Rocky Flats Environmental Technology Site

PRE-DEMOLITION SURVEY REPORT (PDSR)

Building 875, 875 Tunnel and Building 880

886 CLOSURE PROJECT – Phase 2, Part 2 PDSR

REVISION 0

June 26, 2002

JUL 2002
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PRE-DEMOLITION SURVEY REPORT (PDSR)

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886 CLOSURE PROJECT – Phase 2, Part 2 PDSR

REVISION 0

June 26, 2002

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ABBREVIATIONS/ACRONYMS

ACM	Asbestos containing material
Be	Beryllium
CDPHE	Colorado Department of Public Health and the Environment
$DCGL_{EMC}$	Derived Concentration Guideline Level – elevated measurement comparison
$DCGL_{W}$	Derived Concentration Guideline Level – Wilcoxon Rank Sum Test
D&D	Decontamination and Decommissioning
DDCP	Decontamination and Decommissioning Characterization Protocol
DOE	U.S. Department of Energy
DPP	Decommissioning Program Plan
DQA	Data quality assessment
DQOs	Data quality objectives
EPA	U.S. Environmental Protection Agency
FDPM	Facility Disposition Program Manual
HVAC	Heating, ventilation, air conditioning
HSAR	Historical Site Assessment Report
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

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EXECUTIVE SUMMARY

The 886 Cluster was divided into two separate phases for pre-demolition survey (PDS) characterization purposes. Phase 1 and Phase 2 areas were broken down as follows:

Phase 1: 886 exterior, 875 exterior, T886 interior and exterior, 888 interior and exterior, 888A (transformer slab and block wall) exterior, and 886 Office Room interiors (i.e., Rooms 106, 111, 116 –123, 125, and 127-131)

Phase 2: 886 interior rooms (i.e., Rooms 101-104, 108-110, 112-115, 126, 126A, 126B, 140 and 141), 875 interior, and 880 interior and exterior

Phase 2 areas were broken down further into "parts." Phase 2, Part 1 consisted of various B886 rooms and the above ground portions of the 875 tunnel. Phase 2, Part 2 consists of B875, the below ground portions of the 875 tunnel, and B880. **This report only consists of the Phase 2, Part 2 areas (i.e., B875, the below ground portions of the 875 tunnel, and B880).** Phase 1 and Phase 2, Part 1 PDS Reports (PDSR) have already been submitted and concurred with by RFFO and CDPHE.

A Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Phase 2, Part 2 areas. Because these areas will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). All Phase 2, Part 2 areas surfaces were characterized in this PDS including floors (slabs), walls, and ceilings. Environmental media beneath and surrounding the facilities 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.

Results indicate that no radiological or chemical contamination exists in excess of the PDSP unrestricted release limits on any building surfaces. All asbestos containing material, hazardous wastes, and PCB light ballasts have been removed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations. All concrete associated with these Phase 2, Part 2 areas meet the criteria for recycling concrete per the RFCA RSOP for Recycling Concrete.

The 875 Fire Protection System Plenum Deluge Tank (located in a large below ground level pit within building 875) and associated plenum drain piping will remain in the building during demolition of the structure. The plenum Deluge tank is internally contaminated with low-level contamination above the PDSP unrestricted release limits and will be disposed of as a Surface Contaminated Object (SCO) during cleanup of the structural demolition debris. Survey data of the pit and the tank exterior indicate that no radiological or chemical contamination exists in excess of the PDSP unrestricted release limits. Heavy-duty metal grating, plywood and plastic have been placed over the pit and tank to protect them from being damaged during structural demolition.

Based upon this Phase 2, Part 2 PDSR and subject to concurrence by the CDPHE, these facilities can be demolished and the waste disposed of as sanitary waste or the concrete used for recycle. To ensure that the facilities remain free of contamination and that PDS data remain valid, isolation controls have been established, and the areas have been posted accordingly.

