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Rocky Flats Environmental Technology Site

TYPE 2

PRE-DEMOLITION SURVEY REPORT (PDSR)

Building 668 Closure Project

VERSION 1

October 31, 2003



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

ADMIN RECORD

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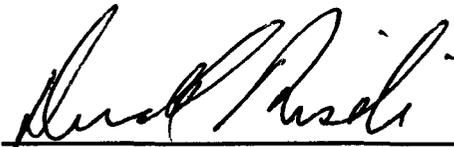
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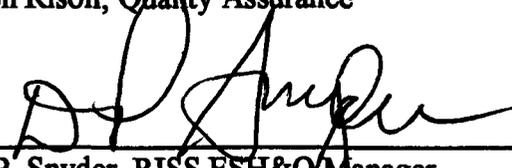
Building 668 Closure Project

VERSION 1

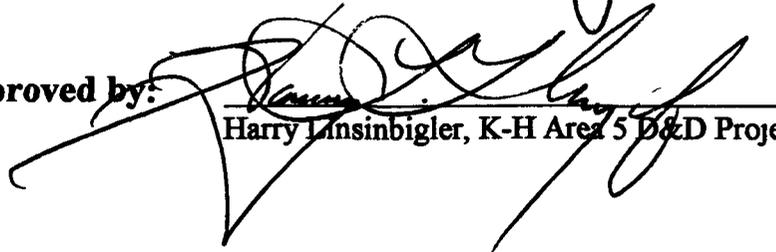
October 31, 2003

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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
FDFM	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
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
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 facility "Typing" per the DPP (10/8/98) and compliant disposition and waste management of Building 668. Initially, this facility was an anticipated Type 1 facility, therefore the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP) requirements. During this anticipated Type 1 facility characterization, plutonium contamination was identified on the concrete slab, therefore this facility has been re-typed as a Type 2 RFCA facility. This characterization report satisfies the Type 2-facility Pre-Demolition Survey Report (PDSR) requirements. All facility surfaces were characterized in this PDS, including the interior and exterior surfaces (i.e., floor, walls, ceiling, roof and equipment). Environmental media beneath and surrounding the facility were not within the scope of this PDSR and will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA.

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

Results indicated that fixed plutonium contamination exists in excess of the PDSP unrestricted release limits of DOE Order 5400 on the concrete slab. Non-friable asbestos transite paneling was identified and abated during the PDS process. The remaining ACM composite roofing material will be managed and disposed of as asbestos containing sanitary waste during demolition activities. All beryllium sample results for Building 668 were less than $0.1 \mu\text{g}/100\text{cm}^2$. Concrete core samples were taken from the Building 668 slab and analyzed for total metals, semi-volatile organic compounds (SVOC), and volatile organic compounds (VOCs). One sample location was slightly above the RCRA limit for hexachlorobenzene. The result translated to a TCLP value of 0.18 ppm, the RCRA limit being 0.13 ppm. However, because this single elevated result is so near the RCRA limit, and isolated to one location, the slab as a whole is considered non-hazardous. The building did not contain PCB-containing equipment or processes. Demolition debris will be managed in compliance with Environmental Compliance Guidance #27, *Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal*, as applicable. Concrete associated with Building 668 will not be used for onsite recycle material.

Based upon this PDSR, Building 668 is considered a Type 2 facility and can be demolished. The radiologically contaminated concrete slab will be decontaminated or managed as LLW during demolition. To ensure this facility remains free of further contamination and PDS data remain valid, Level 2 Isolation Controls have been established and the facility posted accordingly.

1 INTRODUCTION

A Pre-Demolition Survey (PDS) was performed to enable facility "Typing" per the DPP (10/8/98) and compliant disposition and waste management of Building 668. Initially, this facility was an anticipated Type 1 facility, therefore the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP) requirements. During this anticipated Type 1 facility characterization, plutonium contamination was identified on the concrete slab, therefore this facility has been re-typed as a Type 2 RFCA facility. This characterization report satisfies the Type 2 facility Pre-Demolition Survey Report (PDSR) requirements. All facility surfaces were characterized in this PDS, including the interior and exterior surfaces (i.e., floor, walls, ceiling, roof and equipment). Environmental media beneath and surrounding the facility were not within the scope of this PDSR 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 668. 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, a Pre-Demolition Survey (PDS) must be conducted, this document presents the PDS results. The PDS was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). The PDS 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 PDS effort. A PDS is performed before 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. 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 668. Environmental media beneath and surrounding this facility were not within the scope of this 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 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 5-Group 7 Facilities*, dated October 2002, Revision 0 (refer to Attachment B, *Historical Site Assessment Report*) In summary, the HSAR identified the potential for radiological and asbestos hazards

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

Building 668 was characterized for radiological hazards per the PDSP Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on the facility surfaces Measurements were performed to evaluate the contaminants of concern Based upon a review of historical and process knowledge, building walk-downs, and MARSSIM guidance, a Radiological Characterization Plan was developed during the planning phase that describe the minimum survey requirements (refer to the RISS Characterization Project files)

Radiological survey package 668-A-001 was developed for the interior surfaces of Building 668 The exterior surfaces of Building 668 were surveyed as part of radiological survey package EXT-B-001 The survey 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), 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*

Thirty-seven (37) TSA measurements (15 random, 10 biased, 10 equipment and 2 QC) and thirty-five (35) RSA measurements (15 random, 10 biased, 10 equipment) were performed on the interior surfaces of Building 668, and 100% of the facility interior floor and a minimum of 10% of the remaining surfaces were scanned The RLC data confirmed that the concrete slab does contain plutonium contamination above the surface contamination guidelines provided in the PDSP All other building surfaces were less than the surface contamination guidelines provided in the PDSP Radiological survey data, statistical analysis results, and survey locations are presented in Attachment C,

Radiological Data Summary and Survey Maps Refer to the radiological survey map in Attachment C for the locations of the plutonium-contaminated slab. 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 inadvertently introduced.

The exterior radiological surveys for Building 668 were performed as part of the RISS West Side Exterior PDS strategy effort (authorized by Department of Energy letter, *02-DOE-01598*, dated December 13th, 2002 and approved by CDPHE letter, *RE Proposed Deviations From The Pre-Demolition Survey Plan (PDSP)*, dated January 27, 2003, refer to the RISS Characterization Project Files for letter copies). The RISS West Side exterior building radiological surveys and locations can be found in survey unit package EXT-B-001, *RISS West Side Building Exteriors*. Two (2) biased TSA measurements, two (2) biased RSA measurements, and a one (1) square meter scan at each of the two TSA/RSA locations were performed at biased locations on the exterior surfaces of Building 668. The RLC data collected in exterior survey unit package EXT-B-001 confirmed that the exterior surfaces of Building 668 do not contain radiological contamination above the surface contamination guidelines provided in the PDSP. Radiological survey data, statistical analysis results, and survey map locations for the West-Side Exterior survey unit package EXT-B-001 are maintained in the RISS Characterization Project files.

4 CHEMICAL CHARACTERIZATION AND HAZARDS

Building 668 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 668 in accordance with the 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. Asbestos was identified in the exterior and interior transite panels and in the composite roofing material. Both materials are non-friable, the composite roofing is category one and the transite is category two ACM. The interior and exterior transite panels were abated during PDS activities. The remaining roofing tar will be managed and disposed of as asbestos containing sanitary waste during demolition activities. 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 668 was an anticipated Type 1 facility. There was not, however, adequate historical and process knowledge to conclude that beryllium was not used or stored in these buildings. Therefore, 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.

All eight biased beryllium surface smear sample results for Building 668 were less than $0.1 \mu\text{g}/100\text{cm}^2$. 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 668 functioned as a Drum Certification facility, and was used to seal crates. Waste crates sealed in the building were LLW only (no RCRA/CERCLA Materials), and were sealed with a fiberglass and resin application. Although there is no history of chemical spills in the facility and no stains or other evidence of contamination resulting from the sealing process, the unexplained presence of Plutonium on the slab prompted sampling for RCRA constituents. Ten concrete core samples, plus one duplicate (eleven total) were taken from the slab of Building 668 and analyzed for total metals, SVOCs, and VOCs. Seven of the samples were taken from locations biased to the areas where Plutonium contamination had been discovered. The other four samples were taken outside of the Plutonium areas. The metals and VOA analyses did not produce any results above the RCRA limits. However, the SVOC analyses produced one result for hexachlorobenzene, above the RCRA limit in the NW Plutonium area. The total hexachlorobenzene result was 3.8 ppm. Using the "divide by 20" method, this translates to a TCLP result of 0.18 ppm. However, because this single elevated result is so near the RCRA limit and isolated to one location, the slab as a whole is considered non-hazardous.

