



Rocky Flats Environmental Technology Site

RECONNAISSANCE LEVEL CHARACTERIZATION REPORT (RLCR)/PRE-DEMOLITION SURVEY REPORT (PDSR)

Tent 4 Closure Project

REVISION 1

June 28, 2005



Change Control:

- Rev. 1 Revised Exec Summary, 1st Para. – added wording that Tent 4 was originally a Type 2 but based on RLC/PDS is determined to be a Type 1
- Rev. 1 Revised Exec Summary, Para. 4 – clarified asphalt pad wording
- Rev. 1 Revised Introduction, 1st Para. – added wording that Tent 4 was originally a Type 2 but based on RLC/PDS is determined to be a Type 1
- Rev. 1 Revised Section 7 – added “as” to read “disposed of as sanitary”

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

ADMIN RECORD

1/41

IA-A-002734

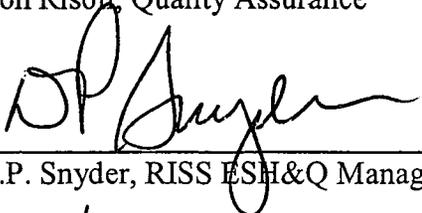
**RECONNAISSANCE LEVEL CHARACTERIZATION
REPORT (RLCR)/PRE-DEMOLITION SURVEY REPORT
(PDSR)**

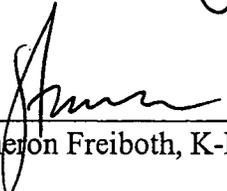
Tent 4 Closure Project

REVISION 0

June 21, 2005

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2/41

TABLE OF CONTENTS

| | |
|---|------------|
| ABBREVIATIONS/ACRONYMS | III |
| EXECUTIVE SUMMARY | IV |
| 1 INTRODUCTION | 1 |
| 1.1 PURPOSE | 1 |
| 1.2 SCOPE..... | 2 |
| 1.3 DATA QUALITY OBJECTIVES | 2 |
| 2 HISTORICAL SITE ASSESSMENT | 2 |
| 3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS | 2 |
| 4 CHEMICAL CHARACTERIZATION AND HAZARDS | 3 |
| 4.1 ASBESTOS | 4 |
| 4.2 BERYLLIUM..... | 4 |
| 4.3 RCRA/CERCLA CONSTITUENTS [INCLUDING METALS, VOLATILE ORGANIC COMPOUNDS (VOCs) AND SEMI VOLATILE ORGANIC COMPOUNDS (SVOCs)] | 4 |
| 4.4 POLYCHLORINATED BIPHENYLS (PCBs) | 4 |
| 5 PHYSICAL HAZARDS | 5 |
| 6 DATA QUALITY ASSESSMENT | 5 |
| 7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES | 5 |
| 8 FACILITY CLASSIFICATION AND CONCLUSIONS..... | 6 |
| 9 REFERENCES | 7 |

ATTACHMENTS

- A Facility Location Map
- B Historical Site Assessment Report
- C Radiological Data Summaries and Survey Maps
- D Chemical Data Summaries and Sample Maps
- E Data Quality Assessment (DQA) Detail

ABBREVIATIONS/ACRONYMS

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

EXECUTIVE SUMMARY

Rev. 1 | A Reconnaissance Level Characterization (RLC) and a Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Tent 4. Tent 4 was anticipated to be a Type 2 Facility, however, based on the results of the RLC/PDS that was performed, it has been determined to be a Type 1 Facility. Because this Type 1 structure will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). Structure surfaces characterized as part of this PDS included the tent fabric and metal structure supports comprising the walls, ceiling, and roof. The asphalt pad beneath the tent was radiologically surveyed in accordance with the Waste Release Evaluation (WRE) process, and all results were less than the unrestricted release criteria and are included in this PDSR. Additional RSP 7.02 surveys of the asphalt pad areas outside the Tent structures will be performed, after tent demolition is complete, for waste disposal determinations (refer to RFCA Contact Record (DAP-035), dated 6/20/05). Environmental media beneath and surrounding the structure was not within the scope of this PDS and will be addressed in accordance with the Soil Disturbance Permit process and in compliance with RFCA.

The PDS encompassed both radiological and chemical characterization to enable compliant disposition and waste management pursuant to the D&D Characterization Protocol (MAN-077-DDCP). The characterization built upon physical, chemical and radiological hazards identified in the facility-specific *Historical Site Assessment Report for the Area 5 - Group 13 Facilities*, dated December 2002, Revision 0.

Results indicate that no radiological, beryllium, asbestos or PCB contamination exists in excess of the PDSP unrestricted release limits. Sampling and analysis for RCRA/CERCLA constituents have been conducted as part of the RCRA closure process. The results of this sampling effort demonstrated that the tent structure is not a regulated hazardous waste, and is suitable for disposal at a sanitary landfill. However, the asphalt pad has not undergone RCRA closure and will be managed as hazardous waste (top layer) and sanitary waste (remaining layer).

Rev. 1 | Based on the analysis of radiological, chemical and physical hazards, Tent 4 is classified as RFCA Type 1 structure pursuant to the RFETS Decommissioning Program Plan (DPP; K-H, 1999). Tent 4 can be demolished and the waste managed as sanitary waste. The asphalt pad will undergo RCRA closure by means of physical extraction. The top layer of the asphalt pad will be removed and managed as hazardous waste and the remainder of the asphalt pad will be managed as sanitary waste. To ensure the facility remains free of contamination and PDS data remain valid, Level 2 Isolation Controls have been established with the required postings.

1 INTRODUCTION

Rev. 1
A Reconnaissance Level Characterization (RLC) and a Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Tent 4. Tent 4 was anticipated to be a Type 2 Facility, however, based on the results of the RLC/PDS that was performed, it has been determined to be a Type 1 Facility. Because this Type 1 structure will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). Building surfaces characterized as a part of this PDS included the walls, ceiling and roof. The asphalt pad beneath the tent was radiologically surveyed in accordance with the Waste Release Evaluation (WRE) process, and all results were less than the unrestricted release criteria and are included in this PDSR. Additional RSP 7.02 surveys of the asphalt pad areas outside the Tent structures will be performed, after tent demolition is complete, for waste disposal determinations (refer to RFCA Contact Record (DAP-035), dated 6/20/05). Environmental media beneath and surrounding the facility was not within the scope of this PDS and will be addressed in accordance with the Soil Disturbance Permit process and in compliance with RFCA.

Tent 4 was an "anticipated" Type 2 RFCA facility prior to the performance of this RLC/PDS effort. A Type 2 RLC had not yet been performed in this building because the tent had been in operation until recently, thus the majority of the tent surfaces were inaccessible for characterization. Since the performance of this RLC/PDS effort was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP), no further characterization of this structure is necessary.

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed. Among these is Tent 4. The location of this structure is shown in Attachment A, *Facility Location Map*. This structure no longer supports the RFETS mission and will be removed to reduce Site infrastructure, risks and/or operating costs.

Before this Type 1 structure can be demolished, the Data Quality Objectives (DQOs) for a Pre-Demolition Survey (PDS) must be satisfied; this document presents the PDS results for Tent 4. 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 was built upon physical, chemical and radiological hazards identified in the facility-specific *Historical Site Assessment Report for the Area 5 - Group 13 Facilities*, dated December 2002, Revision 0.

1.1 Purpose

The purpose of this report is to communicate and document the results of the Tent 4 PDS effort. A PDS is performed prior to building demolition to define the final radiological and chemical conditions of a facility. Final conditions are compared with the release limits for radiological and non-radiological contaminants. PDS results will enable project personnel to make final disposition decisions, develop related worker health and safety controls, and estimate waste volumes by waste types.

6/4/1

1.2 Scope

This report presents the final radiological and chemical conditions of the Tent 4 structure. Environmental media beneath and surrounding the structure are not within the scope of this PDSR and will be addressed in accordance with the Soil Disturbance Permit process and in compliance with RFCA.

1.3 Data Quality Objectives

The Data Quality Objectives (DQOs) used in designing this PDS were the same DQOs identified in the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). Refer to section 2.0 of MAN-127-PDSP for these DQOs. The radiological survey Data Quality Objectives (DQOs) for the asphalt pad satisfied per Radiological Safety Practice procedures 3-PRO-165-07.02, *Contamination Monitoring Requirements*.

2 HISTORICAL SITE ASSESSMENT

A facility-specific Historical Site Assessment Report (HSAR) was conducted to understand the facility history 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 packages. Results of the facility specific HSA were documented in a facility specific *Historical Site Assessment Report for the Area 5 - Group 13 Facilities*, dated December 2002, Revision 0. Refer to Attachment B, *Historical Site Assessment Report*, for a copy of the Tent 4 HSAR. In summary, the HSAR identified a low potential for radiological, chemical, beryllium or asbestos hazards.