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1 INTRODUCTION

The 886 Cluster was divided into two separate phases for pre-demolition survey (PDS) characterization purposes. Phase 1 and Phase 2 areas were broken down as follows:

Phase 1: 886 exterior, 875 exterior, T886 interior and exterior, 888 interior and exterior, 888A (transformer slab and block wall) exterior, and 886 Office Room interiors (i.e., Rooms 106, 111, 116 –123, 125, and 127-131)

Phase 2: 886 interior rooms (i.e., Rooms 101-104, 108-110, 112-115, 126, 126A, 126B, 140 and 141), 875 interior, and 880 interior and exterior

Phase 2 areas were broken down further into "parts." Phase 2, Part 1 consists of B886 rooms 101-104, 108, 109, 110, 112-115, 126, 126A, 126B, 140 and 141, and the above ground portions of the 875 tunnel. Phase 2, Part 2 consists of B875, the below ground portions of the 875 tunnel, and B880.

This report only consists of the Phase 2, Part 2 areas (i.e., B875, the below ground portions of the 875 tunnel, and B880). A Phase 1 PDS Report (PDSR) has already been submitted and concurred with by RFFO and CDPHE. A PDSR for Phase 2, Part 1 has also been submitted and concurred with by RFFO and CDPHE.

A Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Phase 2, Part 2 areas. Because these areas will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). All Phase 2, Part 2 areas surfaces were characterized in this PDS including floors (slabs), walls, and ceilings.

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed. Among these are the 886 Cluster facilities. The locations of these facilities are shown in Attachment A, Facility Location Map. These facilities no longer support the RFETS mission and will be removed to reduce Site infrastructure, risks and/or operating costs.

Before the facilities can be removed, a Pre-Demolition Survey (PDS) must be conducted; this document presents the PDS results for Phase 2, Part 2 areas. The PDS was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). The PDS is built upon physical, chemical and radiological hazards identified during Reconnaissance Level Characterization and In-Process Characterization and in the Historical Site Assessment Reports for the Buildings.

1.1 Purpose

The purpose of this report is to communicate and document the results of the Phase 2, Part 2 PDS effort. PDSs are performed before 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.

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1.2 Scope

This report presents the final radiological and chemical conditions of the 886 Cluster Phase 2, Part 2 areas. Environmental media beneath and surrounding the facilities are 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) and a Reconnaissance Level Characterization (RLC) were conducted to understand facility histories and related hazards. The HSA consisted of facility walkdowns, interviews, and document review, including review of the Historical Release Report. The 886 Cluster RLC was performed in FY 1997 and identified both radiological and chemical hazards. HSA and RLC results were used to identify data gaps and needs, and to develop radiological and chemical PDS characterization packages. Results of the 886 Cluster HSA and RLC were documented in the *Reconnaissance Level Characterization Report for the 886 Cluster Decommissioning Project* (RF/RMRS-97-124.UN). Refer to Attachment B for a copy of the 886 Cluster RLCR text and the 880 HSAR. For a complete copy of the 886 Cluster RLCR, including Appendices A, B and C, refer to the 886 Cluster Characterization Project Files. In summary, the 886 Cluster RLCR and the 880 HSAR identified radiological contaminants, asbestos, and PCBs in paint and light ballasts as the only hazards in the Phase 2, Part 2 areas.

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

Phase 2, Part 2 areas were 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 describes the minimum survey requirements (refer to the RISS Characterization Project files for the 886 Cluster Radiological Characterization Plan). Radiological survey unit packages were developed for each survey unit. Phase 2, Part 2 survey unit identification numbers are as follows: 886-B-007 for the B875 interior, 886-B-011 for the 875 Tunnel, G15-A-001 for the B880 interior, and G15-B-002 for the B880 exterior. The PDS of the 875 exterior (survey unit 886-A-001) was performed as part of the Phase 1 PDS effort and the data was included in the Phase 1 PDSR; all 875 exterior results were less than the PDSP unrestricted release limits. Each interior survey unit included the floor, walls and ceiling surfaces of the affected areas. Individual radiological survey unit packages are maintained in the RISS Characterization Project files.