Sampling for lead in paint in these facilities was not performed. Environmental Waste Compliance Guidance #27, *Lead-based Paint (LBP) and Lead-based paint Debris Disposal*, states that LBP debris generated outside of currently identified high contamination areas shall be managed as non-hazardous (solid) wastes, and additional analysis for characteristics of hazardous waste derived from LBP is not a requirement for disposal.

This facility has no electrical or steam service and is not expected to contain common regulated building materials such as mercury switches, batteries, or fluorescent lamps. However, a thorough inspection of the facility will be made prior to demolition to verify the absence of regulated materials.

4.4 Polychlorinated Biphenyls (PCBs)

Based on a review of the HSAR and facility walk-downs, there is no history of PCB use or evidence of PCB contamination in this facility. Building 668 was never used to store PCB waste. Based on the age of the building (constructed before 1980), paints used are expected to contain PCBs, and all painted surfaces will be managed as PCB Bulk Product Waste.

Prior to removal of the electric service, this facility may have contained fluorescent light ballasts containing PCBs. However, electrical service was removed several years prior to the PDS, and no fixtures remain.

5 PHYSICAL HAZARDS

Physical hazards associated with Building 668 are those common to standard industrial environments and include hazards associated with energized systems, utilities, and trips and falls. There are no unique physical hazards associated with this building. However, care should be taken during demolition activities as Building 668 is near IHSS 600-120 1 "Fiberglass Area North of Building 664-Active". There are portions of the wall and roof missing due to building deterioration and transite wall paneling abatement. 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 668 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.

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 668 will generate a variety of wastes. Estimated waste types and waste volumes are presented below. All wall and ceiling waste can be disposed of as sanitary waste, except PCB Bulk Product Waste. The remaining composite roofing material will be managed and disposed of as asbestos containing sanitary waste during demolition activities. Portions of the concrete slab will be decontaminated and/or managed and disposed of as LLW. There is no hazardous waste. PCB ballasts will be managed pursuant to the Site PCB waste management procedures. Concrete associated with Building 668 will not be used for onsite recycle material.

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 668	750	1,000	100	0	0	200 Non-friable composite roofing	LLW concrete – 130

*Transite wall paneling was abated as part of PDS activities

8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, Building 668 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 PDS data.

The PDS of Building 668 was performed in accordance with the DDCP and PDSP. All PDSP DQOs were met, and all data satisfied the PDSP DQA criteria. Results indicated that fixed plutonium contamination exists in excess of the PDSP unrestricted release limits of DOE Order 5400 on the concrete slab. The contaminated portions of the concrete slab will be decontaminated and/or managed and disposed of as LLW. The remaining composite roofing material will be managed and disposed of as asbestos containing sanitary waste during demolition activities. Concrete core samples were taken from the Building 668 slab and analyzed for total metals, semi-volatile organic compounds (SVOC), and volatile organic compounds (VOCs). One sample location was slightly above the RCRA limit for hexachlorobenzene. The result translated to a TCLP value of 0.18 ppm, and the RCRA limit is 0.13 ppm. However, because this single elevated result is so near the RCRA limit and isolated to one location, the slab as a whole is considered non-hazardous. Demolition debris will be managed in compliance with Environmental Compliance Guidance #27, *Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal*, as applicable. 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. Building 668 concrete will not be used for onsite recycling material.

To ensure this Type 2 facility remains free of further contamination and PDS data remain valid, Level 2 Isolation Controls have been established and the facility posted accordingly.

9 REFERENCES

- DOE/RFFO, CDPHE, EPA, 1996 Rocky Flats 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
- Historical Site Assessment Report (HSAR) for the Area 5 - Group 7 Facilities*, Dated October 2002, Revision 0

ATTACHMENT A

Facility Location Map

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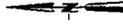
Area 5 Group 7 Building 668

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 flyover data captured by EG&G IRI, Las Vegas. Digitized from the orthophotographs 1/96



Scale = 1 : 12450

1 Inch represents approximately 1038 feet



State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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

or Dept. 303-400-7107

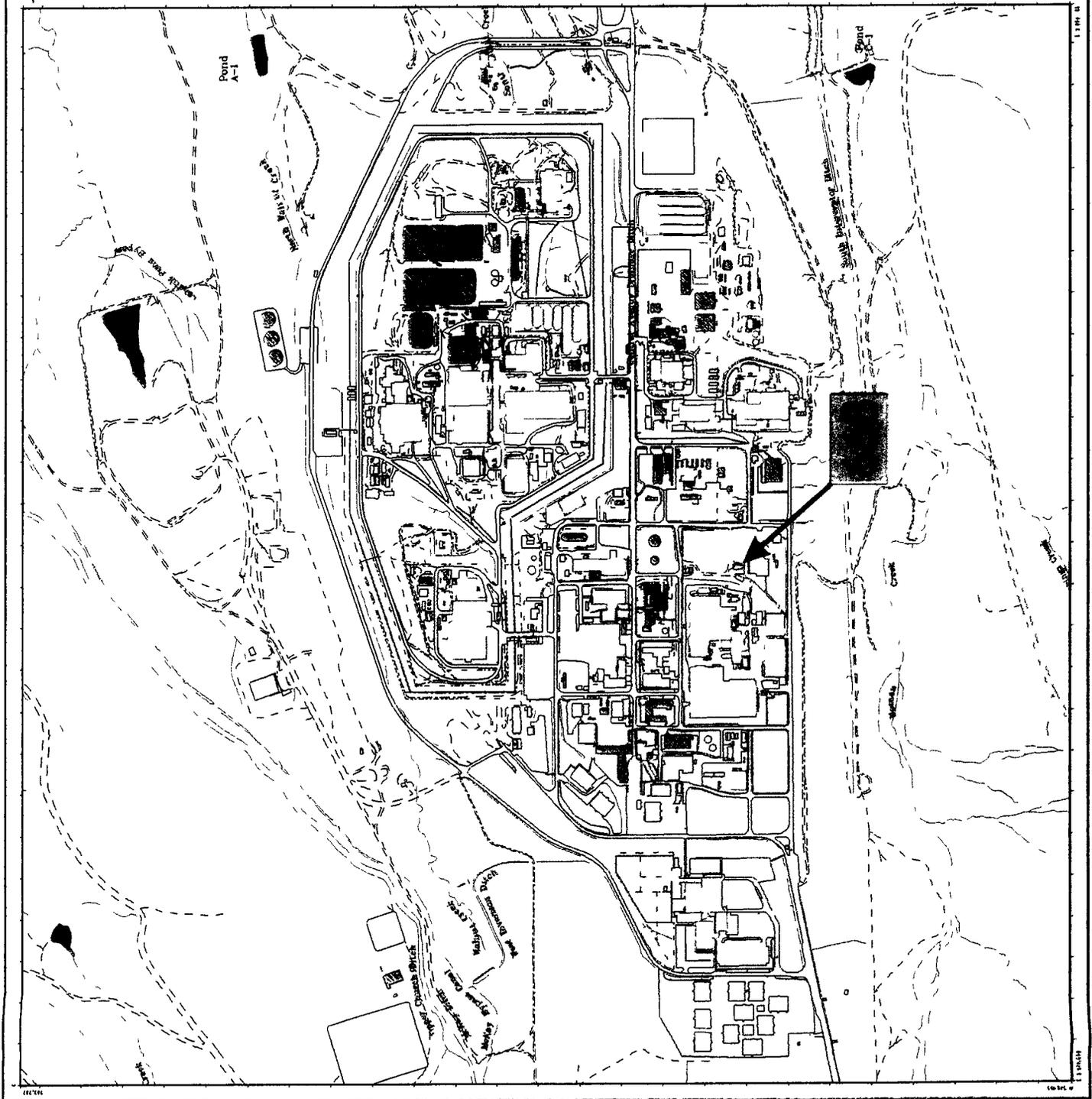
Prepared by
CH2M HILL



MAP ID: R/ 2003

Aug. 27, 2003

MT SW W/PROJECTS-03-007/668-OVERC.D



ATTACHMENT B

Historical Site Assessment Report

**D&D RISS Facility Characterization
Historical Site Assessment Report
October, 2002 Rev. 0**

Facility ID: (AREA 5 GROUP 7) Buildings 460, 439, 462, 668, and T664A.

Anticipated Facility Type (1, 2, or 3) Buildings 460, 439, 668, and T664A are anticipated Type 1 facilities Trailer

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 460

Building 460 is a 212,980 square foot, two-story structure, built in 1984. The structure is a pre-fabricated building constructed on a concrete foundation. The exterior walls are constructed of insulated metal panels attached to a steel frame. The roof is constructed of metal decking with built-up roofing. Building 460 is configured with the south half of the building as office space and a high-bay area on the north half of the building. The ceilings of the office area are 2-foot by 4-foot acoustical panels with recessed light fixtures. The floors in the offices are mostly carpeted. The ceiling in the high-bay area is the underside of the roof and the floor is concrete.

