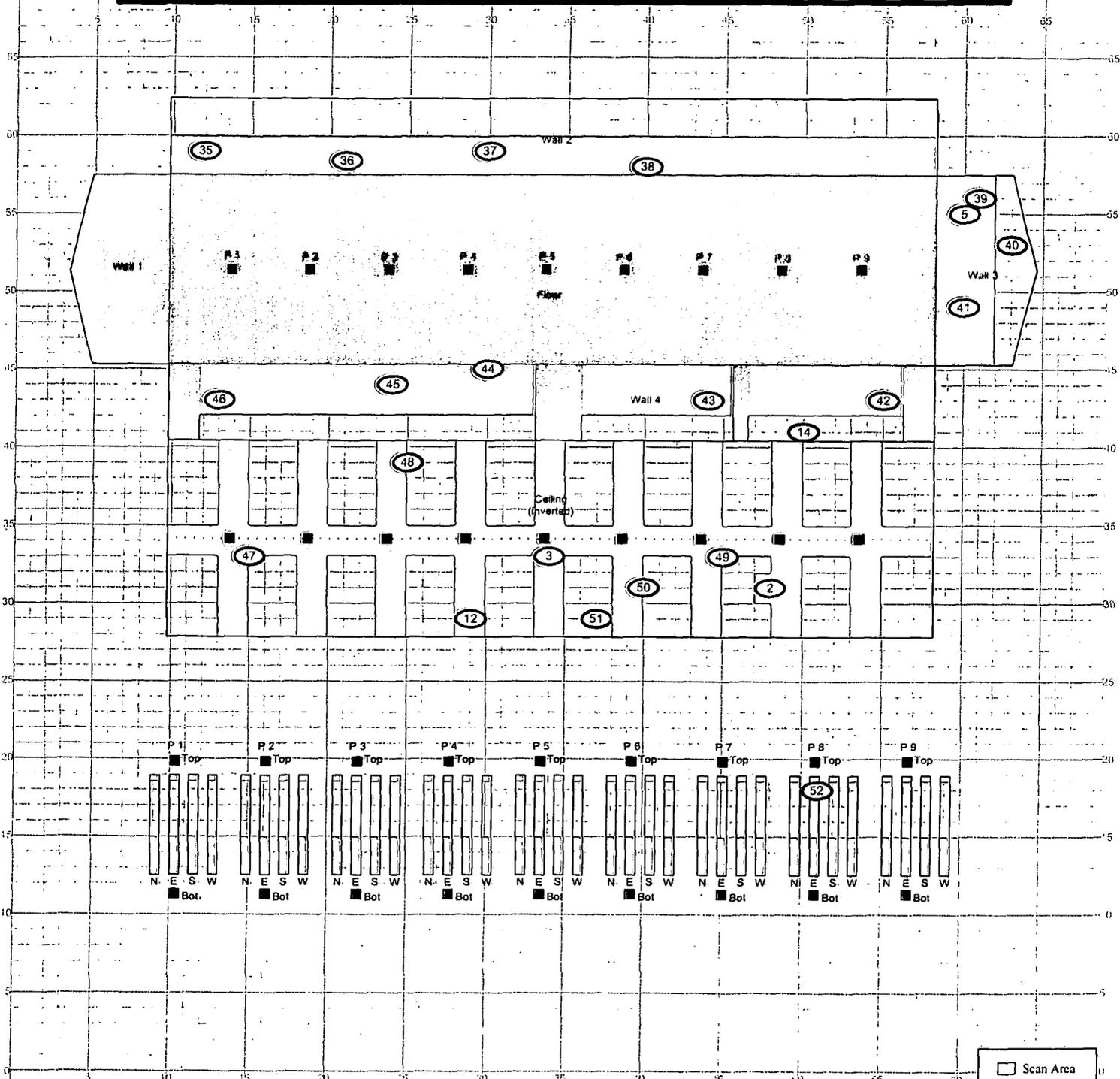
MAP ID: 02-0355/964EX-SC Aug. 18, 2004

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PRE-DEMOLITION SURVEY

Survey Area: 2 Survey Unit: 964002 Classification: 2
 Building: 964
 Survey Unit Description: Interior and Exterior of 964, (Excluding the floor)
 Total Area: 2,695 sq. m. Total Floor Area: 591 sq. m.

PAGE 2 OF 2



<p>SURVEY MAP LEGEND</p> <ul style="list-style-type: none"> Smear & TSA Location Smear, TSA & Sample Location Open/Inaccessible Area Low Level Waste Areas 	<p>Neither the United States Government nor Kaiser Hill Co., nor DynCorp I&ET, 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>Scan Survey Information Survey Instrument ID #(s) & RCT ID #(s): 2-5, 7, 8, 11-19, 21, 22</p>	<p style="text-align: center;">N</p> <p style="text-align: center;">0 FEET 40</p> <p style="text-align: center;">0 METERS 10</p> <p style="text-align: center;">1 inch = 30 feet 1 grid sq. = 1 sq. m.</p>	<p style="text-align: center;">U.S. Department of Energy Rocky Flats Environmental Technology Site</p> <p>Prepared by: GIS Dept. 303-966-7707 Prepared for:</p> <div style="display: flex; justify-content: space-around;"> </div> <p>MAP ID: 02-03551B964IN-SC Aug. 17, 2004</p>
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ATTACHMENT D

Chemical Data Summaries and Sample Maps

Asbestos Data Summary

Sample Number	Map Survey Location	Room	Material Sampled and Location	Analytical Results
964-10202003-9-101	1	Roof	Green Shingle Building 964 - RIN 04Z0173	None Detected