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

Tent 4 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 structure surfaces. Measurements were performed to evaluate the contaminants of concern. Based upon a review of historical and process knowledge, structure walk-downs, and MARSSIM guidance, a Radiological Characterization Plan was developed during the planning phase that describes the minimum survey requirements [refer to the RISS Characterization Project files for the Tent 4 Radiological Characterization Plan]. One Class 3 radiological survey unit package was developed for Tent 4: 750T04 (interior and exterior). A Class 3 designation was chosen since this survey unit has a low potential for contamination. Individual radiological survey unit packages are maintained in the RISS Characterization Project files.

7/41

The Tent 4 survey unit package was developed in accordance with Radiological Safety Practices (RSP) 16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure*. Total surface activity (TSA), removable surface activity (RSA), and scan measurements were collected in accordance with RSP 16.02 *Radiological Surveys of Surfaces and Structures*. Radiological survey data were verified, validated and evaluated in accordance with RSP 16.04, *Radiological Survey/Sample Data Analysis*. Quality control measures were implemented relative to the survey process in accordance with RSP 16.05, *Radiological Survey/Sample Quality Control*.

A total of 29 total surface activity (TSA) measurements (17 random, 10 biased and 2 QC) and 27 removable surface activity (RSA) measurements (17 random and 10 biased) were taken and scan surveys performed. A minimum alpha scan survey of 15% of all interior and exterior surfaces at biased locations was performed. None of the measurements or scans indicated elevated activity above applicable DCGL values. The asphalt pad beneath Tent 4 will be released as part of the WRE and RCRA closure process. The Radiological Safety Practices (RSP) 7.02 procedure surveys of the asphalt pad that are included in Attachment C are of adequate quality and quantity to safely demolish the tent structure. These RSP 7.02 surveys of the asphalt pad were performed at evenly distributed locations and met TSA and RSA MDA PDSP requirements. Biased scans of stained areas (stained areas encompassed same locations as TSA/RSA locations) and areas along the tent edges were also performed. Additional RSP 7.02 surveys of the asphalt pad areas outside the Tent structures will be performed, after tent demolition is complete, for waste disposal determinations (refer to RFCA Contact Record (DAP-035), dated 6/20/05).

Radiological survey data, statistical analysis results, survey locations, asphalt pad WRE surveys, and radiological scan maps are presented in Attachment C, *Radiological Data Summary and Survey Maps*. Level 2 Isolation Control postings are displayed on the tent entrances to ensure no radioactive materials are introduced.

4 CHEMICAL CHARACTERIZATION AND HAZARDS

Tent 4 was characterized for chemical hazards per the PDSP. Chemical characterization was performed to determine the nature and extent of chemical contamination that may be present on, or in the structures. Based upon a review of historical and process knowledge, visual inspections, and PDSP DQOs, additional sampling needs were determined. A Chemical Characterization Plan was developed during the planning phase that describes sampling requirements and the justification for the sample locations and estimated sample numbers. The contaminants of concern were asbestos, beryllium, RCRA/CERCLA, lead and PCBs. Refer to Attachment D, *Chemical Summary Data and Sample Maps*, for details on sample results and sample locations. Isolation control postings are displayed on affected structures to ensure no hazardous materials are introduced.

8/41

4.1 Asbestos

A survey of building materials suspected of containing asbestos was conducted in Tent 4 as part of PDS activities. A CDPHE-certified asbestos inspector conducted the inspection 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. No materials suspected of containing asbestos were identified therefore, asbestos sampling was not performed as part of this RLC/PDS.

4.2 Beryllium

Based on the HSAR, Interview Checklists, and the Known Beryllium Area list, there was not adequate historical or process knowledge to conclude that beryllium was not present in Tent 4. Consequently, random and biased beryllium sampling was conducted in Tent 4 in accordance with PRO-536-BCPR, Beryllium Characterization Procedure. Biased beryllium sample locations corresponded with the most probable areas of dust accumulation (including beryllium dust), assuming airborne deposition. Random sample locations were computer generated.

All PDS beryllium laboratory results from Tent 4 were less than the investigative limit of $0.1 \mu\text{g}/100\text{cm}^2$. PDS 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, Volatile Organic Compounds (VOCs) and Semi Volatile Organic Compounds (SVOCs)]

A Closure Description Document (CDD) was submitted for RCRA Unit 750.1 including Tent 4 (05-RF-00218) and approved by CDPHE on March 23, 2005. The tent structure will be closed as denoted in the CDD. Since the asphalt pad is the RCRA secondary containment for the 750 Pad, and the pad has not yet undergone RCRA closure, the pad will undergo closure once the tent structure has been demolished. Tent 4 may have contained some RCRA regulated items, such as mercury thermostats, fluorescent light bulbs, mercury vapor light bulbs, mercury containing gauges, circuit boards, and lead-acid batteries. However, these items have been removed and are being managed in accordance with the Colorado Hazardous Waste Act. The Tent 4 structure will be removed and managed as sanitary waste. The asphalt pad will undergo proper RCRA closure by means of physical extraction. The layer removed will be managed as hazardous waste and the remainder of the pad will be managed as sanitary waste. All RCRA closure actions will be reported in the Closure Summary Report for the RCRA Unit 750.1.

4.4 Polychlorinated Biphenyls (PCBs)

Based on the HSAR for Tent 4, interviews, facility walk-downs and a review of historical WSRIC processes, the facility did not have a history of PCB use or storage. The structure may have contained PCB fluorescent light ballast, however, all PCB ballast have been removed from the structure. Consequently, PCB sampling and analysis was not conducted as part of this RLC/PDS and will not impact decontamination and decommissioning activities.

9/4/1

5 PHYSICAL HAZARDS

Physical hazards associated with Tent 4 consist of those common to standard industrial environments, and include hazards associated with energized systems, utilities, and trips and falls. There are no other unique hazards associated with the facility. The facility has been relatively well maintained and is in good physical condition, therefore, does not present any hazards associated with building deterioration. However, care should be taken as Tent 4 is located near the following IHSSs, PACs or UBCs:

- PAC – 700-214, *750 Pad Pondcrete and Saltcrete Storage, Unit 25, Active*
- IHSS – 192, *Seep Area Near OU-2 Influent, NFA 1999*

Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practices. The piping system that was installed in Tent 4 to move pond sludge from the sludge tanks to the Barn Tent mixing units was removed from the tent prior to the start of this RLC/PDS.

6 DATA QUALITY ASSESSMENT

Data used in making management decisions for decommissioning of Tent 4, 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 project DQOs.

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

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

Details of the DQA are provided in Attachment E.

7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES

Rev. 1 | The demolition and disposal of Tent 4 will generate sanitary and hazardous waste. The tent structure will be managed and disposed of as sanitary waste and the asphalt pad will be managed as hazardous waste (top layer) and the remainder of the pad will be managed as sanitary waste (remaining layer). Estimated waste types and waste volumes are presented below. PCB ballast and hazardous waste items have been removed and managed pursuant to Site PCB and waste management procedures.

10/41

| WASTE TYPES AND VOLUME ESTIMATES | | | | | | | |
|----------------------------------|---------------------|-----------------|------------------|--------------------------------------|--------------------------|----------------|---|
| Facility | Concrete (cu ft) | Wood (cu ft) | Metal (cu ft) | Corrugated Sheet Metal (cu ft) | Wall Board (cu ft) | ACM (cu ft) | Other Waste (cu ft) |
| Tent 4 | 0 | 0 | 2,500 | 0 | 0 | 0 | Tent panels & misc. debris – 1,000 |
| Asphalt Pad | 0 | 0 | 0 | 0 | 0 | 0 | Hazardous waste- 5,000 |

8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, Tent 4 is classified as a RFCA Type 1 structure pursuant to the RFETS Decommissioning Program Plan (DPP; K-H, 1999). Tent 4 does not possess any radiological, asbestos or beryllium contamination in excess of the PDSP unrestricted release criteria. PCB ballast and hazardous waste items have been removed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations.

The RLC/PDS for Tent 4 was performed in accordance with the DDCP and PDSP. All PDSP DQOs were met, and all data satisfied the PDSP DQA criteria. The asphalt pad beneath the tent was radiologically surveyed in accordance with the Waste Release Evaluation (WRE) process and meets the unrestricted release criteria. Additional RSP 7.02 surveys of the asphalt pad areas outside the Tent structures will be performed, after tent demolition is complete, for waste disposal determinations (refer to RFCA Contact Record (DAP-035), dated 6/20/05). Tent 4 can be demolished and the waste managed as sanitary waste. The asphalt pad will undergo RCRA closure by means of physical extraction. The layer removed will be managed as hazardous waste and the remainder of the pad will be managed as sanitary waste. Environmental media beneath and surrounding the facility will be addressed at a future date in accordance with the Soil Disturbance Permit process and in compliance with RFCA. To ensure Tent 4 remains free of contamination, Level 2 Isolation Controls have been established with the required postings.