Building 460 has the following utilities: electrical, plant water, plant sanitary, plant steam, and fire protection is provided by an overhead sprinkler system and wall mounted fire extinguishers. Building 460 was originally connected to the site process waste system. The building's process waste system was isolated in the mid 1990s.

Building 439

Building 439 is a 5,140 square foot, single story building constructed in 1971. This structure is a pre-fabricated insulated metal building constructed on a concrete slab. This building is configured with a high bay area in the center of the building and several smaller machine rooms and offices on the east and west sides of the building.

Building 439 has the following utilities: electrical, plant water, plant sanitary, and fire protection is provided by an overhead sprinkler system and wall mounted fire extinguishers.

Building 462

Building 462 is a 590 square foot cooling tower constructed in 1985 and provides cooling water to Building 460. Building 462 is a metal structure elevated above a concrete pad by 8 concrete pedestals.

Building 462 has the following utilities: electrical and plant water.

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Building 668

Building 668 is a 1,540 square foot single-story building constructed in 1957. The exterior walls are Transite® panels and fiberglass panels, the floor is a concrete pad pour on grade. Building 668 is not a heated building and does not have a ventilation system. The building was once wired for electricity but is currently disconnected. The building was also fitted with fire protection sprinkler heads, but these heads were never activated.

Building 668 currently has no utility hook-ups.

Trailer T664A

Trailer T664A is a 4,392 square foot general office trailer acquired in 1991. This trailer has corrugated metal siding with corrugated metal skirting. The entrances have wooden stairs leading to a wooded enclosure. The interiors are primarily a cubical layout, but have several hard-walled offices, conference rooms, and rest rooms. Interior walls are wallboard, the ceiling is a drop ceiling with acoustical tiles and recessed lights. The floors are primarily covered with carpet except in the bathrooms, which are covered with vinyl tile.

Trailer T664A has the following utilities: electrical, plant water, plant sanitary, and fire protection is provided by an overhead sprinkler system and wall mounted fire extinguishers.

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Historical Operations

Building 460

Building 460 was originally constructed as a manufacturing facility designed to fabricate stainless steel and other non-nuclear parts such as reservoirs, tubes, and non-fissile trigger components. Building 460 housed fabrication operations such as Mechanical Machining in Room 134, Electrochemical machining and Grinding in Room 141, Electro Discharge machining in room 141, and Crush grinding in room 142. Assembly machining in room 143, welding in rooms 122A, 122C, 132, 132B, 132C and 135, Grit Blasting in room 135B, Cleaning in rooms 156, 156C, and 157. Inspection operation in rooms 115A, 115H, 121, 122B, 123, 151A, 151S, and 163. A metallurgical laboratory was operated in Room 135. Room 141B housed a Hexavalent Chrome reduction process which was not part of the RCRA permit due to its classification as a recycling operation and this equipment still remain. Building 460 also had a cafeteria on the second floor until the mid 1990s.

Process wastes were collected in 4 sump tanks. Sump Tank ST1 was located in room 141B, ST2 was located in Room 151, ST3 was located in Room 156, and T4 was located in room 156C. All these tanks have been closed in accordance with the "RCRA Closure Plan for the B460". The facility's process wastewater collection and filtration system was located in Room 140 and consisted of 2 holding tanks and a sump tank. Wastewater was filtered prior to being transported to Building 374 for treatment. These tanks have also been closed in accordance with the "RCRA Closure Plan for the B460". Most of the process waste lines were overhead lines and only in a few areas were they located in the concrete floor slab. Much of the process waste lines and process waste equipment were removed during the closure process. Waste streams handled in Building 460 included solvents, metals, and acids. See the building 460 WSRIC for a more complete list of process that occurred in Building 460.

In the mid 1990 manufacturing operation ended in Building 460 and most of the process equipment was removed. The building was then used as an administrative office building housing primarily DOE personnel. Building 460 began storing low level radioactive, RCRA and TSCA wastes in September 2002. Building 460 is currently a containerized waste storage facility, and does not perform any waste repackaging or waste treatment.

**D&D RISS Facility Characterization
Historical Site Assessment Report
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Building 439

Building 439 was originally a fabrication and machine shop, which supported Building 440 operations as well as other R&D operations. Historically, this building housed such operations as an organic coating lab in the southeast corner of the building. A machine shop located on the west side of the building, quality assurance testing equipment such as NDT, ultrasonic density testing and tensile testing equipment on the north side of the facility. Other operations housed in Building 439 include electronic equipment services, Gamma Survey instrument maintenance, silver recovery related to electronic equipment, Radiological counting and survey operations, and PU&D equipment release operations. Currently Building 439 is currently used to store equipment, as a break room, and general offices in support of Building 440 operations.

Building 462

Building 462 is the evaporative cooling tower for Building 460. The cooling system consists of both an open loop and closed loop system interconnected by a heat exchanger. Nalco 2536 is added to the cooling water to prevent rust build-up and Nalco 2590 is added to the cooling water for alga control. Sodium Hypochlorite is used as a fungicide and biocide.

Building 668

Building 668 is the Drum Certification Building. Building 668 was originally used to seal fiberglass-coated wood waste crates after being filled with low level waste. The crates were sealed using fiberglass matting and sprayed on fiberglass resin. This operation was moved to Building 664 in the 1980's and the building was then used to inspect, number, label, and certify new waste crates and waste drums prior to being sent to the production buildings to be filled with waste. Although the waste crates sealing operations that occurred in the early days of operation did contain radioactive waste, the waste containers were never opened, they were only permanently sealed prior to shipment. There is no evidence of any radiological contamination related to this event. Polyester resins and cleaning solvents were used in the fiberglass operations.

Trailer T664A

Trailer T664 is a general office trailer, which has historically, been used to house management and administrative personnel in support of waste storage and shipping operation conducted in Buildings 440 and 664.

Current Operational Status

Buildings 460, 439, 462 and Trailer T664A are all operational. Building 668 is not operational, but has some old equipment and supplies related to past operation, which need to be cleaned out.

Contaminants of Concern

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Asbestos

Describe any potential, likely, or known sources of Asbestos

Building 668 is posted as containing asbestos, T664A is posted as possibly containing asbestos

The Industrial Hygiene Group (IH) has collected some asbestos data on Building 460 Contact IH for a copy of this information.

Beryllium (Be)

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

The only facility on the List of Historic and Present Be Areas is the High Bay area of Building 460 The High Bay area is list based on historical information that beryllium copper plates where occasionally polished in the high bay area. The UBC section of the HRR states that Be may have occasionally been handled in Building 439 No evidence of this was found

Summarize any recent Be sampling results

There have been no recent Be samples collected on any of these facilities

Lead

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

Based on the age of some of the facilities addressed in this HSA, lead in paint may be a concern. No processes containing lead were conducted in these facilities

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RCRA/CERCLA Constituents

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

Building 460 was a major non-nuclear manufacturing facility and used chemicals such as acids, bases and solvents. Metals contamination of these chemicals did occur as part of the machining and fabrication operations (i.e. chromium). Building 460 had several permitted RCRA units associated with these activities. These RCRA units have been closed. Building 460 is currently a permitted LLW and mixed waste Storage facility. Historically, Building 439 was used as a machine shop to support Building 440 operations and other maintenance operations in the 400 area. No significant amounts of RCRA or CERCLA Constituents were handled in this facility. See the Historical operations section above for a more detailed listing of the operations which occurred in the facilities addressed in this HSA.

Building 460 had the following permitted storage areas. All RCRA units have been closed in accordance with the "RCRA Closure Plan for the B460 Process Waste System"

- 39 03 - Fabric Filtration Unit
- 40 08 - Process Waste Tank T-1
- 40 09 - Process Waste Tank T-2
- 40 10 - Filter System Collection Tank T-4
- 40 11 - Sump Tank ST-1
- 40 12 - Sump Tank ST-2
- 40 13 - Sump Tank ST-3
- 40 14 - Sump Tank ST-4
- 40 15 - Sump Tank ST-5

Building 460 has the following current permit - MS001- B460 Containerized Storage. This permit is a temporary permit. The final permit is expected to be approved later this year.

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

See the Environmental Concerns section below for information about RCRA/CERCLA spills.

Describe methods in which spills were mitigated, if any

See the Environmental Concerns section below for information about RCRA/CERCLA spills.

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PCBs

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

No PCB containing process where housed in any of the facilities addressed in this HSA Based on the age of construction of some of these facilities, PCBs in paint may be a concern.