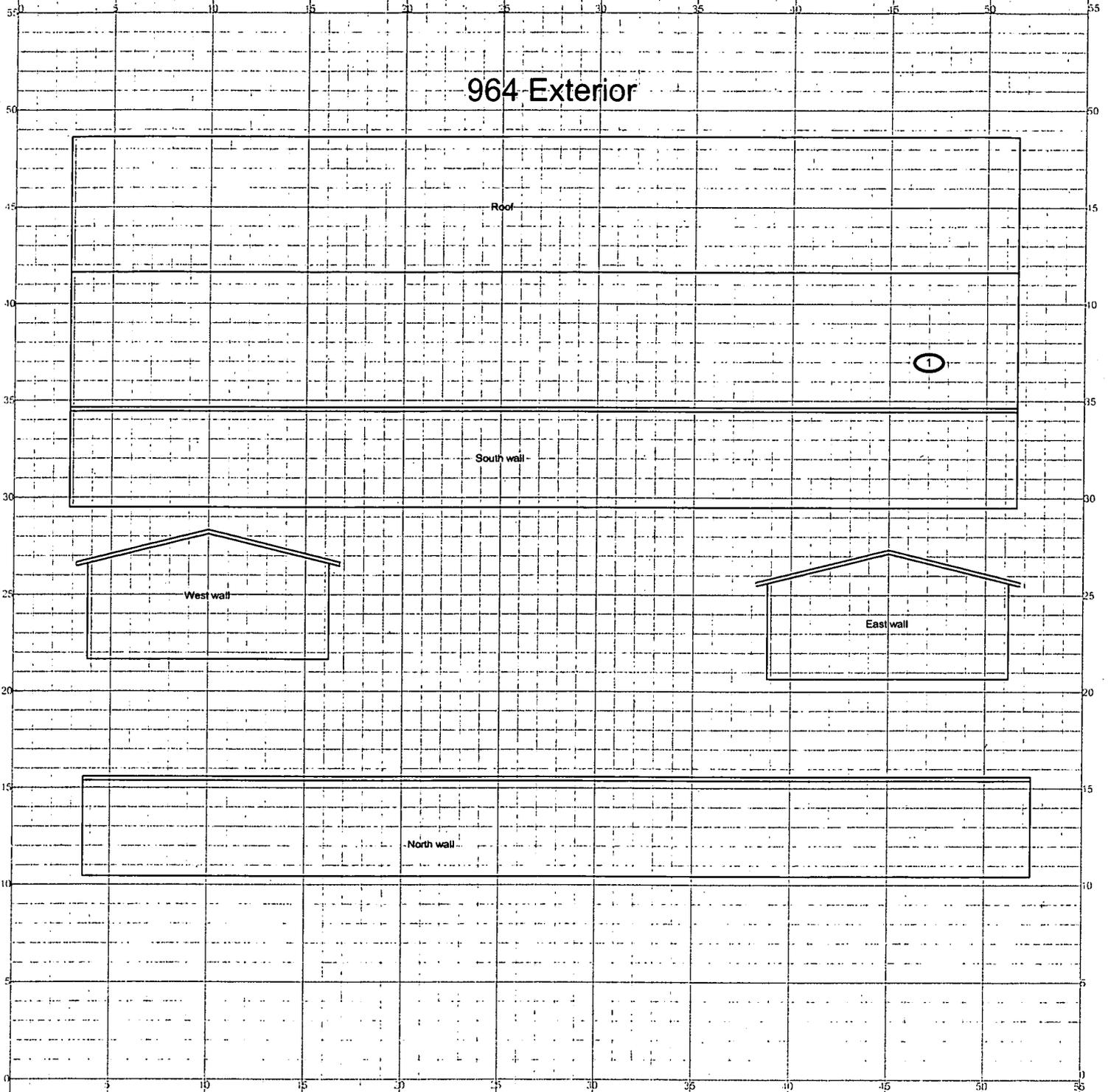
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CHEMICAL SAMPLE MAP

Building 964
Asbestos

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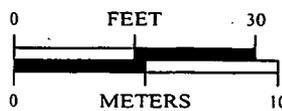
964 Exterior



SURVEY MAP LEGEND

-  Asbestos Sample Location
-  Beryllium Sample Location
-  Lead Sample Location
-  RCRA/CERCLA Sample Location
-  PCB Sample Location

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

-  Open/Inaccessible Area
-  Area in Another Survey Unit

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Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

Prepared for:



CH2MHILL
Communications Group



MAP ID: 02-0355/964-EX-ASB

Aug. 16, 2004

Beryllium Data Summary

Sample Number	Map Survey Point Location	Room	Sample Location	Result (ug/100 cm ²)
Building 964 – RIN04Z1663, Random Points				
964-04052004-9-001	1	Main	Floor – see map	< 0.1
964-04052004-9-002	2	Main	Floor – see map	< 0.1
964-04052004-9-003	3	Main	Floor – see map	< 0.1
964-04052004-9-004	4	Main	Floor – see map	< 0.1
964-04052004-9-005	5	Main	Floor – see map	< 0.1
964-04052004-9-006	6	Main	Floor – see map	< 0.1
964-04052004-9-007	7	Main	Pier 4, 12 feet above floor	< 0.1
964-04052004-9-008	8	Main	Floor – see map	< 0.1
964-04052004-9-009	9	Main	Pier # 1, 10 feet above floor	< 0.1
964-04052004-9-010	10	Main	Pier # 8, 12 feet above floor	< 0.1
964-04052004-9-011	11	Main	Floor – see map	< 0.1
964-04042004-9-012	12	Main	Floor – see map	< 0.1
964-04052004-9-013	13	Main	Pier # 6, 12 feet above floor	< 0.1
964-04052004-9-014	14	Main	Floor – see map	< 0.1
964-04052004-9-015	15	Main	Floor – see map	< 0.1
964-04052004-9-016	16	Main	Floor – see map	< 0.1
964-04052004-9-017	17	Main	Floor – see map	< 0.1
964-04052004-9-018	18	Main	Pier # 9, 12 feet above floor	< 0.1
964-04052004-9-019	19	Main	Floor – see map	< 0.1
964-04052004-9-020	20	Main	Floor – see map	< 0.1
964-04052004-9-021	21	Main	East wall, 3 feet above floor	< 0.1
964-04052004-9-022	22	Main	Floor – see map	< 0.1
964-04052004-9-023	23	Main	East wall, 3 feet above floor	< 0.1
964-04052004-9-024	24	Main	Floor – see map	< 0.1
964-04052004-9-025	25	Main	Floor – see map	< 0.1
964-04052004-9-026	26	Main	Pier # 3, elevated 12 feet	< 0.1
964-04052004-9-027	27	Main	Floor – see map	< 0.1
964-04052004-9-028	28	Main	Pier # 2, elevated 12 feet	< 0.1
964-04052004-9-029	29	Main	Pier # 7, elevated 12 feet	< 0.1
964-04052004-9-030	30	Main	South wall, 3 feet above floor	< 0.1
964-04052004-9-031	31	Main	Floor – see map	< 0.1
964-04052004-9-032	32	Main	Pier # 5, elevated 12 feet	< 0.1
964-04052004-9-033	33	Main	Floor – see map	< 0.1

SURVEY MAP LEGEND

Asbestos Sample Location

Beryllium Sample Location

Lead Sample Location

RCA/CERCLA Sample Location

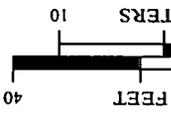
PCB Sample Location

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Area in Another Survey Unit

Open/Inaccessible Area



1 inch = 30 feet 1 grid sq. = 1 sq. m.

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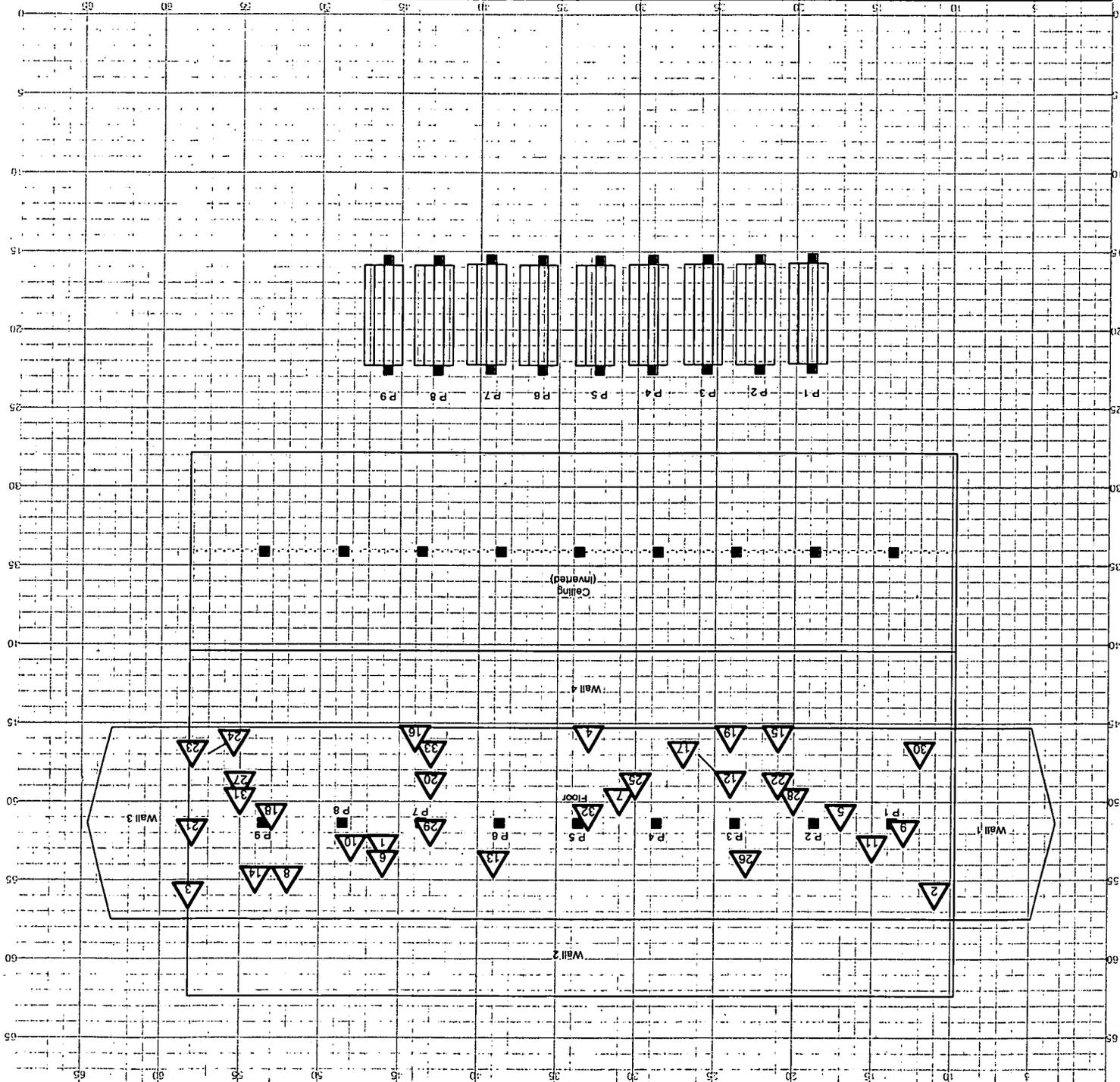
Prepared by: GIS Dept. 303-968-7707