11/4'

9 REFERENCES

- DOE/RFFO, CDPHE, EPA, 1996. Rocky Flats Cleanup Agreement (RFCA), July 19, 1996.
- DOE Order 5400.5, "Radiation Protection of the Public and the Environment."
- DOE Order 414.1A, "Quality Assurance."
- EPA, 1994. "The Data Quality Objective Process," EPA QA/G-4.
- K-H, 1999. Decommissioning Program Plan, June 21, 1999.
- MAN-131-QAPM, *Kaiser-Hill Team Quality Assurance Program*, Rev. 1, November 1, 2001.
- MAN-076-FDPM, *Facility Disposition Program Manual*, Rev. 3, January 1, 2002.
- MAN-077-DDCP, *Decontamination and Decommissioning Characterization Protocol*, Rev. 4, July 15, 2002.
- MAN-127-PDSP, *Pre-Demolition Survey Plan for D&D Facilities*, Rev. 1, July 15, 2002.
- MARSSIM - *Multi-Agency Radiation Survey and Site Investigation Manual*, dated August 2000, Revision 1 (NUREG-1575, EPA 402-R-97-016).
- PRO-475-RSP-16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation, and Closure*, Rev. 1, May 22, 2001.
- PRO-476-RSP-16.02, *Pre-Demolition (Final Status) Radiological Surveys of Surfaces and Structures*, Rev. 1; May 22, 2001.
- PRO-477-RSP-16.03, *Radiological Samples of Building Media*, Rev. 1, May 22, 2001.
- PRO-478-RSP-16.04, *Radiological Survey/Sample Data Analysis for Final Status Survey*, Rev. 1, May 22, 2001.
- PRO-479-RSP-16.05, *Radiological Survey/Sample Quality Control for Final Status Survey*, Rev. 1, May 22, 2001.
- PRO-563-ACPR, Asbestos Characterization Procedure, Revision 0, August 24, 1999.
- PRO-536-BCPR, Beryllium Characterization Procedure, Revision 0, August 24, 1999.
- RFETS, Environmental Waste Compliance Guidance #25, Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition.
- RFETS, Environmental Waste Compliance Guidance #27, Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal.
- RFETS, RFCA RSOP for Recycling Concrete, September 28, 1999
- RFETS, *Historical Site Assessment Report for Area 5-Group 13*, dated December 2002.

12/41

ATTACHMENT A

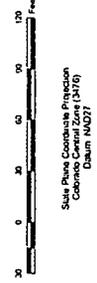
Facility Location Map

13/41

Tent 04 Location Map

Standard Map Features

- Demolished Facility
- Lakes and Ponds
- Delineated Roads
- Road Boards
- Dirt Roads
- Railroad Removed
- Railroad Remaining
- Fence Remaining
- Streams, Ditches, or Other Drainage Features
- Remaining Facility
- Tent 04



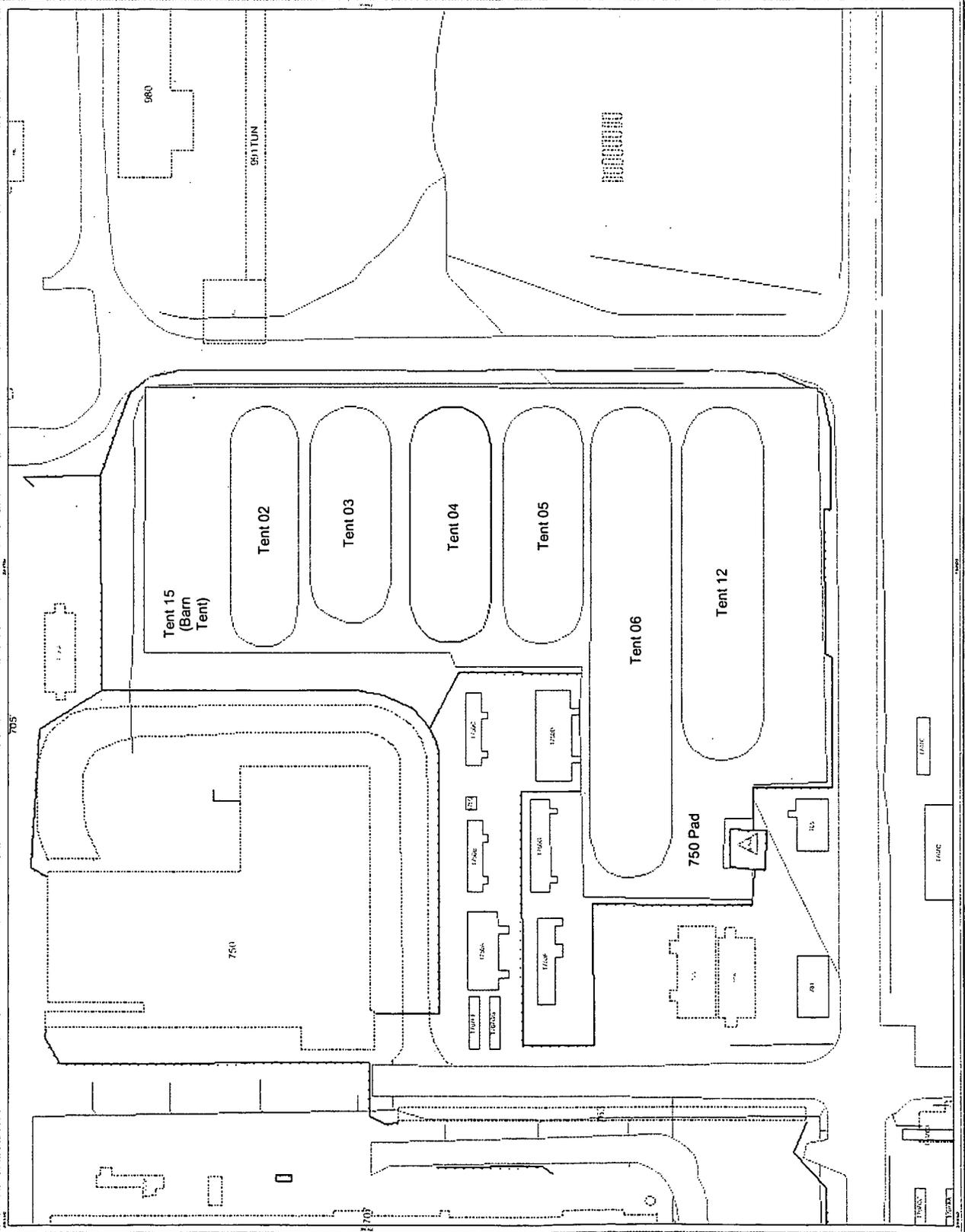
State Plane Coordinate Projection
Colorado Central Zone (3410)
Datum: NAD77

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

Prepared By: CHEN/HILL
 U.S. DEPT. OF ENERGY
 300 866-7707

Prepared For: KAISER HILL
 COMPANY

DATE: 8/15/2005



14741

ATTACHMENT B

Historical Site Assessment Report

15/41

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

Facility ID: (AREA 5 GROUP 13) Buildings S750, 750 Pad, Tent 02, Tent 03, Tent 04, Tent 05, Tent 06, and Tent 12.

Anticipated Facility Type (1, 2, or 3): Buildings S750, 750 Pad, Tent 02, Tent 03, Tent 04, Tent 05, Tent 06, and Tent 12 are anticipated Type 2 facilities.

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 S750

Building S750 is a 48 square-foot skid mounted portable shed acquired in the late 1980s or early 1990s. The shed has aluminum siding and an aluminum roof, the floor is wood.

Building S750 has the following utilities: electric.

The 750 Pad and associated tents (Tents 02, 03, 04, 05, 06, and 12)

The 750 Pad is approximately 100,000 square-foot, fenced and bermed, asphalt pad that was built in 1987. The 750 Pad is estimated to be 4-inches thick and is sloped to control runoff. In 1990 six large tents (Tents 02, 03, 04, 05, 06, and 12) were added to the pad to enclose the Pondcrete and saltcrete waste management activities. In 2002 tent T-750 SPR was constructed to house the sludge stabilization equipment. The tents were constructed with fabric panel stretched across an aluminum frame and used steel anchored pins to mount the tents to the pad. The pad has installed piping for transferring the pond sludge from the storage tents to T750SPR for stabilization activities.

The 750 pad has the following utilities: electric and fire protection is provided by randomly placed fire extinguishers.

Tent 2, 3, 4, 5, 6, and 12

Tents 2, 3, 4, 5, 6, and 12 were constructed in approximately 1990 as a temporary storage facility for the storage and solidification of Pondcrete and Saltcrete. Tent T-750 SPR was constructed in 2002 to house pond sludge stabilization equipment. These tents are constructed with arched aluminum frames covered with polyester fabric. Tent 2 and 12 have a second layer of fabric to increase durability. The arched frames are anchored to the asphalt pad. Each tent has a containment berm around perimeter of the interior of each tent. Tent 5 houses a Perma-Con unit and a drum crusher.