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Phase 2, Part 2 survey unit packages were developed in accordance with Radiological Safety Practices (RSP) 16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure*. Total surface activity (TSA), removable surface activity (RSA), and scan measurements were collected in accordance with RSP 16.02 *Radiological Surveys of Surfaces and Structures*. Radiological survey data were verified, validated and evaluated in accordance with RSP 16.04, *Radiological Survey/Sample Data Analysis*. Quality control measures were implemented relative to the survey process in accordance with RSP 16.05, *Radiological Survey/Sample Quality Control*. Radiological survey data, statistical analysis results, survey locations, and radiological scan maps are presented in Attachment C, Radiological Data Summary and Survey Maps.

A total of 72 TSA measurements and 72 RSA measurements were taken, and scan surveys were performed. None of the measurements indicated elevated activity above the appropriate $DCGL_W$ values. Therefore, the Phase 2, Part 2 PDS confirmed the indicated areas do not contain radiological contamination above the surface contamination guidelines provided in the RFETS PDSP for D&D Facilities. Isolation control postings are displayed in affected areas to ensure no radioactive materials are introduced.

The radiologically contaminated plenum (502) in 875 was removed and disposed of as LLW prior to the PDS. The two non-radiologically contaminated plenums (501 and 503) in 875 were surveyed and unconditionally released using the Waste Evaluation Process (WRE); refer to the WRE form and surveys in Attachment C.

The 875 Fire Protection System Plenum Deluge Tank (located in a large below ground level pit within building 875) and associated plenum drain piping will remain in the building during demolition of the structure. The plenum Deluge tank is internally contaminated with low-level contamination above the PDSP unrestricted release limits and will be disposed of as a Surface Contaminated Object (SCO) during cleanup of the structural demolition debris. Survey data of the pit and the tank exterior indicate that no radiological or chemical contamination exists in excess of the PDSP unrestricted release limits. Heavy-duty metal grating, plywood and plastic have been placed over the pit and tank to protect them from being damaged during structural demolition. Additionally, the associated plenum drain piping has been grouted to protect them damage during structural demolition. Refer to Figure C.1 in Attachment C for the general locations of the tank and associated plenum drain piping.

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4 CHEMICAL CHARACTERIZATION AND HAZARDS

Phase 2, Part 2 areas were 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 these facilities. 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 for the 886 Cluster Chemical Characterization Plan) was developed during the planning phases that describes sampling requirements and the justification for the sample locations and estimated sample numbers. Contaminants of concern included asbestos, beryllium, RCRA/CERCLA constituents, and PCBs. Isolation control postings are displayed on affected structures to ensure no hazardous materials are introduced.

4.1 Asbestos

RLC sampling of building materials suspected of containing asbestos was conducted in the 886 Phase II, Part 2 areas. A CDPHE-certified asbestos inspector conducted the inspection and sampling in accordance with the *Asbestos Characterization Protocol, PRO-563-ACPR, Revision 0.* Numerous building materials contained greater than 1% asbestos. The friable and non-friable asbestos containing building materials identified during this inspection were abated, and final air clearance monitoring was performed during in-process D&D work. All air clearance samples passed the clearance standards established by CDPHE, Regulation 8.

4.2 Beryllium (Be)

Based on the 886 Cluster RLCR, additional documentation reviews of past facility operations, and personal interviews performed with past building occupants, there was no record of beryllium operations in 880 or 875. Examples of documents that were reviewed by facility management and SMEs for possible references to Be use included:

- Daily operating logs and records
- Experimental summaries and reports
- Reports of accidents, spills, and incidents
- Letters from Lab staff to others at RFETS
- Summary report of the HEUN Removal Project
- Routine and non-routine radiological survey results
- Historical and current facility drawings

There is no mention of beryllium made in any of the 886 Cluster project-specific documents. Facility management has interviewed numerous personnel who were assigned to B886 Cluster over the years, and none of the personnel have any memory of Be ever being introduced into these facilities. A security fence and guardhouse surrounded the 886 Cluster therefore, the chance of any inadvertent introduction was miniscule. During the research and development of the 886 Cluster RLCR, there was no indication or mention of Be being discovered or reported.

A formal-documented interview with Dr. Rothe was also performed on May 21, 2001, to determine the potential for Be use in the 886 Cluster. Dr. Rothe occupied the facility from the time of construction (1964) to the time R&D operations shutdown (1994). He was the lead scientist in B886, and he has extensive process knowledge of the 886 Cluster operations. Based on Dr. Rothe's interview, there was no indication that Be was ever brought into or used in the 886 Cluster facilities during his tenure. Dr Rothe stated that Be was never used or stored in the B886 Cluster, and that no transfer or exchanges of equipment and/or materials between the 886 Cluster and the 865/883 Clusters ever took place.