Prepared for:

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

Feb 25, 2003

MAP ID: 02-03551B964 Int BE



CHEMICAL SAMPLE MAP
Building 964 Beryllium
Floor Area = 591 sq. m. = 6,360 sq. ft.
No. of SU Random Samples = 33
PAGE 1 OF 1

RCRA/CERCLA Constituents Data Summary

Sample Location/ Media/Sample Number	Sample Map Number	Analysis	Result (mg/L)
Bldg. 964, Concrete Slab - Sample Numbers: 04S0283.001.001/ 04S0283.001.002 and 04S0283.002.001/ 04S0283.002.002	1 and 2	RCRA Metals, SVOC, and VOC	RCRA Toxicity Characteristic substances less than regulatory limits, RCRA Listed substances not applicable

RCRA Toxicity Characteristic Limits

Analyte	Regulatory limit (mg/L)
Arsenic (D004)	5.0
Barium (D005)	100.0
Benzene (D018)	0.5
Cadmium (D006)	1.0
Carbon tetrachloride (D019)	0.5
Chlordane (D020)	0.03
Chlorobenzene (D021)	100.0
Chloroform (D022)	6.0
Chromium (D007)	5.0
o-Cresol (D023)	200.0 (a)
m-Cresol (D024)	200.0 (a)
p-Cresol (D025)	200.0 (a)
Cresol (D026)	200.0 (a)
2,4 -D (D016)	10.0
1,4 Dichlorobenzene (D027)	7.5
1,2 Dichloroethane (D028)	0.5
1,1 Dichloroethylene (D029)	0.7
2,4 Dinitrotoluene (D030)	0.13 (b)
Endrin (D012)	0.02
Heptachlor - and its epoxide (D031)	0.008
Hexachlorobenzene (D032)	0.13 (b)
Hexachlorobutadiene (D033)	0.5
Hexachloroethane (D034)	3.0
Lead (D008)	5.0
Lindane (D013)	0.4
Mercury (D009)	0.2
Methoxychlor (D014)	10.0
MEK (D035)	200.0
Nitrobenzene (D036)	2.0
Pentachlorophenol (D037)	100.0
Pyridine (DD038)	5.0 (b)
Selenium (D010)	1.0
Silver (D011)	5.0
Tetrachloroethylene (D039)	0.7
Toxaphene (D015)	0.5
Trichloroethylene (D040)	0.5
2,4,5-Trichlorophenol (D041)	400.0
2,4,6-Trichlorophenol (D042)	2.0
2,4,5-TP (Silvex) (D017)	1.0
Vinyl Chloride (D043)	0.2

(a) Quantitation Limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.

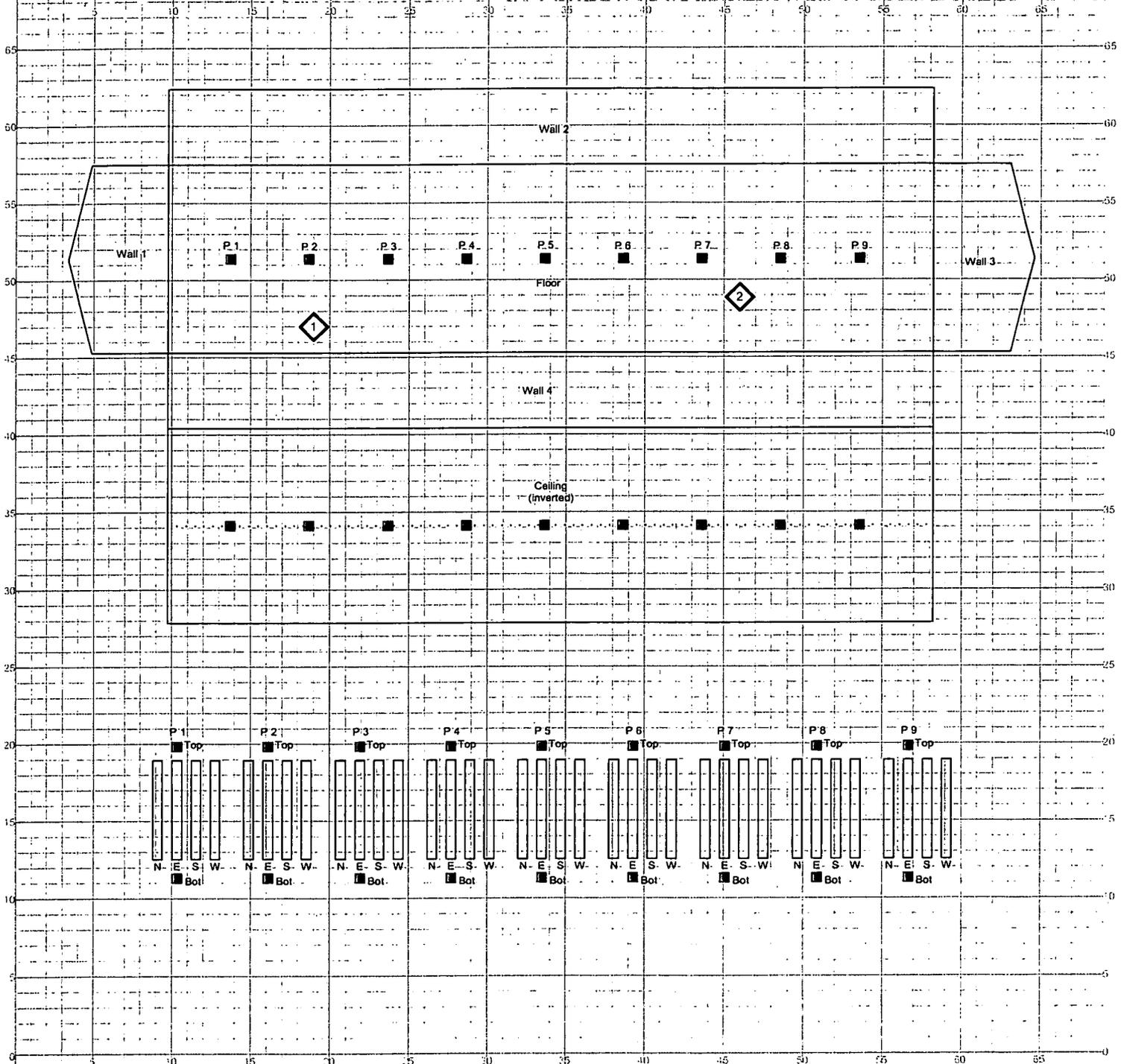
(b) If o-, m-, and p-Cresol concentrations cannot be differentiated, the total Cresol (D026) concentration (200mg/l) is used.