Each tent is equipped with one or more vehicle access ways, metal access doors and 12-in-diameter wind turbine style ventilators. Tent 5 has a Perma-Con used to sample and repackage waste containers. The dimension of each tent is as follows; Tent 2 - 50 ft. wide by 180 ft. long by 24 ft. high; Tent 3 - 60 ft. wide by 176 ft. long by 24 ft. high; Tent 4 - 60 ft. wide by 180 ft. long by 24 ft. high; Tent 5 - 60 ft. wide by 180 ft. long by 24 ft. high; Tent 6 - 60 ft. wide by 360 ft. long by 24 ft. high; Tent 12 - 60 ft. wide by 280 ft. long by 24 ft. high; and Tent T-750 - 60 ft. wide by 80 ft. long by 24 feet high.

Each Tent has the following utilities: electric and fire protection is provided by randomly placed fire extinguishers.

16/41

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

Historical Operations

Building S750

Building S750 is a shed that was installed in the late 1990s. This shed has primarily been used as a storage shed for non-hazardous and non-radiological operation such as the site housekeeping services, food service organization and site maintenance organization. There is no history of any radiological or Hazardous operations.

The 750 pad and Tents 2, 3, 4, 5, 6, 12, and T-750 SPR

The 750 pad is a large asphalt-paved area located east of Building 750. The 750 Pad and the associated tents (Tents 2, 3, 4, 5, 6, 12, and T-750 SPR) are used to store LLW, LLW-Mixed, and hazardous waste. Tents 2 and 12 can be used to store TRU and TRU-Mixed waste. Waste is stored in Tri-wall boxes, plywood crates, corrugated boxes, metal crates, and pond sludge storage tanks. Tent 5 has a Perma-Con used to repackage and samples waste, and a drum crusher. Tent T-750 SPR was constructed in 2002 and house the pond sludge stabilization equipment. A piping system has been installed to move the pond sludge from the tents 3, 4, and 5 to Tent T-750SPR for stabilization. The 750 Pad and the associated tents primarily store Pondcrete, Saltcrete, pond sludge, investigative derived waste and to a lesser extent process generated waste from various operation inside the Protected area. See the 750 Pad WSRIC and Safety Analysis Report for additional information. There have been several small releases to the 750 Pad. Additional release information can be found in IHH, PAC, and UBC section below.

Tent 5 holds the Perma-Con unit used to repackage and sample waste containers and the drum-crushing unit. A second Perma-con is being built in Tent 5 to assist in the waste repackaging and sampling activities. Tent 3, 4, and 6 are primarily used to house Pondcrete storage tanks and Tents 2, 6, and 12 are primarily used to store waste drums and crates.

The 750 pad and associated tents hours the following RCRA units:

- 1) RCRA Unit 750-1, which addresses container storage, and will be closed in accordance with RCRA Part B Permit No. CO 97-05-30-01.
- 2) RCRA Unit 750.2, which addresses the Pondcrete storage, tanks, and will be closed in accordance with RCRA Part B Permit No. CO-97-05-30-01.
- 3) RCRA Unit 750.3 that addresses sludge de-watering and stabilization processes. The sludge de-watering equipment has been removed and RCRA Closure is in progress. The stabilization process is still active. Closure will be performed in accordance with RCRA Part B Permit No. CO-97-05-30-01.

Current Operational Status

Buildings S750, the 750 Pad and the associated tents are all operational.

Contaminants of Concern

17/41

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

Asbestos

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

None of the facilities addressed in this HSA have an asbestos posting.

Beryllium (Be)

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

The 750 pad and Tents 2, 3, 4, 5, 6, 12 and the Perma-Con in Tent 5 are all on the RFETS list of Historic and Present Beryllium Areas. Tent T-750-SPR was constructed in 2002 and has no current Data.

Summarize any recent Be sampling results:

See Industrial Hygiene group has a list of the most recent Be samples collected for the facilities addressed in this HSA.

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 should not be a concern. No processes containing lead were conducted in these facilities.

RCRA/CERCLA Constituents

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

Building S750 has no history of Hazardous operations. The 750 Pad and the Associated tents were used to Store LLW, LLW-Mixed, TRU, TRU-Mixed, and hazardous waste streams. See the Historical Operation section above for a more detailed description of the activities which occurred on the 750 Pad. See the 750 Pad WSRIC for a more detailed description of the waste streams handled on the 750 Pad. See the IHSS, PAC, and UBC section below for release information.

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

The 750 Pad and the associated tents have had several small releases, some of these releases are documented in PAC 700-214, "750 Pad Pondcrete and Saltcrete Storage, Unit 25".

Describe methods in which spills were mitigated, if any:

Spills were cleaned by sweeping, washing, wiping or scooping.

18/41

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

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: No process equipment containing PCBs were located in any of these facilities. The 750 Pad (and the associated tents) were never used a permitted TSCA waste storage area. Based on the age of construction of some of these facilities, PCBs in paint should not 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:

The 750 Pad (including Tents 2, 3, 4, 5, 6, and 12), have radiological postings, The 750 Pad, and the associated Tents are permitted LLW, LLWN TRU and TRUM waste storage units. Waste stored on the 750 Pad is primarily Pondcrete, and Saltcrete. See the 750 Pad WSRIC for more information on the waste stored on the 750 Pad. 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.):

The 750 Pad and the associated tents have had several small releases, some of which are documented in the IHSS, PAC, and UBC section below.

Describe methods in which spills were mitigated, if any:

Spills were cleaned by sweeping, washing, wiping or scooping.

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.

19/41

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

Environmental Restoration Concerns

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

The 750 Pad and Tents 2, 3, 4, 5, 6, 12, and T-750 SPR are located on the following IHSSs, PACs, or UBCs. See individual IHSS, PAC, or UBC report for additional information.

- 1) PAC - 700-214, "750 Pad Pondcrete and Saltcrete Storage, Unit 25", Active.
- 2) IHSS - 192 "Seep Area Near OU-2 Influent", NFA, 1999.

Building S750 is not associated with any IHSSs, PACs, or UBCs.

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.

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) |
|----------|------------------|--------------|---------------|--------------------------------|--------------------|-------------|---------------------|
| S750 | 0 | 50 | 50 | 50 | 0 | TBD | N/A |
| 750 Pad | 0 | 0 | 0 | 0 | 0 | TBD | Asphalt 50,000 |
| Tent 2 | 0 | 0 | 2300 | 0 | 0 | TBD | Fabric- 1000 |
| Tent 3 | 0 | 0 | 2300 | 0 | 0 | TBD | Fabric- 1200 |
| Tent 4 | 0 | 0 | 2500 | 0 | 0 | TBD | Fabric- 1300 |
| Tent 5 | 0 | 0 | 2500 | 0 | 0 | TBD | Fabric- 1300 |
| Tent 6 | 0 | 0 | 5000 | 0 | 0 | TBD | Fabric- 2600 |
| Tent 12 | 0 | 0 | 3100 | 0 | 0 | TBD | Fabric- 1900 |

Further Actions

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

Begin the RLC/PDS process.

20/41

2/1/12

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.

for Doug Bryant

Prepared By:

Doug Bryant

Signature

Date

December 2002

ATTACHMENT C

Radiological Data Summaries
And Survey Maps

22/41

Survey Area: 5

Survey Unit: 750T04

Building: TENT 4

Description: Tent 4, Interior and Exterior, except asphalt pad

Rocky Flats Environmental Technology Site Final Radiological Survey Summary Results

Total Surface Activity Measurements

Nbr Random Measurements Required: 17

Nbr Biased Measurements Required: 10

Nbr QC Required: 2

Nbr Random Measurements Performed: 17

Nbr Biased Measurements Performed: 10

Nbr QC Performed: 2

Alpha

| | |
|-----------------------------------|------------------------------|
| Maximum: | 73.6 dpm/100cm ² |
| Minimum: | -13.3 dpm/100cm ² |
| Mean: | 20.8 dpm/100cm ² |
| Standard Deviation: | 21.8 |
| QC Maximum: | 50.5 dpm/100cm ² |
| QC Minimum: | 36.2 dpm/100cm ² |
| QC Mean: | 43.4 dpm/100cm ² |
| Transuranic DCGL _w : | 100.0 dpm/100cm ² |
| Transuranic DCGL _{EMC} : | 300.0 dpm/100cm ² |

Removable Surface Activity Measurements

Nbr Random Measurements Required: 17

Nbr Biased Measurements Required: 10

Nbr Random Measurements Performed: 17

Nbr Biased Measurements Performed: 10

Alpha

| | |
|---------------------------------|-----------------------------|
| Maximum: | 5.5 dpm/100cm ² |
| Minimum: | -0.9 dpm/100cm ² |
| Mean: | 0.5 dpm/100cm ² |
| Standard Deviation: | 1.5 |
| Transuranic DCGL _w : | 20.0 dpm/100cm ² |

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.