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

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

Describe methods in which spills were mitigated, if any

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

Radiological Contaminants

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

Building 460 recently became a LLW storage facility In the past Building 668 housed fiberglass operations used to seal LLW waste crates Historically, Building 439 was primarily a machine shop in support of Building 440 operation The UBC section of the HRR states that uranium, on limited occasions, may have been handled in Building 439 No evidence of this was found. See the Historical operations section above for a more detailed listing of the operations which occurred in the facilities addressed in this HSA.

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

None of the facilities in this HSA have had a radiological spill

Describe methods in which spills were mitigated, if any

None of the facilities in this HSA have had a radiological spill.

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

Isotopes of concern include uranium and plutonium.

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

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Environmental Restoration Concerns

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

Building 460 is associated with or located near the following IHSSs, PACs, or UBCs See individual IHSS, PAC, or UBC report for additional information.

- 1) 400-136 1, "Cooling Tower Pond East of Building 444", Active
- 2) 400-157 2, "Radioactive site South Area", Active
- 3) 400-205, "Building 460 Sump No 3, Acid Side" Active
- 4) 400-804, "Road North of Building 460", Active
- 5) 400-812, "Tank T-2 Spill in Building 460, Proposed NFA in 2001
- 6) 400-813, "RCRA Tank Leak in Building 460, Active
- 7) 400-815, "RCRA Tank Leak in Building 460, Active

Building 439 is associated with or located near the following IHSSs, PACs, or UBCs See individual IHSS, PAC, or UBC report for additional information.

- 1) 400-157 2, "Radioactive site South Area", Active

Building 439 is identified as a UBC because it housed modification and machining operations, which may have involved deleted uranium or beryllium.

Building 668 is associated with or located near the following IHSSs, PACs, or UBCs See individual IHSS, PAC, or UBC report for additional information.

- 1) 600-120 1, "Fiberglass area north of Building 664 ", Active

Building 462, and Trailer T664A are not associated any IHSS, PAC, or UBC

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 The WSRIC for those buildings with a WSRIC In addition, a facility walkdown and interviews were performed.

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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 460	42,400	0	73,000	24,000	20,600	TBD	N/A
Building 439	2500	0	1200	1600	300	TBD	N/A
Building 462	250	0	1000	0	0	TBD	N/A
Building 668	750	1000	100	0	0	TBD	N/A
Trailer T664A	0	1,100	800	1000	1,500	TBD	N/A
Further Actions							
<i>Recommend any further actions, if any (e.g., characterization, decontamination, special handling, etc.)</i>							
Begin the RLC/PDS process							
Note:							
This HSA was performed prior to SME walkdowns, and chemical and radiological characterization package preparations. SMEs should evaluate and/or verify all information during the RLC/PDS process. SMEs may need to review additional documentation and perform additional interviews. Information contained in this HSA only represents a "snapshot" in time. Subsequent data may be obtained during SME walkdowns and chemical and radiological characterization package preparations, which may conflict with this report. However, this report will not be amended, and the newer data will take precedence over the data in this report. Newer Data will appear in the RLCR/PDSR.							

Prepared By: Doug Bryant / /s/ Doug Bryant / October 2002
Name Signature Date

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ATTACHMENT C

Radiological Data Summaries and Survey Maps

**SURVEY UNIT 668-A-001
RADIOLOGICAL DATA SUMMARY - PDS**

Survey Unit Description: B668 (Interior)

668-A-001
PDS Data Summary

Total Surface Activity Measurements

35	35
Number Required	Number Obtained

MIN	-19.5	dpm/100 cm ²
MAX	148.6	dpm/100 cm ²
MEAN	20.2	dpm/100 cm ²
STD DEV	32.6	dpm/100 cm ²

TRANSURANIC DCGL _w	100	dpm/100 cm ²
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Removable Activity Measurements

35	35
Number Required	Number Obtained

MIN	-1.2	dpm/100 cm ²
MAX	3.0	dpm/100 cm ²
MEAN	0.2	dpm/100 cm ²
STD DEV	1.0	dpm/100 cm ²

TRANSURANIC DCGL _w	20	dpm/100 cm ²
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**SURVEY UNIT 668-A-001
TSA - DATA SUMMARY**

Manufacturer	NE Tech	NE Tech	NE Tech	NE Tech	NE Tech
Model	DP-6	DP-6	DP-6	DP-6	DP-6
Instrument ID#	1	2	3	4	10
Serial #	2344	1273	1547	1417	1589
Cal Due Date	1/29/04	1/9/04	11/20/03	1/21/04	12/30/03
Analysis Date	9/5/03	9/5/03	9/5/03	9/8/03	9/9/03
Alpha Eff (c/d)	0.220	0.212	0.223	0.218	0.220
Alpha Bkgd (cpm)	2.7	2.7	4.0	1.3	3.0
Sample Time (min)	1.5	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5	1.5
MDC (dpm/100cm ²)	48.0	48.0	48.0	48.0	48.0

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) ^{1,2}
1	2	10.7	50.5	1.3	6.1	30.9
2	1	2.7	12.3	3.3	15.0	-7.3
3	1	3.3	15.0	6.0	27.3	-4.5
4	2	9.3	43.9	4.0	18.9	24.3
5	2	3.3	15.6	6.7	31.6	-4.0
6	4	4.0	18.3	5.3	24.3	-1.2
7	2	4.7	22.2	4.0	18.9	2.6
8	1	0.0	0.0	4.7	21.4	-19.5
9	1	1.3	5.9	0.7	3.2	13.6
10	2	6.0	28.3	4.0	18.9	8.8
11	1	0.7	3.2	6.0	27.3	-16.4
12	3	8.0	35.9	4.7	21.1	16.3
13	4	4.7	21.6	7.3	33.5	0.0
14	2	9.3	43.9	4.0	18.9	24.3
15	4	12.0	55.0	7.3	33.5	35.5
16	2	10.0	47.2	2.0	9.4	27.6
17	2	6.0	28.3	4.0	18.9	8.8
18	2	9.3	43.9	0.7	3.3	24.3
19	2	10.0	47.2	2.7	12.7	27.6
20	2	7.3	34.4	3.3	15.6	14.9
21	3	10.7	48.0	6.0	26.9	28.4
22	3	8.0	35.9	7.3	32.7	16.3
23	3	7.3	32.7	2.7	12.1	13.2
24	3	6.0	26.9	2.7	12.1	7.4
25	2	7.3	34.4	4.7	22.2	14.9
26	2	4.0	18.9	4.0	18.9	-0.7
27	2	6.7	31.6	4.0	18.9	12.1
28	3	11.3	50.7	6.0	26.9	31.1
29	3	8.0	35.9	4.7	21.1	16.3
30	2	8.7	41.0	6.0	28.3	21.5

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**SURVEY UNIT 668-A-001
TSA - DATA SUMMARY**

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) ^{1,2}
31	3	73	32.7	33	14.8	13.2
32	3	67	30.0	20	9.0	10.5
33	3	60	26.9	30	13.5	7.4
34	3	67	30.0	73	32.7	10.5
35	2	113	53.3	20	9.4	33.8
36	10	260	118.2	40	18.2	100.0
37	10	270	122.7	40	18.2	103.2
38	10	370	168.2	60	27.3	148.6

1 Average LAB used to subtract from Gross Sample Activity

19.5	Sample LAB Average
MIN	-19.5
MAX	148.6
MEAN	20.2
SD	32.6
Transuranic DCGL _w	100

QC Measurements

1 QC	4	40	18.3	60	27.5	-9.2
35 QC	4	80	36.7	60	27.5	9.2

1 Average QC LAB used to subtract from Gross Sample Activity

2 - The scan survey found three floor locations (36, 37, 38) contaminated up to 148.6 dpm/100cm². Concrete surface samples collected from locations 37 and 38 were analyzed using the Canberra ISOCS system. Transuranic isotopes up to 187 dpm/100cm² were detected. These three areas of elevated activity will either be decontaminated and re-surveyed prior to release of the concrete slab or else managed as Low Level Waste.