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CHEMICAL SAMPLE MAP

Building 964
RCRA/CERCLA

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<p>SURVEY MAP LEGEND</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 DynCorp I&ET, 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>0 FEET 40</p> <p>0 METERS 10</p>	<p style="text-align: center;">U.S. Department of Energy Rocky Flats Environmental Technology Site</p> <p>Prepared by: GIS Dept. 303-986-7707 Prepared for:</p> <div style="display: flex; justify-content: space-around; align-items: center;"> </div> <p>MAP ID: 02-0355\B964-RCRA-INT Aug. 17, 2004</p>
<p>■ Open/Inaccessible Area □ Area in Another Survey Unit</p>		<p>1 inch = 30 feet 1 grid sq. = 1 sq. m.</p>		

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PCB Data Summary

Sample Number	Sample Map Number	Sample Location	Arcolor Analysis	Results (ppm)
04S0283-001.003	1	Bldg. 964, Slab East	All	< 50
04S0283-002.003	2	Bldg. 964, Slab West	All	< 50

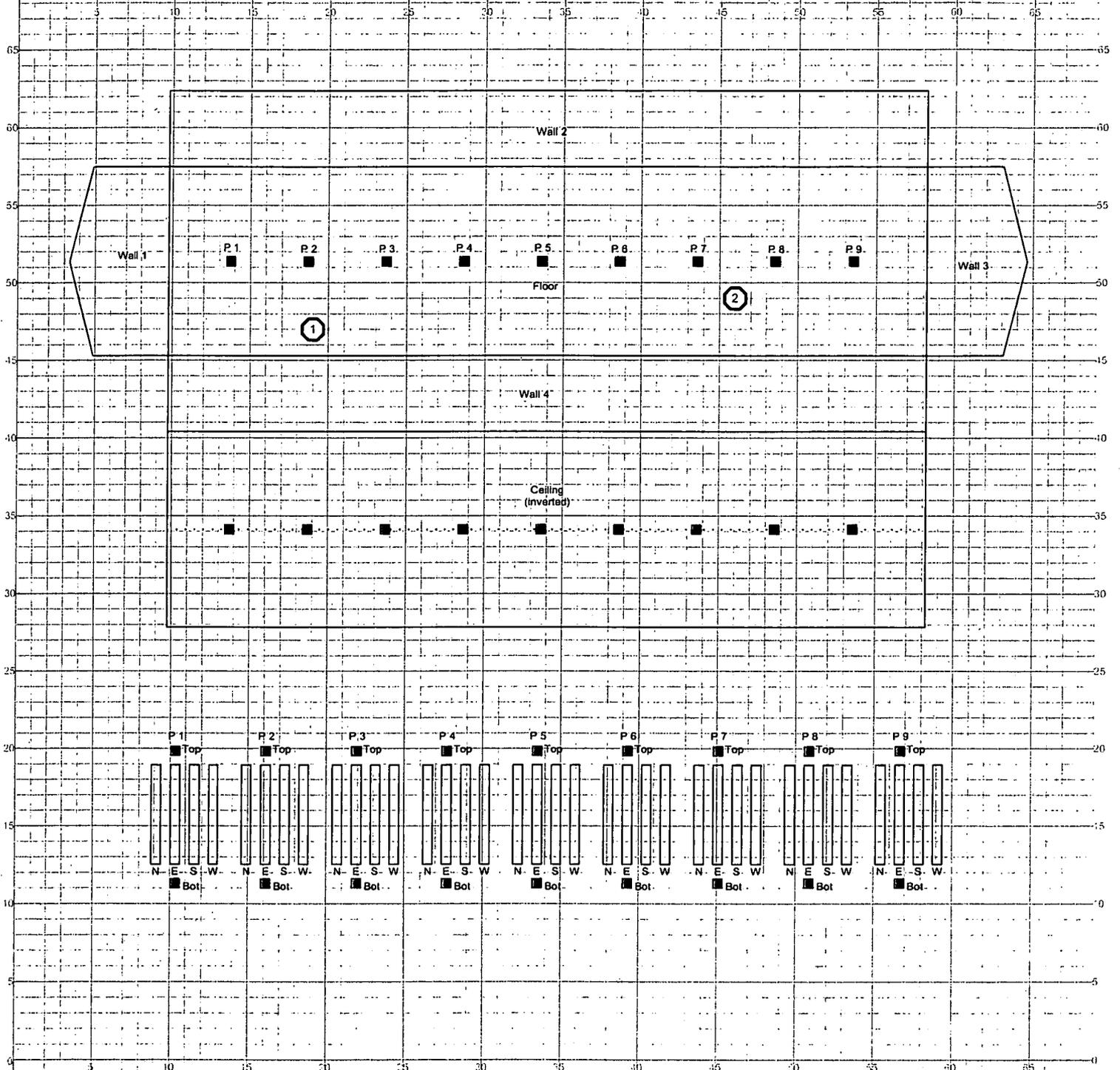
Regulatory Limit for PCB's: 50 ppm

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CHEMICAL SAMPLE MAP

Building 964
PCBS

PAGE 1 OF 1



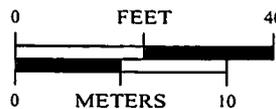
SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location

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- Open/Inaccessible Area
- Area in Another Survey Unit



1 inch = 30 feet 1 grid sq. = 1 sq. m.

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

Prepared by: GIS Dept. 303-966-7707

Prepared for:



MAP ID: 02-0355\B964-PCBS-INT

Aug. 17, 2004

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ATTACHMENT E

Data Quality Assessment (DQA) Detail

DATA QUALITY ASSESSMENT (DQA)

VERIFICATION & VALIDATION 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 asbestos, beryllium, VOCs, SVOCs, RCRA metals and PCBs).

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 E-1, asbestos in Table E-2, beryllium in E-3, VOCs in table E-4, SVOCs in table E-5, Metals in Table E-6 and PCBs in Table E-7. A data completeness summary for all results is given in Table E-8.

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

Beta/gamma survey designs were not implemented for Building 964 based on the conservatism of the transuranic limits used as DCGLs in the unrestricted release decision process. Survey designs were implemented for Building 964 based on the transuranic limits used as DCGLs in the unrestricted release decision process. Survey Unit 964002 results were evaluated against the Transuranic DCGL_w (100 dpm/100cm²) and the Uranium DCGL_w (5,000 dpm/100cm²) unrestricted release limits. Elevated contamination was found greater than the PDS unrestricted release levels in some areas of Survey Unit 964002 (exterior west wall and portions of the exterior south wall and gutter system). All remaining areas of survey unit 964002 were less than the PDS unrestricted release levels.

Media samples were taken and analyzed by ISOCS Canberra gamma spectroscopy. Transuranic isotope activity and Uranium and/or other naturally occurring isotope activity were evaluated against the Transuranic DCGL_w (100 dpm/100cm²) and the Uranium DCGL_w (5,000 dpm/100cm²) unrestricted release limits. Media results (i.e., slab paint samples and metal wall coupon samples) were converted to dpm/100cm² using the Media Conversion Table, evaluated against the transuranic and uranium DCGL limits, and filed in the RISS Characterization files. Media results of the exterior west wall, the concrete slab, and portions of the exterior south wall and gutter system were greater than the PDSP unrestricted release limits and will be managed as LLW during demolition.