23/41

Survey Area: 5

Survey Unit: 750T04

Building: TENT 4

Description: Tent 4, Interior and Exterior, except asphalt pad

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 | 511466 | 06/13/05 | Electra | 1244 | DP-6 | 12/01/05 | 0.210 | NA | 300.0 | NA | S |
| 2 | 510643 | 06/13/05 | Electra | 3127 | DP-6 | 08/21/05 | 0.206 | NA | 300.0 | NA | S |
| 3 | 511466 | 06/14/05 | Electra | 1244 | DP-6 | 12/01/05 | 0.210 | NA | 300.0 | NA | S |
| 4 | 510643 | 06/14/05 | Electra | 3127 | DP-6 | 08/21/05 | 0.206 | NA | 48.0 | NA | T/S |
| 5 | 511466 | 06/15/05 | Electra | 3552 | DP-6 | 12/02/05 | 0.204 | NA | 48.0 | NA | T/S |
| 6 | 510766 | 06/15/05 | Electra | 1244 | DP-6 | 12/01/05 | 0.210 | NA | 48.0 | NA | T/Q/S |
| 7 | 511466 | 06/16/05 | SAC-4 | 767 | NA | 08/03/05 | 0.330 | NA | 10.0 | NA | R |
| 8 | 511466 | 06/16/05 | SAC-4 | 1130 | NA | 07/03/05 | 0.330 | NA | 10.0 | NA | R |

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

24/41

Survey Area: 5

Survey Unit: 750T04

Building: TENT 4

Description: Tent 4, Interior and Exterior, except asphalt pad

Comments Sheet

General Comments: N/A

TSA Comments: For instruments that were used for both TSAs and scans (T/S) on the Instrument Data Sheet, The TSA A-Priori MDA is 48.0 and the scan A-Priori MDA is 300.0.

Ventilation sleeve drops in tent ceiling were included in the scan surveys of the tent. No elevated concentrations above the DCGLw were detected.

RSA Comments: N/A

Media Comments: N/A

25/41

Survey Area: 5

Survey Unit: 750T04

Building: TENT 4

Description: Tent 4, Interior and Exterior, except asphalt pad

Random Removable Surface Activity Data Sheet

| Random Measurement Location | Inst / RCT Nbr | Net Alpha (dpm/100cm ²) | Net Beta (dpm/100cm ²) | |
|-----------------------------|----------------|-------------------------------------|------------------------------------|-----|
| 750T04PRP-N001 | 7 | 0.9 | N/A | N/A |
| 750T04PRP-N002 | 8 | -0.9 | N/A | N/A |
| 750T04PRP-N003 | 7 | -0.6 | N/A | N/A |
| 750T04PRP-N004 | 8 | -0.9 | N/A | N/A |
| 750T04PRP-N005 | 7 | 0.9 | N/A | N/A |
| 750T04PRP-N006 | 8 | -0.9 | N/A | N/A |
| 750T04PRP-N007 | 7 | -0.6 | N/A | N/A |
| 750T04PRP-N008 | 8 | -0.9 | N/A | N/A |
| 750T04PRP-N009 | 7 | -0.6 | N/A | N/A |
| 750T04PRP-N010 | 8 | -0.9 | N/A | N/A |
| 750T04PRP-N011 | 7 | -0.6 | N/A | N/A |
| 750T04PRP-N012 | 8 | 0.6 | N/A | N/A |
| 750T04PRP-N013 | 7 | 2.4 | N/A | N/A |
| 750T04PRP-N014 | 8 | 2.1 | N/A | N/A |
| 750T04PRP-N015 | 7 | 0.9 | N/A | N/A |
| 750T04PRP-N016 | 8 | -0.9 | N/A | N/A |
| 750T04PRP-N017 | 7 | 0.9 | N/A | N/A |

26/41

Survey Area: 5

Survey Unit: 750T04

Building: TENT 4

Description: Tent 4, Interior and Exterior, except asphalt pad

Biased Removable Surface Activity Data Sheet

| Biased Measurement Location | Inst / RCT Nbr | Net Alpha (dpm/100cm ²) | Net Beta (dpm/100cm ²) | |
|-----------------------------|----------------|-------------------------------------|------------------------------------|-----|
| 750T04PBP-N018 | 8 | 2.1 | N/A | N/A |
| 750T04PBP-N019 | 7 | 5.5 | N/A | N/A |
| 750T04PBP-N020 | 8 | 2.1 | N/A | N/A |
| 750T04PBP-N021 | 7 | -0.6 | N/A | N/A |
| 750T04PBP-N022 | 8 | 0.6 | N/A | N/A |
| 750T04PBP-N023 | 7 | -0.6 | N/A | N/A |
| 750T04PBP-N024 | 8 | -0.9 | N/A | N/A |
| 750T04PBP-N025 | 7 | 2.4 | N/A | N/A |
| 750T04PBP-N026 | 8 | 0.6 | N/A | N/A |
| 750T04PBP-N027 | 7 | 0.9 | N/A | N/A |

27/41

Survey Area: 5

Survey Unit: 750T04

Building: TENT 4

Description: Tent 4, Interior and Exterior, except asphalt pad

Random/QC Total Surface Activity Data Sheet

| Random Measurement Location | Inst / RCT Nbr | Net Alpha (dpm/100cm ²) | Net Beta (dpm/100cm ²) | |
|-----------------------------|----------------|-------------------------------------|------------------------------------|-----|
| 750T04PRP-N001 | 5 | 16.2 | N/A | N/A |
| 750T04PRP-N002 | 5 | 9.8 | N/A | N/A |
| 750T04PRP-N003 | 4 | -13.3 | N/A | N/A |
| 750T04PRP-N004 | 4 | -7.0 | N/A | N/A |
| 750T04PRP-N005 | 5 | 61.8 | N/A | N/A |
| 750T04PRP-N006 | 4 | 9.5 | N/A | N/A |
| 750T04PRP-N007 | 5 | 22.6 | N/A | N/A |
| 750T04PRP-N008 | 5 | 45.6 | N/A | N/A |
| 750T04QRP-N008 | 6 | 50.5 | N/A | N/A |
| 750T04PRP-N009 | 5 | 35.8 | N/A | N/A |
| 750T04PRP-N010 | 5 | 3.0 | N/A | N/A |
| 750T04PRP-N011 | 5 | 6.4 | N/A | N/A |
| 750T04PRP-N012 | 5 | 35.8 | N/A | N/A |
| 750T04PRP-N013 | 4 | 6.1 | N/A | N/A |
| 750T04PRP-N014 | 5 | 39.3 | N/A | N/A |
| 750T04QRP-N014 | 6 | 36.2 | N/A | N/A |
| 750T04PRP-N015 | 5 | 16.2 | N/A | N/A |
| 750T04PRP-N016 | 5 | 22.6 | N/A | N/A |
| 750T04PRP-N017 | 5 | -6.8 | N/A | N/A |

28/41

Survey Area: 5

Survey Unit: 750T04

Building: TENT 4

Description: Tent 4, Interior and Exterior, except asphalt pad

Biased Total Surface Activity Data Sheet

| Biased Measurement Location | Inst / RCT Nbr | Net Alpha (dpm/100cm ²) | Net Beta (dpm/100cm ²) | |
|-----------------------------|----------------|-------------------------------------|------------------------------------|-----|
| 750T04PBP-N018 | 5 | 9.2 | N/A | N/A |
| 750T04PBP-N019 | 5 | 15.6 | N/A | N/A |
| 750T04PBP-N020 | 5 | -0.6 | N/A | N/A |
| 750T04PBP-N021 | 5 | -4.0 | N/A | N/A |
| 750T04PBP-N022 | 5 | 20.5 | N/A | N/A |
| 750T04PBP-N023 | 5 | 19.0 | N/A | N/A |
| 750T04PBP-N024 | 5 | 51.9 | N/A | N/A |
| 750T04PBP-N025 | 6 | 73.6 | N/A | N/A |
| 750T04PBP-N026 | 6 | 30.8 | N/A | N/A |
| 750T04PBP-N027 | 6 | 43.1 | N/A | N/A |

29/41

PRE-DEMOLITION SURVEY FOR TENT 4

Survey Area: 5 Survey Unit: 750T04 Classification: 3
 Building: Tent 4
 Survey Unit Description: Tent 4 Interior & Exterior, excluding asphalt pad
 Total Area: 2,955 sq. m. Total Floor Area: 1,077 sq. m.