27.5	QC LAB Average
MIN	-9.2
MAX	9.2
MEAN	0.0
Transuranic DCGL _w	100

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**SURVEY UNIT 668-A-001
RSC - DATA SUMMARY**

Manufacturer	Eberline	Eberline	Eberline	Eberline
Model	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#	6	7	8	9
Serial #	952	1164	924	959
Cal Due Date	1/10/04	11/30/03	10/23/03	1/14/04
Analysis Date	9/8/03	9/8/03	6/8/03	9/8/03
Alpha Eff (c/d)	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.3	0.1	0.4	0.1
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm²)	9.0	9.0	9.0	9.0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm²)
1	6	0	-1.2
2	7	0	-0.3
3	8	0	0.0
4	9	0	0.0
5	6	1	0.3
6	7	0	-0.3
7	8	0	0.0
8	9	0	0.0
9	6	1	0.3
10	7	2	2.7
11	8	0	0.0
12	9	0	0.0
13	6	1	0.3
14	7	0	-0.3
15	8	0	0.0
16	9	0	0.0
17	6	0	-1.2
18	7	2	2.7
19	8	2	3.0
20	9	1	1.5
21	6	1	0.3
22	7	0	-0.3
23	8	0	0.0
24	9	0	0.0
25	6	0	-1.2
26	7	0	-0.3
27	8	0	0.0
28	9	1	1.5
29	6	0	1.2
30	7	0	-0.3
31	8	1	1.5
32	9	0	0.0
33	6	1	0.3
34	7	0	-0.3
35	8	0	0.0
		MIN	-1.2
		MAX	3.0
		MEAN	0.2
		SD	1.0
		Transuranic DCGL_w	20

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Analysis Results Header 9/15/2003 4 44 47 PM Page 1

***** G A M M A S P E C T R U M A N A L Y S I S *****
** C a n b e r r a M o b i l e L a b o r a t o r y S e r v i c e s **

Report Generated On 9/15/2003 4 44 47 PM

RIN Number 03S0340
Analytical Batch ID 0309124606
Line Item Code RC10C019

668-A-001

Filename S \GENIE2K\CAMFILES\LI014(G)\MOD\G1900070 CNF

*B668 Concrete
slab - surface
samples*

Sample Number 03S0340-003 001
Lab Sample Number CMLS-3677
Sample Receipt Date 9/10/2003
Sample Volume Received 7 86E+001 GRAM

Result Identifier N/A

Peak Locate Threshold 2 50
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 1 000 keV

Sample (Final Aliquot Size) 7 860E+001 GRAM
Sample Quantity Error 0 000E+000
Systematic Error Applied 0 000E+000

Sample Taken On 9/10/2003 1 30 00 PM
Acquisition Started 9/12/2003 7 56 27 PM

Count Time 57600 0 seconds
Real Time 57866 1 seconds
Dead Time 0 46 %

Energy Calibration Used Done On 6/24/03
Energy = 0 286 + 0 250*ch + -9 68E-009*ch^2 + 6 85E-013*ch^3

Corrections Applied
None

Efficiency Calibration Used Done On 9/15/03
Efficiency Geometry ID 03S0340-003 001

Analyzed By Sean Stanfield Date 9/15/03
Reviewed By Marilyn Umbaugh Date 9/15/03

 ***** Sample and QC Sample Results Summary *****

Site Sample ID 03S0340-003 001
 Analytical Batch ID 0309124606
 Sample Type (Result Identifier) G19
 Lab Sample Number CMLS-3677
 Geometry ID 03S0340-003 001
 Filename S \GENIE2K\CAMFILES\LI014(G)\MOD\G1900070 CNF
 Detector Name 4606

MDA = Curie method as specified in Genie-2000 Customization Tools Manual
 Appendix B, Basic Algorithms

Analyte	Activity (pCi/GRAM)	2-Sigma Uncertainty (pCi/GRAM)	MDA (pCi/GRAM)
K-40n	1 52E+001	5 28E-001	3 96E-001
Cs-137n	0 00E+000	0 00E+000	3 77E-002
TL-208n	3 83E-001	3 70E-002	5 77E-002
PO-210 _{1n}	1 51E+003	7 09E+002	2 14E+003
BI-212n	1 52E+000	5 71E-001	3 45E-001
PB-212n	1 06E+000	5 04E-002	3 06E-002
BI-214n	7 41E-001	4 49E-002	6 32E-002
PB-214n	8 59E-001	3 16E-002	6 08E-002
RA-226n	0 00E+000	0 00E+000	4 79E-001
AC-228n	1 15E+000	8 51E-002	1 43E-001
TH-230n	0 00E+000	0 00E+000	3 61E+000
Th-231n	2 10E-001	1 64E-001	1 56E-001
PA-234Mn	0 00E+000	0 00E+000	4 48E+000
PA-234n	0 00E+000	0 00E+000	4 71E-002
U-235	1 18E-001	1 88E-002	2 96E-002
Np-237n	0 00E+000	0 00E+000	5 99E-002
Pu-238n	0 00E+000	0 00E+000	3 55E+001
U238/234	6 87E-001	2 38E-001	1 90E-001
Pu-239n	0 00E+000	0 00E+000	2 31E+002
Pu-240n	0 00E+000	0 00E+000	3 11E+001
AM-241	2 07E-001	2 40E-002	3 63E-002
Pu-241n	0 00E+000	0 00E+000	7 94E+003

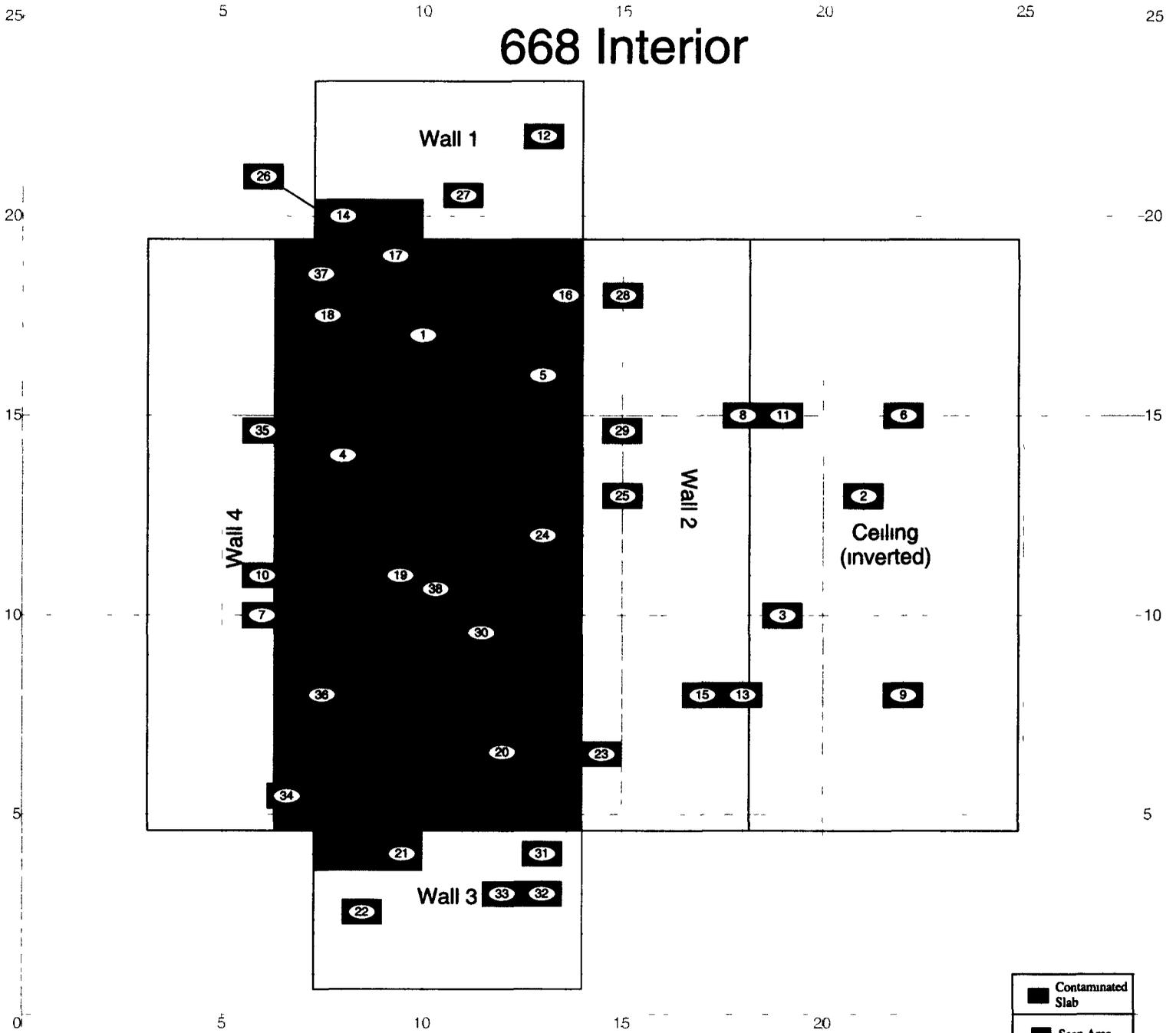
1 - If Po-210 is detected in the spectrum, this peak may be the result of the interaction of Pb-206(n,n') which also produces a prompt gamma at 803 keV

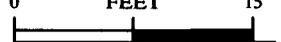
n - Non-contractual Nuclide

PRE-DEMOLITION SURVEY FOR B668

Survey Area 5 Survey Unit 668-5-001 Classification 3
 Building 668
 Survey Unit Description B668 (Interior)
 Total Area 376 sq m Total Floor Area 100 sq m