Consistent with EPA's G-4 DQO process, the radiological survey design (for those survey units performed per PDS requirements) was optimized by checking actual measurement results (acquired during pre-demolition surveys) against 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.

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:

- Initially, the slab of Building 964 was broken out as a separate Class 2 survey unit (964001), but during PDS surveys, the slab was found to be contaminated above the transuranic PDSP unrestricted release criteria. As a result, the slab will be managed and disposed of as LLW during demolition. Consequently, survey unit package 964001 was deleted and is not reported as part of this PDSR.
- During the PDS surveys, contamination was identified above the PDSP unrestricted levels on the West Wall and portions of the South Wall and South Wall gutters. As a result, the West Wall and portions of the South Wall and South Wall gutters will be managed and disposed of as LLW during demolition. Because survey locations 9, 25, 26, 27, 53 and 54 were located on the West wall and portions of the South wall, they have been deleted from this PDSR and are not reported as part of the PDS data summary. This also explains why the survey locations are not numbered in a continuous sequence.
- Random survey location #9 was deleted from this PDS as discussed above (survey locations 25, 26, 27, 53 and 54 were biased locations). However, the minimum number of random samples required per MARSSIM, Section 5.5.2.3 includes a 20% increase (15 samples) to allow for invalid or missing points, therefore, the 14 random samples taken as part of this PDS still satisfies the minimum number of samples required for a Class 2 facility per MARSSIM.

Based upon an independent review of the radiological data, it is determined that the original project DQOs satisfied MARSSIM guidance. Minimum survey requirements were met, sampling/survey protocol was performed in accordance with applicable procedures, survey units were properly designed and bounded, and instrument performance and calibration were within acceptable limits thereby ensuring data accuracy. All radiological results in survey unit 964002 meet the PDS unrestricted release criteria (except as discussed above), asbestos results were "none detected", and all beryllium results were less than associated action levels ($0.1 \mu\text{g}/100\text{cm}^2$).

Chain of Custody was intact; documentation was complete, hold times were acceptable (where applicable) and packaging integrity/custody seals were maintained throughout the sampling/analysis process. Level 2 Isolation Controls have been posted to prevent the inadvertent introduction of contamination into the facility. The concrete slab, the exterior West Wall, and portions of the exterior South Wall and gutter system, will be managed as LLW during demolition. On this basis, Building 964 is considered a Type 2 RFCA facility and is acceptable for demolition. .