PAGE 1 OF 1

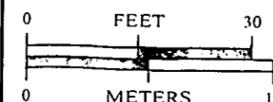
SURVEY MAP LEGEND

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

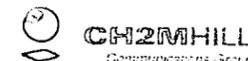
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Scan Survey Information

Survey Instrument ID #(s) & RCT ID #(s):
 1-6

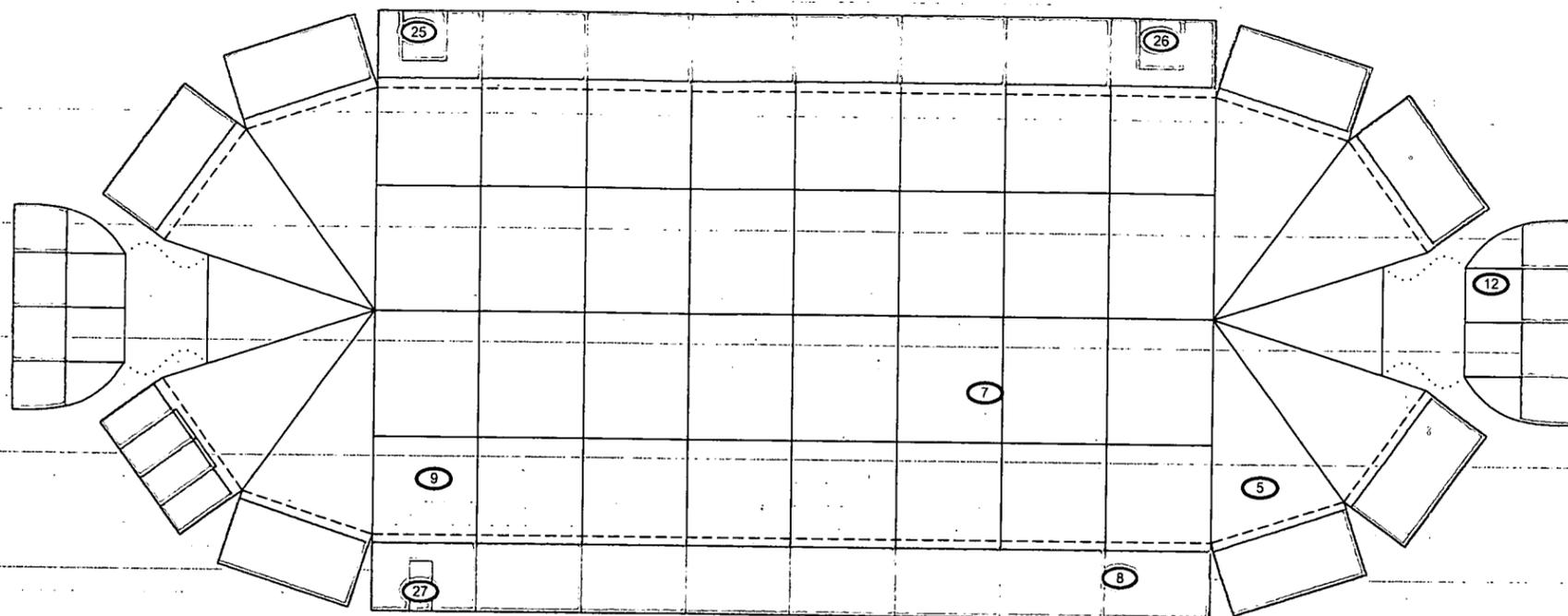


1 inch = 24 feet 1 grid sq. = 1 sq. m.

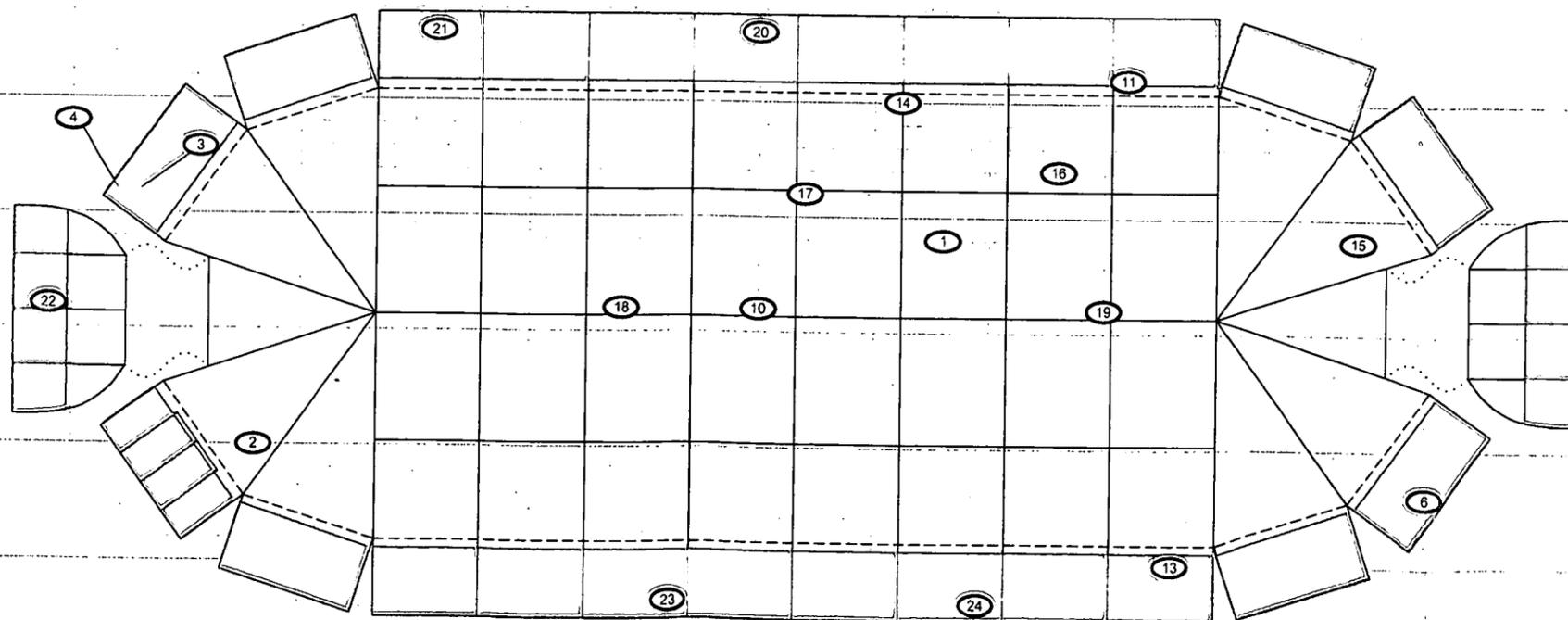
U.S. Department of Energy
 Rocky Flats Environmental Technology Site
 Prepared by: GIS Dept. 303-966-7707 Prepared for:
 
 MAP ID: 03-JSIA5G13Tent04_SE June 21, 2005

□ Scan Area

750 Pad ~ Tent 04 Exterior (Flattened)

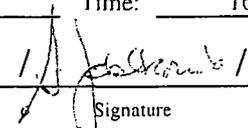


750 Pad ~ Tent 04 Interior (Inverted)



30/41

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

| INSTRUMENT DATA | | | | | | Survey Tracking # N/A | |
|--|---------------------------------------|---------------------------------------|--|--|--|---|--|
| Mfg. <u>Eberline</u> | Mfg. <u>NE Electra</u> | Mfg. <u>NE Electra</u> | | | | Survey Type: <u>Contamination (fixed and removable)</u> | |
| Model <u>SAC-4</u> | Model <u>DP-6</u> | Model <u>DP-6</u> | | | | Building: <u>Tent 4</u> | |
| Serial # <u>767</u> | Serial # <u>1244</u> | Serial # <u>3127</u> | | | | Location: <u>750 pad</u> | |
| Cal Due <u>8/3/05</u> | Cal Due <u>12/1/05</u> | Cal Due <u>8/21/05</u> | | | | Purpose: <u>Survey of asphalt pad inside tent 4</u> | |
| Bkg <u>0.1 cpmα</u> | Bkg <u>2.0 cpmα</u> | Bkg <u>4.0 cpmα</u> | | | | RWP #: <u>N/A</u> | |
| Efficiency <u>33.00 %</u> | Efficiency <u>21.60 %</u> | Efficiency <u>20.60 %</u> | | | | Date: <u>6/15/05</u> Time: <u>1600</u> | |
| MDA <u>10 dpmα</u> | MDA <u>48 dpmα</u> | MDA <u>48 dpmα</u> | | | | RCT: <u>S. Jablkowski</u> /  /  | |
| Mfg. <u>N/A</u> | Mfg. <u>N/A</u> | Mfg. <u>N/A</u> | | | | Print name <u>S. Jablkowski</u> Signature | |
| Model <u>N/A</u> | Model <u>N/A</u> | Model <u>N/A</u> | | | | RCT: <u>N/A</u> / <u>N/A</u> / <u>N/A</u> | |
| Serial # <u>N/A</u> | Serial # <u>N/A</u> | Serial # <u>N/A</u> | | | | Print name Signature Emp. # | |
| Cal Due <u>N/A</u> | Cal Due <u>N/A</u> | Cal Due <u>N/A</u> | | | | | |
| Bkg <u>N/A cpmβ</u> | Bkg <u>N/A cpmβ</u> | Bkg <u>N/A cpmβ</u> | | | | | |
| Efficiency <u>N/A %</u> | Efficiency <u>N/A %</u> | Efficiency <u>N/A %</u> | | | | | |
| MDA <u>N/A dpmβ</u> | MDA <u>N/A dpmβ</u> | MDA <u>N/A dpmβ</u> | | | | | |
| Comments: Nuclide of concern is plutonium. Floor area around each point was scanned in a 2 square meter area, on the areas near the edge of tent denoted on map and all noticeably stained areas with no contamination found above the MDA's of the instruments listed above. MDA's listed are for 90 second PAT's for electras and 2 minute counts for the SAC-4's for all removable smear counts. | | | | | | | |