668 Interior



<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 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 style="text-align: center;">N ↑</p>	<p style="text-align: center;">0 FEET 15</p>  <p style="text-align: center;">0 METERS 5</p> <p style="text-align: center;">1 inch = 12 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> <p style="text-align: center;">CH2MHILL Communications Group</p> <p>MAP ID 03-0076668-IN-SC Sept 11, 2003</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
Building 668 - RIN 01D0648				
668-04252001-74-001	1	Roof	Black fibrous tar	None Detect
668-04252001-74-002	2	Main	White shingle - palletized	None Detect
668-04252001-74-003	3	Main	Kraft paper - crate lining	None Detect
668-04252001-74-004	4	Main	Wall board - loose on floor	4% Chrysotile
668-04252001-74-005	5	Main	Insulation - fluffy white material	None Detect
668-04252001-74-006	6	Main	Wall board - loose on floor	None Detect
668-04252001-74-007	7	Roof	Roofing tar paper	None Detect
668-04252001-74-008	8	Roof	Roof shingle - loose on floor	8% Chrysotile
668-04252001-74-009	9	Main	Debris - center of room on floor	None Detect
668-04252001-74-010	10	Main	Debris - bottom of south wall	Less than 1%
668-04252001-74-011	11	Main	Debris - wood beam west side	None Detect
668-04252001-74-012	12	Main	Debris - north inside	None Detect
668-04252001-74-013	13	Main	Debris - fluffy insulation on floor	None Detect
668-04252001-74-014	14	Main	Debris - east side	None Detect
668-04252001-74-015	15	Main	Crate liner paper	None Detect
668-04252001-74-016	16	Roof	Composite roofing material	5% Chrysotile
668-04252001-74-017	17	Roof	Roof shingle - SW corner	None Detect
668-04252001-74-018	18	Roof	Roof shingle with white rock surface	None Detect

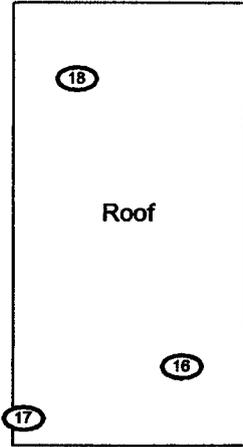
37

CHEMICAL SAMPLE MAP

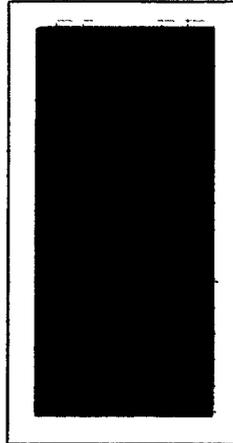
**Building: 668
Asbestos**

PAGE 1 OF 1

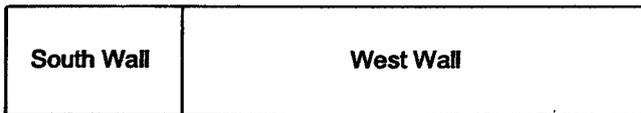
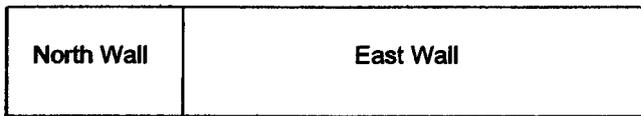
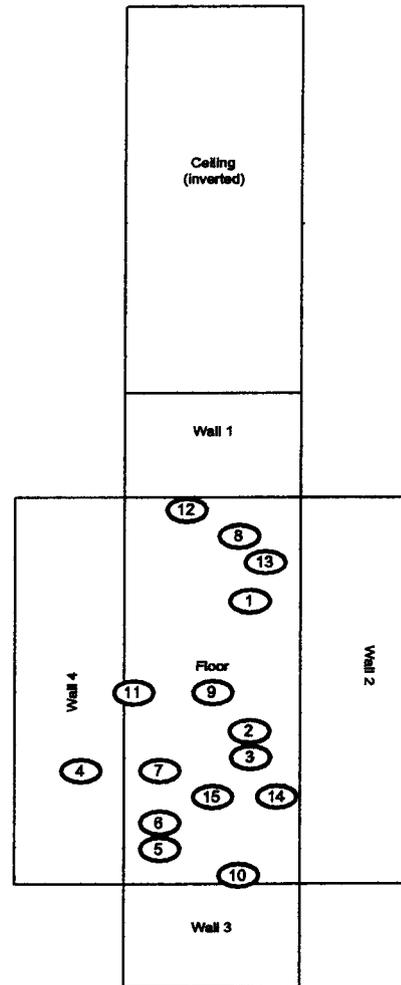
668 Exterior



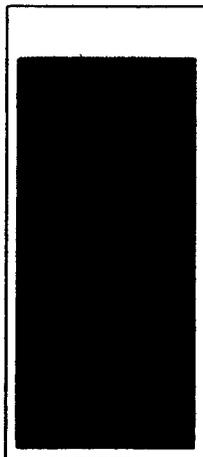
Roof Overhang



668 Interior



Building Concrete Pad



<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 Kaser 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>N</p>	<p>0 FEET 30</p> <p>0 METERS 10</p> <p>1 inch = 24 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 303-668-7707 Prepared for</p> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: right;"> <p>CH2MHILL Communications Group</p> </div> </div> <p>MAP ID 03-0076/668-ASB Sept 15, 2003</p>
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Beryllium Data Summary

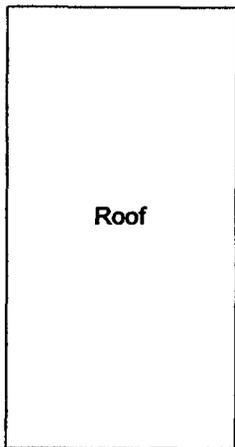
Sample Number	Map Survey Point Location	Room	Sample Location	Result (pp/100 cm ²)
668-09082003-314-101	1	Main	Concrete floor - NE corner by doorway, biased	<0.1
668-09082003-314-102	2	Main	Concrete floor - center of building next to north support beams, biased	<0.1
668-09082003-314-103	3	Main	North wall - 2x6 lip, biased	<0.1
668-09082003-314-104	4	Main	West wall ledge, building support beam, biased	<0.1
668-09082003-314-105	5	Main	Concrete floor - SW corner, biased	<0.1
668-09082003-314-106	6	Main	South wall ledge, biased	<0.1
668-09082003-314-107	7	Main	East wall ledge, biased	<0.1
668-09082003-314-108	8	Main	Concrete floor - east side, biased	<0.1

CHEMICAL SAMPLE MAP

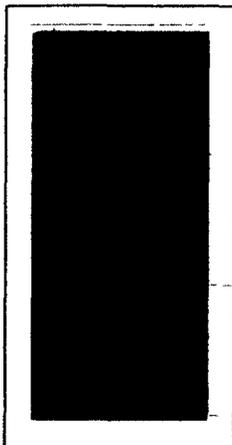
**Building: 668
Beryllium**

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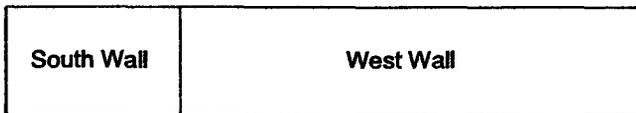
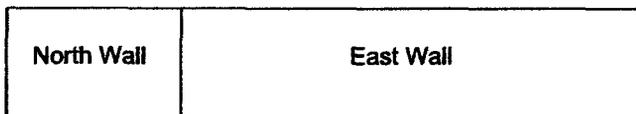
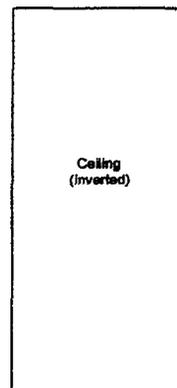
668 Exterior



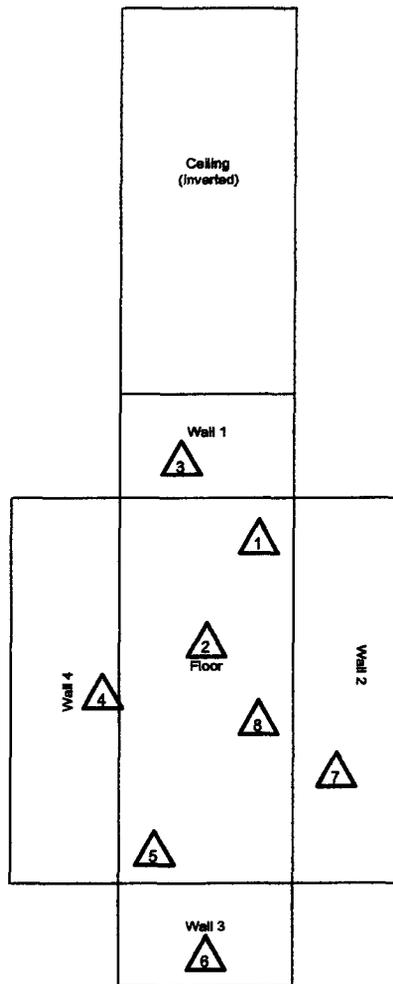
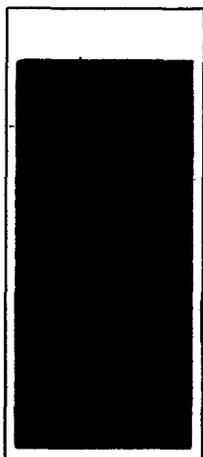
Roof Overhang