Table E-1 V&V of Radiological Surveys – Building 964

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 964002 (interior and exterior, excluding the floor).	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 E-8 for details.
SENSITIVITY	detection limits	TSA: ≤50 dpm/100cm ² RA: ≤10 dpm/100cm ²	all measures	MDAs ≤ 50% DCGL _w per MARSSIM guidelines.

Table E-2 V&V of Asbestos Results – Building 964

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
ASBESTOS	METHOD: EPA 600/R-93/116	LAB ---->	Reservoirs Environmental, Inc. Denver, Co. 80211	
QUALITY REQUIREMENT		RIN ---->	RIN04Z0173	
		Measure	Frequency	COMMENTS
ACCURACY	Calibrations: Initial/continuing	below detectable amounts	≥1	Semi-quantitative, per (microscopic) visual estimation.
PRECISION	Actual Number Sampled LCSD Lab duplicates	all below detectable amounts	≥ 1 sample	Semi-quantitative, per (microscopic) visual estimation.
REPRESENTATIVENESS	COC	Qualitative	NA	Chain-of-Custody intact: completed paperwork, containers w/ custody seals.
	Hold times/preservation	Qualitative	NA	N/A
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA	See original Chemical Characterization Package (planning document); for field/sampling procedures (located in project file;) thorough documentation of the planning, sampling/analysis process, and data reduction into formats.
COMPARABILITY	Measurement Units	% by bulk volume	NA	Use of standardized engineering units in the reporting of measurement results.
COMPLETENESS	Plan vs. Actual samples Usable results vs. unusable	Qualitative	NA	See Table E-8; final number of samples at Certified Inspector's discretion.
SENSITIVITY	Detection limits	<1% by volume	All measures	N/A

Table E-3 V&V of Beryllium Results – Building 964

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		COMMENTS
BERYLLIUM	Prep: NMAM 7300 METHOD: OSHA ID-125G	LAB ---->	Data Chem Laboratories Salt Lake City, Utah	
	QUALITY REQUIREMENTS		RIN ----> RIN04Z1663	
		Measure	Frequency	
ACCURACY	Calibrations Initial	Linear Calibration	≥1	No qualifications significant enough to change project decisions i.e., classification of a Type 2 facility is confirmed. All results were below associated action levels and investigative levels.
	Continuing	80%<%R<120 %	≥1	
	LCS/MS	80%<%R<120 %	≥1	
	Blanks - lab & field	<MDL	≥1	
	interference check std (ICP)	NA	NA	
PRECISION	LCSD	80%<%R<120 % (RPD<20%)	≥1	
	field duplicate	all results < RL	≥1	
REPRESENTATIVENESS	COC	Qualitative	NA	
	hold times/preservation	Qualitative	NA	
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA	
COMPARABILITY	measurement units	ug/100cm ²	NA	
COMPLETENESS	Plan vs. Actual samples	>95%	NA	
	usable results vs. unusable	>95%		
SENSITIVITY	detection limits	MDL of 0.012 ug/100cm ²	all measures	

Table E-4 V&V of Volatile Organic Compounds (VOCs) - Building 964

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		COMMENTS
VOCs	METHOD: SW8260	LAB ---->	Severn-Trent, Denver, Co.	
		RIN ---->	RIN04S0283	
QUALITY REQUIREMENTS		Measure	Frequency	No qualifications significant enough to change project decision, i.e., classification of Type 2 areas confirmed; all results were below regulatory limits.
ACCURACY	Calibrations: Initial	± 40%D in Response Factor	≥1/batch	
	Continuing	80%<%R<120%	≥1/batch.	
	LCS	80%<%R<120%	≥1/batch	
	MS	75%<%R<125%	≥1 batch	
	Blanks - lab	ug/kg	≥1/batch	
	Internal standards	retention times and area factors	≥1/batch	
	Surrogate	%R (variable)	≥1/batch	
PRECISION	MSD	RPD<30%	≥1/batch	
	Field duplicate	all results < RL	≥1/batch	
REPRESENTATIVENESS	COC	Qualitative	NA	
	Hold times/preservation	≤ 14 days	NA	
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA	
COMPARABILITY	Measurement units	ug/kg	NA	
COMPLETENESS	Plan vs. Actual samples	>95%	NA	
	Usable results vs. unusable	>95%		
SENSITIVITY	Detection limits	Various	all analytes	

Table E-5 V&V of Semi-Volatile Organic Compounds (SVOCs) - Building 964

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		COMMENTS
SVOCs	METHOD: SW8270	LAB ---->	Severn-Trent, Denver, Co.	
		RIN ---->	RIN04S0283	
QUALITY REQUIREMENTS		Measure	Frequency	No qualifications significant enough to change project decision, i.e., classification of Type 2 areas confirmed, all results were below regulatory limits.
ACCURACY	Calibrations: Initial	± 40%D in Response Factor	≥1/batch	
	Continuing	80%<%R<120%	≥1/batch	
	LCS	80%<%R<120%	≥1/batch	
	MS	75%<%R<125%	≥1 batch	
	Blanks - Lab	ug/kg	≥1/batch	
	Internal standards	retention times and area factors	≥1/batch	
	Surrogate	%R (variable)	≥1/batch	
PRECISION	MSD	RPD<30%	≥1/batch	
	Field duplicate	all results < RL	≥1/batch	
REPRESENTATIVENESS	COC	Qualitative	NA	
	Hold times/preservation	≤ 14 days	NA	
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA	
COMPARABILITY	Measurement units	ug/kg	NA	
COMPLETENESS	Plan vs. Actual samples	>95%	NA	
	Usable results vs. unusable	>95%		
SENSITIVITY	Detection limits	Various	all analytes	