SURVEY RESULTS

| # | LOCATION | ALPHA | | | BETA | | |
|-----|----------|------------------------|------------------------|----------|------------------------|------------------------|----------|
| | | Swipe | Direct | Wipe | Swipe | Direct | Wipe |
| | | dpm/100cm ² | dpm/100cm ² | dpm/wipe | dpm/100cm ² | dpm/100cm ² | dpm/wipe |
| 1 | On pad | <10 | <48 | N/A | N/A | N/A | N/A |
| 2 | On pad | <10 | <48 | N/A | N/A | N/A | N/A |
| 3 | On pad | <10 | <48 | N/A | N/A | N/A | N/A |
| 4 | On pad | <10 | <48 | N/A | N/A | N/A | N/A |
| 5 | On pad | <10 | <48 | N/A | N/A | N/A | N/A |
| 6 | On pad | <10 | <48 | N/A | N/A | N/A | N/A |
| 7 | On pad | <10 | <48 | N/A | N/A | N/A | N/A |
| 8 | On pad | <10 | <48 | N/A | N/A | N/A | N/A |
| 9 | On pad | <10 | <48 | N/A | N/A | N/A | N/A |
| 10 | On pad | <10 | <48 | N/A | N/A | N/A | N/A |
| 11 | On pad | <10 | <48 | N/A | N/A | N/A | N/A |
| 12 | On pad | <10 | <48 | N/A | N/A | N/A | N/A |
| N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

Date Reviewed: 6/16/05 RS Supervision: G. S. Treadwell /  / 

Print Name Signature

3/41

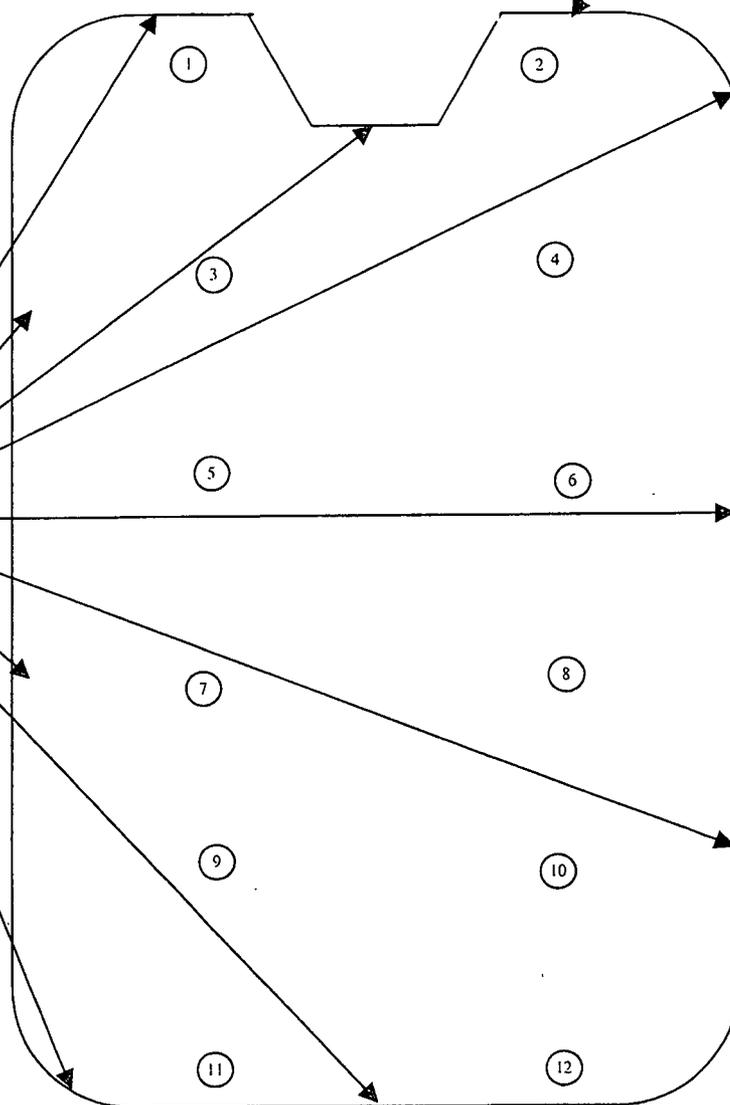
ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

Drawing Showing Survey Points

← North

Tent 4 floor

Denotes area near edge of tent which was scanned.



BW/41

ATTACHMENT D

Chemical Data Summaries And Sample Maps

33/41

Beryllium Data Summary

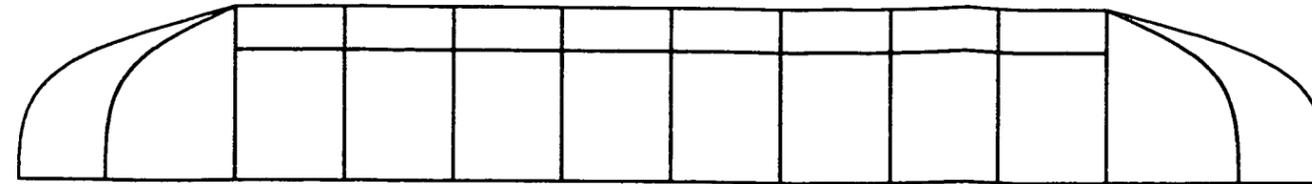
| Sample Number | Map Survey Point Location | Room | Sample Location | Result (ug/100 cm ²) |
|-----------------------------|---------------------------|------|-----------------|----------------------------------|
| Tent 4 - RIN 05Z1229 | | | | |
| 750-06062005-214-078 | 1 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-079 | 18 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-080 | 15 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-081 | 13 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-082 | 23 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-083 | 7 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-084 | 12 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-085 | 19 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-086 | 29 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-087 | 16 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-088 | 11 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-089 | 17 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-090 | 3 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-091 | 14 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-092 | 9 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-093 | 6 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-094 | 20 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-095 | 2 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-096 | 22 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-097 | 28 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-098 | 8 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-099 | 21 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-100 | 25 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-101 | 30 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-102 | 5 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-103 | 27 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-104 | 24 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-105 | 26 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-106 | 4 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-107 | 10 | Main | asphalt pad | < 0.1 |
| 750-06062005-214-108 | 40 | Main | tent ceiling | < 0.1 |
| 750-06062005-214-109 | 35 | Main | tent ceiling | < 0.1 |
| 750-06062005-214-110 | 39 | Main | tent ceiling | < 0.1 |
| 750-06062005-214-111 | 31 | Main | tent ceiling | < 0.1 |
| 750-06062005-214-112 | 33 | Main | tent ceiling | < 0.1 |
| 750-06062005-214-113 | 32 | Main | tent ceiling | < 0.1 |
| 750-06062005-214-114 | 34 | Main | tent ceiling | < 0.1 |
| 750-06062005-214-115 | 37 | Main | tent ceiling | < 0.1 |
| 750-06062005-214-116 | 38 | Main | tent ceiling | < 0.1 |
| 750-06062005-214-117 | 36 | Main | tent ceiling | < 0.1 |

Note 1: Sample numbers 750-06062005-214-108 through 750-06062005-214-117 were randomly generated but are considered bias samples as they have been moved from their floor location to the tent ceiling directly above their floor location.