668 Interior



Building Concrete Pad



<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>N</p>	<p>0 FEET 30</p> <p>0 METERS 10</p> <p>1 inch = 24 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 303-486 7707 Prepared for:</p> <div style="display: flex; justify-content: space-between; align-items: center;"> </div> <p>CH2MHILL Communications Group</p> <p>MAP ID 03-0076/668-BE Sept 15, 2003</p>
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RCRA/CERCLA Constituents Data Summary

Sample Location / Media / Sample Number	Analyte	Result (mg/L)
Bldg 668, Concrete Slab, Locations 04S0001-001-011	Total Metals	All results less than TCLP limits based on the "divide by 20" method
Bldg 668, Concrete Slab, Locations 04S0001-001-011	Total Semi-Volatile Organic Compounds	Sample 04S0001-002 result translated to 0.18 ppm based on the "divide by 20" method. All other results less than TCLP limits based on the "divide by 20" method
Bldg 668, Concrete Slab, Locations 04S0001-001-011	Total Volatile Organic Compounds	All results less than TCLP limits based on the "divide by 20" method

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 (b)
m-Cresol (D024)	200.0 (b)
p-Cresol (D025)	200.0 (b)
Cresol (D026)	200.0 (b)
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 (a)
Endrin (D012)	0.02
Heptachlor - and its epoxide (D031)	0.008
Hexachlorobenzene (D032)	0.13 (a)
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 (a)
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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RCRA Metals Toxicity Characteristic Limits

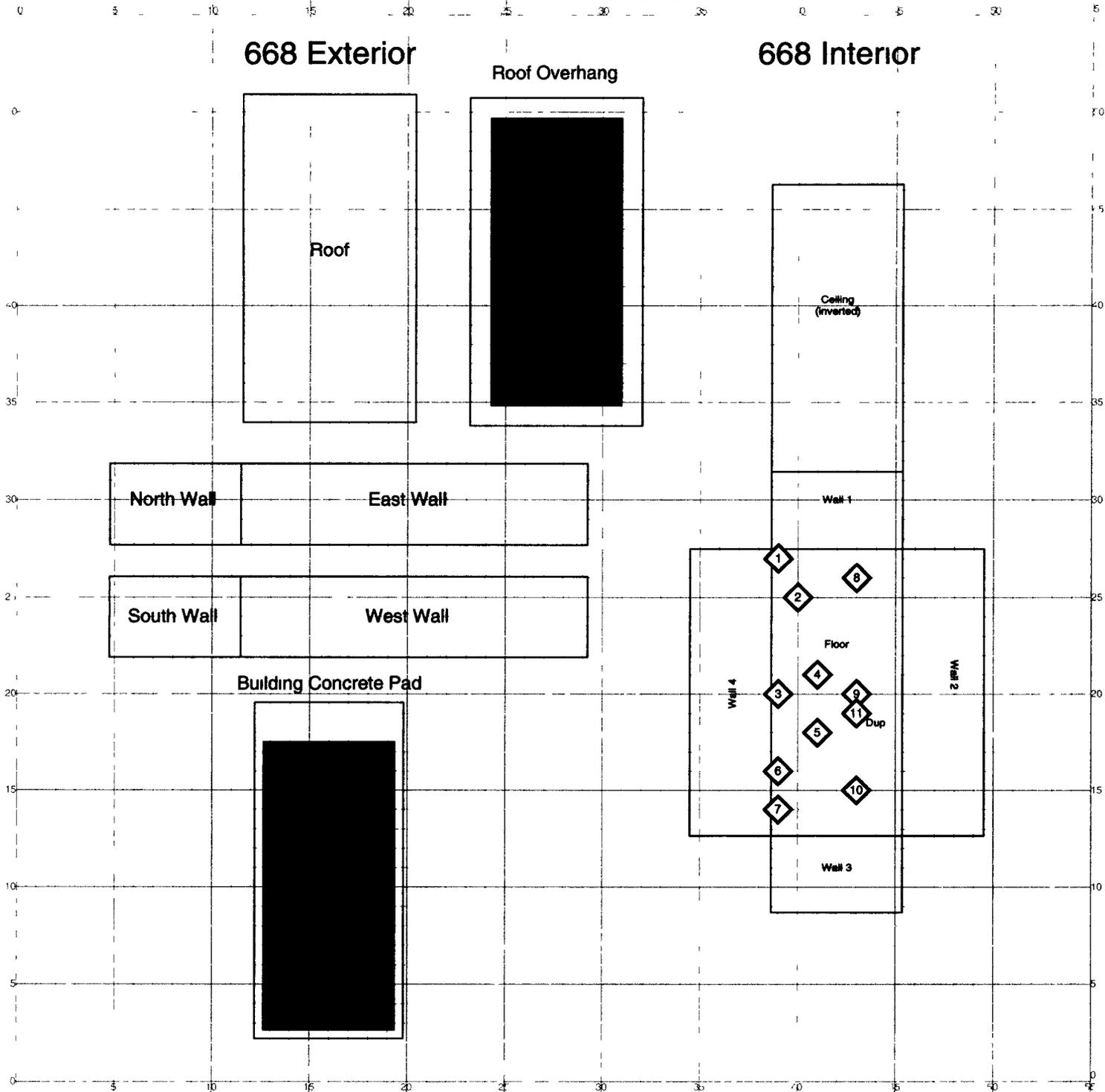
Analyte	Regulatory Limit (mg/L)
Arsenic (D004)	50
Barium (D005)	1000
Cadmium (D006)	10
Chromium (D007)	50
Lead (D008)	50
Mercury (D009)	0.2
Selenium (D010)	10
Silver (D011)	50

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CHEMICAL SAMPLE MAP

**Building. 668
RCRA/CERCLA**

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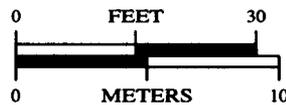
SURVEY MAP LEGEND

- 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 = 24 feet 1 sq m = 1 sq m

U S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by GHS Dept. 303-966-7707

Prepared for



MAP ID 03-0076/668-Chem

Sept 29, 2003

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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 and Metals)

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 E-4, SVOCs in E-5 and Metals in E-6. A data completeness summary for all results is given in Table E-7.

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 668 based on the conservatism of the transuranic limits used as DCGLs in the unrestricted release decision process. Survey designs were implemented based on the transuranic limits used as DCGLs in the unrestricted release decision process. Coupon 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, and were less than the Transuranic DCGL_w (100 dpm/100cm²) and the Uranium DCGL_w (5,000 dpm/100cm²) unrestricted release limits for all of the wall and ceiling survey results. However, portions of the concrete slab were greater than the Transuranic DCGL_w (100 dpm/100cm²) unrestricted release limits.

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. Media surveyed and sampled yielded results less than their associated action levels and with acceptable certainties, except for the following conditions:

- Contamination greater than the PDS unrestricted release limits was identified at three locations on the concrete slab up to 148.2 dpm/100cm². Coupon samples were taken from the two highest readings and analyzed by Canberra ISOCS gamma spectroscopy. Results confirmed transuranic isotopes up to 187 dpm/100cm². The contaminated areas of the concrete slab will be decontaminated and/or managed and disposed of as LLW.
- Non-friable asbestos containing materials were identified in the interior and exterior transite panels and in the composite roofing material. However, the transite panels were abated during PDS activities. The remaining composite roofing material will be managed and disposed of as asbestos containing sanitary waste during demolition activities.
- One core sample was greater than the RCRA regulatory limit for hexachlorobenzene (SVOC). The result translated to a TCLP value of 0.18 ppm, and the RCRA limit is 0.13 ppm. However, because this single elevated result is so near the RCRA limit and isolated to one location, the slab as a whole is considered non-hazardous. Refer to section 4.3 for further discussion.