Table E-6 V&V of Metals -Building 964

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		COMMENTS
Metals (total)	METHOD: SW6010/6020	LAB ---->	Severn-Trent, Denver, Co.	
		RIN ---->	RIN04S0283	
QUALITY REQUIREMENTS		Measure	Frequency	No qualifications significant enough to change project decision, i.e., classification of Type 2 areas confirmed; TCLP results below associated action levels and regulatory limits.
ACCURACY	Calibrations: Initial	linear calibration	≥1/batch	
		80%<%R<120%	≥1/batch	
	Continuing			
	LCS	80%<%R<120%	≥1/batch	
	MS	75%<%R<125%	≥1/batch	
	Blanks - lab	mg/kg	≥1/batch	
	Serial dilutions	%D<10%	≥1/batch	
	Interference check std (ICP)	80%<%R<120%	bracket batch	
PRECISION	MSD	RPD<30%	≥1/batch	
	Field duplicate	all results < RL	≥1/batch	
REPRESENTATIVENESS	COC	Qualitative	NA	
	Hold times/preservation	≤180 days	NA	
	Controlling Documents (Plans, Procedures, Maps, etc.)	Qualitative	NA	
COMPARABILITY	Measurement units	mg/kg	NA	
COMPLETENESS	Plan vs. Actual samples	>95%	NA	
	Usable results vs. unusable	>95%		
SENSITIVITY	Detection limits	Various	all analytes	

Table E-7 V&V of PCBs - Building 964

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		COMMENTS
PCBs	METHOD: SW8082	LAB ---->	Severn-Trent, Denver, Co.	
		RIN ---->	RIN04S0283	
QUALITY REQUIREMENTS		Measure	Frequency	No qualifications significant enough to change project decision, i.e., classification of a Type 2 facility confirmed. All results were less than regulatory limits.
ACCURACY	Calibrations:	$r^2 > 0.99$	$\geq 1/\text{batch}$	
	Initial	$80\% < \%R < 120\%$	$\geq 1/\text{batch}$	
	Continuing			
	LCS	$80\% < \%R < 120\%$	$\geq 1/\text{batch}$	
	MS	$75\% < \%R < 125\%$	$\geq 1/\text{batch}$	
	Blanks - Labs	$< \text{MDL}$	$\geq 1/\text{batch}$	
PRECISION	MSD	$75\% < \%R < 125\%$	$\geq 1/\text{batch}$	
	Field duplicate	all results $< \text{RL}$	$\geq 1/\text{batch}$	
REPRESENTATIVENESS	COC	Qualitative	NA	
	Hold times/preservation	≤ 30 days extract ≤ 45 days analysis	NA	
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA	
COMPARABILITY	Measurement units	ug/kg	NA	
COMPLETENESS	Plan vs. Actual samples	$> 95\%$	NA	
	Usable results vs. unusable	$> 95\%$		
SENSITIVITY	Detection limits	Various	all analytes	

Table E-8 Data Completeness Summary – Building 964

ANALYTE	Building/Area/ Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Asbestos	Building 964 (interior)	2 biased	1 biased	No ACM present, all results < 1% by volume	40 CFR763.86; 5 CCR 1001-10; EPA 600/R-93/116 RIN04Z0173
Beryllium	Building 964 (interior)	33 random	33 random	No beryllium contamination found, all results less than associated action levels	OSHA ID-125G RIN04Z1663 No results above action level (0.2ug/100cm ²) or investigative level (0.1 ug/100cm ²).
VOCs	Building 964 (interior)	2 (solid)	2 (solid)	No VOCs exceeded the regulatory limits, no VOC contamination found	6 CCR 1007-3; SW846 1311/Method 8260 RIN04S0283
SVOCs	Building 964 (interior)	2 (solid)	2 (solid)	No SVOCs exceeded the regulatory limits, no SVOC contamination found	6 CCR 1007-3; SW846 1311/Method 8270/8270C RIN04S0283
Metals (total and TCLP)	Building 964 (interior)	2 (solid)	2 (solid)	No Metals exceeded the regulatory limits, no metal contamination found	SW846 1311; SW846 6010/6010B RIN04S0283
PCBs	Building 964 (interior)	2 (solid)	2 (solid)	No PCB contamination found, all results were below the regulatory limit (50 ppm)	40CFR761; SW846/Method 8082 RIN04S0283

Table E-8 Data Completeness Summary – Building 964

ANALYTE	Building/Area/ Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Radiological	Survey Area 2 Survey Unit: 964002 Building 964 – Interior and Exterior, all surfaces; excluding the floors	61 α TSA (14 random/47 biased) 61 α Smears (14 random/47 biased) 3 QC TSA 100% scan of interior walls ≤ 2 m.; 50% scan of remaining interior and exterior surfaces	61 α TSA (14 random/47 biased) 61 α Smears (14 random/47 biased) 3 QC TSA 100% scan of interior walls ≤ 2 m.; 50% scan of remaining interior and exterior surfaces	Elevated contamination found greater than the PDS unrestricted release levels in some areas. All remaining areas of this survey unit were less than the PDS unrestricted release levels. ¹	Transuranic DCGLs used. Refer to Attachment E, <i>Data Quality Assessment</i> , anomalous conditions, for discussion on deleted survey unit (964001) and survey points 9, 25, 26, 27, 53 and 54 that were removed from this package. ¹ Refer to Attachment E, <i>Data Quality Assessment</i> , for areas identified greater than the PDS unrestricted release criteria that will be managed and disposed of as low level waste.