34/41

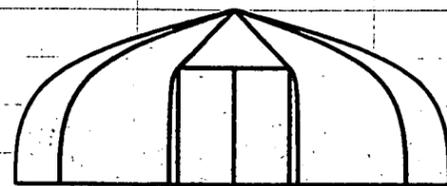
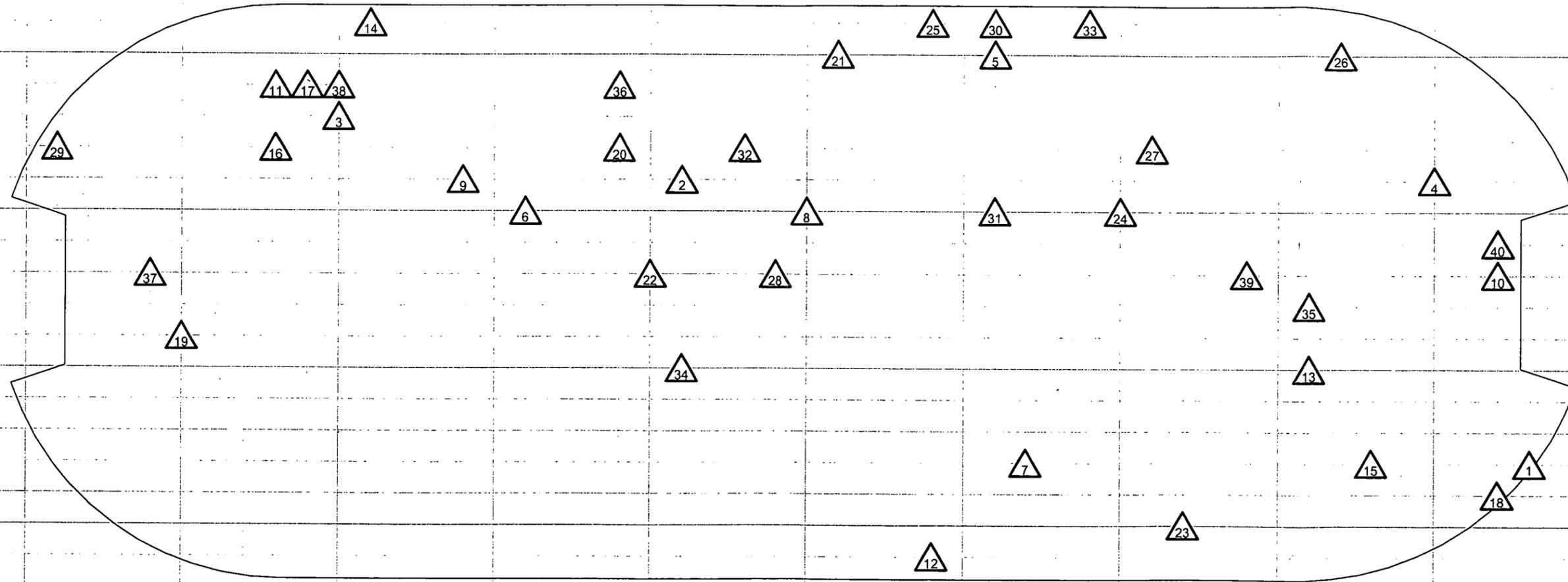
CHEMICAL SAMPLE MAP

750 Pad ~ Tent 04
Floor Area: 9,924 sq. ft. (40 Random Be Samples)



North/South Profile
1/2 Drawing Scale
(Reference View)

750 Pad ~ Tent 04 Floor



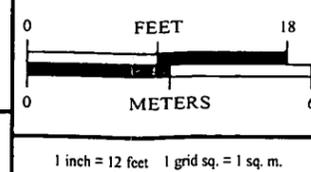
East/West Profile
1/2 Drawing Scale
(Reference View)

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 Shown in Another View



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

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

CH2MHILL
Communications Group

Kaiser Hill
Communications Group

MAP ID: 03-0000TENT04-Be March 27, 2003

35/41

ATTACHMENT E

Data Quality Assessment (DQA) Detail

36/41

DATA QUALITY ASSESSMENT (DQA)

VERIFICATION & VALIDATION (V&V) OF RESULTS

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

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

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

Beta/gamma survey designs were not implemented for Tent 4 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. 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) unrestricted release limits.

Consistent with EPA's G-4 DQO process, the radiological survey design for each survey unit performed per PDS requirements was optimized by checking actual measurement results acquired during pre-demolition surveys against the model output with original estimates. Use of actual sample/survey (result) variances in the MARSSIM DQO model confirms that an adequate number of surveys were acquired. The radiological survey Data Quality Objectives (DQOs) for the asphalt pad were satisfied per Radiological Safety Practice procedures 3-PRO-165-07.02, *Contamination Monitoring Requirements*. Additional RSP 7.02 surveys of the asphalt pad areas outside the Tent structures will be performed after tent demolition is complete for waste disposal determinations (refer to RFCA Contact Record DAP-035, dated 6/20/05).

DQA SUMMARY

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

37/41

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

Chain of Custody was intact; documentation was complete, hold times were acceptable (where applicable,) and packaging integrity/custody seals were maintained throughout the sampling/analysis process. Level 2 Isolation Controls have been posted to prevent the inadvertent introduction of contamination into the facilities. On this basis, Tent 4 meets the unrestricted release criteria with the confidences stated.

38 / 41

39/41

Table E-1 V&V of Radiological Results - Tent 4

| V&V CRITERIA, RADIOLOGICAL SURVEYS | | K-H RSP 16.00 Series MARSSIM (NUREG-1575) | | |
|------------------------------------|--|---|----------------|---|
| QUALITY REQUIREMENTS | | | | |
| | Parameters | Measure | Frequency | COMMENTS |
| ACCURACY | Initial calibrations | 90% < x < 110% | ≥ 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 750T04 (interior and exterior). | statistical and biased | NA | Random w/ statistical confidence. |
| | Survey Maps | NA | NA | Random and biased measurement locations controlled/mapped to ± 1m. |
| | Controlling Documents (Characterization Pkg; RSPs) | qualitative | NA | Refer to the Characterization Package (planning document) for field/sampling procedures (located in Project files); thorough documentation of the planning, sampling/analysis process, and data reduction into formats. |
| COMPARABILITY | Units of measure | dpm/100cm ² | NA | Use of standardized engineering units in the reporting of measurement results. |
| COMPLETENESS | Plan vs. Actual surveys | > 95% | NA | See Table E-3 for details. |
| | Usable results vs. unusable | > 95% | | |
| SENSITIVITY | Detection limits | TSA: ≤ 50 dpm/100cm ² RA: ≤ 10 dpm/100cm ² | all measures | MDAs ≤ 50% DCGL _w Note: The waste characterization surveys of the asphalt pad met the MDA requirements for waste packaging and disposal but not the PDSP requirements. However, since this material will not be unrestricted released, but rather disposed of as hazardous waste, the stated MDAs are adequate. |

Table E-2 V&V of Beryllium Results - Tent 4

| V&V CRITERIA, CHEMICAL ANALYSES | | DATA PACKAGE | | COMMENTS |
|---------------------------------|---|---|----------------------------------|--|
| BERYLLIUM | Prep: NMAM 7300 METHOD: OSHA ID-125G | LAB ----> | Johns Manville Littleton, Co. | |
| | | RIN ----> | RIN05Z1229 | |
| QUALITY REQUIREMENTS | | Measure | Frequency | All results were below associated action levels. |
| ACCURACY | Calibrations Initial | linear calibration | ≥1 | |
| | Continuing LCS/MS | 80%<%R<120% | ≥1 | |
| | Blanks - lab & field | <MDL | ≥1 | |
| | Interference check std (ICP) | NA | NA | |
| | PRECISION | LCSD | 80%<%R<120% (RPD<20%) | |
| | 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 0.00084 ug/100cm ² | all measures | |

Table E-3 Data Completeness Summary - Tent 4

| ANALYTE | Building/Area/ Unit | Sample Number Planned (Real & QC) | Sample Number Taken (Real & QC) | Project Decisions (Conclusions) & Uncertainty | Comments (RIN, Analytical Method, Qualifications, etc.) |
|--------------|---|---|---|---|--|
| Beryllium | Tent 4 (interior and exterior) | 38 samples (28 random/10 biased) | ^A 40 samples (30 random/10 biased) | No contamination found at any location | 10CFR850; OSHA ID-125G RIN05Z1229: sample numbers 750-06062005-214-108 through numbers 750-06062005-214-117 ^A Refer to Attachment D, <i>Beryllium Data Summary</i> , Note 1, for discussion regarding random and bias samples. No results above the action level (0.2 ug/100cm ²) or investigative level (0.1 ug/100cm ² .) |
| Radiological | Survey Area 5 Survey Class 3 Survey Unit: 750T04 Tent 4 (interior and exterior) | 27 α TSA (17 random/10 biased) 27 α Smears (17 random/10 biased) 2 QC TSA 10% scan of the all interior and exterior surfaces | 27 α TSA (17 random/10 biased) 27 α Smears (17 random/10 biased) 2 QC TSA 15% scan of the all interior and exterior surfaces | No contamination at any location; all values below unrestricted release levels | Transuranic DCGLs used. |
| Radiological | Tent 4 Pad RSP-7.02 WRE Survey | 14 α TSA 14 α Smears 2 m ² scan at each TSA/RSA location, plus biased scanning on stains and at tent edges | 14 α TSA 14 α Smears 2 m ² scan at each TSA/RSA location, plus biased scanning on stains and at tent edges | No contamination at any location; all values below unrestricted release levels | Transuranic DCGLs used. Additional RSP-7.02 surveys of the asphalt pad areas outside the Tent structures will be performed after tent demolition is complete for waste disposal determinations (refer to RFCA Contact Record DAP-035, dated 6/20/05). |