Based upon an independent review of the radiological data, it is determined that the original project DQOs satisfied MARSSIM guidance. All facility contamination levels were below applicable unrestricted release levels except for the plutonium contaminated concrete slab. 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 meet the PDS unrestricted release criteria, except for the plutonium contaminated concrete slab, thus confirming the Type 2 facility classification. All beryllium results were less than associated action levels (0.1 µg/100cm²).

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 further contamination into the facility. On this basis, Building 668 meets the unrestricted release criteria with the confidences stated herein.

Table E-1 V&V of Radiological Surveys – Building 668

V&V CRITERIA, RADIOLOGICAL SURVEYS		K-H RSP 16.00 Series MARSSIM (NUREG-1575)		COMMENTS
QUALITY REQUIREMENTS				
	Parameters	Measure	frequency	
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 Units 668-A-001 (interior) and EXT-B-001 (exterior)	statistical and biased	NA	Random w/ statistical confidence
	Survey Maps	NA	NA	Random and biased measurement locations controlled/mapped to ± 1m.
	Controlling Documents (Characterization Pkg. RSPs)	qualitative	NA	Refer to the Characterization Package (planning document) for field/sampling procedures (located in Project files), thorough documentation of the planning, sampling/analysis process, and data reduction into formats
COMPARABILITY	units of measure	dpm/100cm ²	NA	Use of standardized engineering units in the reporting of measurement results
COMPLETENESS	Plan vs Actual surveys	> 95%	NA	See Table E-4 for details
	usable results vs unusable detection limits	> 95%	NA	
SENSITIVITY		TSA ≤ 50 dpm/100cm ² RA ≤ 10 dpm/100cm ²	all measures	MDAs ≤ 50% DCGL _w per MARSSIM guidelines

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Table E-2 V&V of Asbestos Results - Building 668

V&V CRITERIA, CHEMICAL ANALYSES ASBESTOS	METHOD- EPA 600/R-93/116	DATA PACKAGE		COMMENTS
		LAB ---->	Reservoirs Environmental, Inc RIN01D0848	
QUALITY REQUIREMENT				
ACCURACY	Calibrations Initial/continuing	Measure	Frequency	Semi-quantitative, per (microscopic) visual estimation.
PRECISION	Actual Number Sampled LCSD Lab duplicates	below detectable amounts	≥1	Semi-quantitative, per (microscopic) visual estimation.
REPRESENTATIVENESS	COC	all below detectable amounts	≥ 18 samples	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-4, final number of samples at Certified Inspector's discretion.
SENSITIVITY	Detection limits	<1% by volume	all measures	N/A

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Table E-3 V&V of Beryllium Results – Building 668

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		COMMENTS
BERYLLIUM	Prep. NMAM 7300 METHOD: OSHA ID-125G	LAB → RIN →	DataChem Laboratories Salt Lake City, Utah RIN0322245	
QUALITY REQUIREMENTS				
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.
	Continuing	80% < %R < 120%	≥1	
	LCS/MS	80% < %R < 120%	≥1	
	Blanks - lab & field	< MDL	≥1	
PRECISION	interference check std (ICP)	NA	NA	
	LCS/D	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		
		0.012 ug/100cm ²	all measures	

Table E-4 V&V of VOC Results - Building 668

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE	
VOCs	METHOD: SW8260	LAB →	Severn-Trent, Denver, Co
		RIN →	RIN04S0001
QUALITY REQUIREMENTS			
ACCURACY	Calibrations Initial	± 40%ΔD in Response Factor	≥1/batch
	Continuing	80% < ΔR < 120%	≥1/batch
	LCS	80% < ΔR < 120%	≥1/batch
	MS	75% < ΔR < 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%	NA
SENSITIVITY	Detection limits	Various	all analytes
COMMENTS			
No qualifications significant enough to change project decision, i.e., classification of Type 2 areas confirmed, all results were below regulatory limits			

Table E-5 V&V of SVOC Results - Building 668

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE	
SVOCs	METHOD. SW8270	LAB →	Severn-Trent, Denver, Co. RIN04S0001
		RIN →	
QUALITY REQUIREMENTS		Measure	Frequency
ACCURACY	Calibrations Initial	± 40% D in Response Factor	≥1/batch
	Continuing LCS	80% < %R < 120%	≥1/batch
	MS	80% < %R < 120%	≥1/batch
	Blanks - Lab	75% < %R < 125%	≥1/batch
	Internal standards	ug/kg	≥1/batch
	Surrogate	retention times and area factors	≥1/batch
	MSD	%R (variable)	≥1/batch
	Field duplicate	RPD < 30%	≥1/batch
	COC	all results < RL	≥1/batch
	REPRESENTATIVENESS	Hold times/preservation	Qualitative
Controlling Documents (Plans, Procedures, maps, etc.)		Qualitative	NA
Measurement units		ug/kg	NA
COMPLETENESS	Plan vs Actual samples	>95%	NA
	Usable results vs. unusable	>95%	NA
SENSITIVITY	Detection limits	Various	all analytes
	COMMENTS		
No qualifications significant enough to change project decision, i.e., classification of Type 2 areas confirmed, all results were below regulatory limits.			

Table E-6 V&V of Metals – Building 668

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE	
Metals (total)	METHOD SW6010/6020	LAB →	Severn-Trent, Denver, Co RIN04S0001
QUALITY REQUIREMENT			
ACCURACY	calibrations	Initial	frequency
		Continuing	Measure
	LCS		linear calibration ≥1/batch
	MS		80% < %R < 120% ≥1/batch
	blanks	Lab	80% < %R < 120% ≥1/batch
	serial dilutions		75% < %R < 125% mg/kg ≥1/batch
	interference check std (ICP)		%D < 10% ≥1/batch
PRECISION	MSD		80% < %R < 120% 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			mg/kg NA
COMPLETENESS	Plan vs Actual samples		>95% NA
SENSITIVITY	usable results vs unusable detection limits		>95% NA
			Various all analytes
COMMENTS			
No qualifications significant enough to change project decision, i.e., classification of a Type 2 Facility confirmed, TCLP results well below associated action levels			

Table E-7 Data Completeness Summary – Building 668

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 668 (interior)	6 biased	18 biased	ACM present, results > 1% by volume (3 locations)	40 CFR 763.86, 5 CCR 1001-10, EPA 600/R-93/116 RIN01D0848 ACM identified at 3 locations ranging from 4% to 8% Chrysotile Refer to Attachment D for sample locations and analytical results and Attachment E for further discussion.
Beryllium	Building 668 (interior)	15 biased	8 biased	No beryllium contamination found, all results less than associated action levels	OSHA ID-125G RIN03Z2245 No results above action level (0.2 ug/100cm ²) or investigative level (0.1 ug/100cm ²)
VOCs	Building 668 (interior)	10 (solids) and 1 duplicate	10 (solids) and 1 duplicate	No VOC contamination found, all results less than the regulatory limit	6 CCR 1007-3, SW 846.1311/Method 8260 RIN04S0001
SVOCs	Building 668 (interior)	10 (solids) and 1 duplicate	10 (solids) and 1 duplicate	No SVOC contamination found, all results less than the regulatory limit	6 CCR 1007-3, SW 846.1311/Method 8270/8270C RIN04S0001 One (1) SVOC result greater than the RCRA regulatory limit. The total hexachlorobenzene result was 3.8 ppm. Using the "divide by 20" method, this translates to a TCLP result of 0.18 ppm. Because this single elevated result is so near the RCRA limit and isolated to one location, the slab as a whole is considered non-hazardous. Refer to Section 4.3 for further discussion.

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Table E-7 Data Completeness Summary – Building 668

ANALYTE	Building/Area/ Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc)
Metals	Building 668 (interior)	10 (solids) and 1 duplicate	10 (solids) and 1 duplicate	No Metal contamination found, all results less than the regulatory limit	SW 846 1311, SW 846 6010/6010B RIN04S0001
Radiological	Survey Area 5 Survey Unit 668-A-001 Building 668 (interior)	25 α TSA (15 random/10 biased) & 25 α Smears (15 random/10 biased)	25 α TSA (15 random/10 biased) & 25 α Smears (15 random/10 biased)	Elevated contamination found at three locations on the concrete slab greater than the PDS unrestricted release levels	Transuranic and/or Uranium DCGLs as applicable Contamination greater than the PDS unrestricted release limits was identified at three locations on the concrete slab up to 148 2 dpm/100cm ² Coupon samples were taken from the two highest reading and analyzed by Canberra ISOCS gamma spectroscopy Results confirmed Transuranic isotopes up to 187 dpm/100cm ² The contaminated areas of the concrete slab will be decontaminated and/or managed and disposed of as LLW
		10 α TSA and 10 α Smears (equipment) 2 QC TSA	10 α TSA and 10 α Smears (equipment) 2 QC TSA	100% scan of floor and 10% of remaining surfaces	
		5% scan of interior surfaces			