Based on the above information, there is virtually no potential for Be contamination in the Phase 2, Part 2 areas. Therefore, no Be sampling was performed in Phase 2, Part 2 areas.

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

Based on the 886 Cluster RLCR, interviews and facility walkdowns, there was no record of RCRA/CERCLA constituent operations, storage or spills, and therefore, RCRA/CERCLA constituent sampling was not performed in 880 or 875. Demolition debris will not exhibit any RCRA hazardous waste characteristics and will not contain any RCRA listed wastes. The buildings contained some RCRA regulated items, such as mercury thermostats, fluorescent light bulbs, mercury vapor light bulbs, mercury containing gauges, circuit boards, leaded glass and lead-acid batteries; these items have been removed and managed in accordance with the Colorado Hazardous Waste Act.

Sampling for lead in paint in the 886 Cluster 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.

4.4 Polychlorinated Biphenyls (PCBs)

Based on the 886 Cluster RLCR, interviews and facility walkdowns, no PCB-containing equipment were ever present in 880 or 875, and therefore, there is no potential for PCB contamination resulting from spills. Therefore, PCB sampling was not performed in these facilities. Facilities may have contained PCB fluorescent light ballasts however, all potential PCB ballasts have been removed. Based on the age of the facilities (constructed prior to1980), paints used on the facilities may contain PCBs; and non-concrete painted surfaces will need to be disposed of PCB Bulk Product Waste. Painted concrete surfaces can be used as backfill on site in accordance with approval received from EPA in November 2001 (letter from K. Clough, US EPA Region 8, to J. Legare, DOE RFFO, 8EPR-F, Approval of the Risk-Based Approach for Polychlorinated Biphenyls (PCB)-Based Painted Concrete), provided the concrete meets the unrestricted-release criteria outlined in the Concrete Recycling RSOP.

5 PHYSICAL HAZARDS

Physical hazards associated with the 886 Phase 2, Part 2 areas consist of those common to standard industrial environments and include hazards associated with energized systems, utilities, and trips and falls. Refer to the Site Safety Analysis Report (PADC-1998-00662). Building 875 contains a pit on the north side that is 15 feet deep and 20 by 20 feet in width. The pit contains a radiologically contaminated Plenum Deluge Tank that will be removed during structural demolition debris cleanup. Heavy-duty metal grating, plywood and plastic have been placed over the pit and tank to protect them damage during structural demolition. The Building 875 underground tunnel is approximately 73 feet long, 9 feet wide by 8 feet high, and tunnel roof is approximately four feet underground. The 875 underground tunnel runs in a NE direction from the north side of 875. Care should be taken during demolition to prevent heavy demolition equipment from collapsing into the tunnel or pit, or from disturbing the pit cover. The facilities have been relatively well maintained and are in good physical condition, and therefore, do not present hazards associated with building deterioration. Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practices.

6 DATA QUALITY ASSESSMENT

Data used in making management decisions for decommissioning of the 886 Phase II, Part 2 areas, and consequent waste management, are of adequate quality to support the decisions documented in this report. The data presented in this report (Attachment C) 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 D.

7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES

The demolition and disposal of the 886 Phase 2, Part 2 areas will generate a variety of wastes. Estimated waste types and waste volumes are presented below by facility. All wastes can be disposed of as sanitary waste, except PCB Bulk Product Waste and the Plenum Deluge Tank. There is no radioactive or hazardous wastes in Phase 2, Part 2 areas, and all asbestos containing material and PCB light ballasts have been removed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations.

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)**
875 and below-grade portion of the 875 Tunnel	7,600	None	200	None	None	None	Built-up Roof – 750 Mercury Vapor Lights – 8
880	764	None	448	928	None	None	Glass - 10 Plexiglass® - 1

- The 875 Plenum Deluge Tank and associated plenum drain piping will be disposed of as LLW, SCO waste during structural demolition debris cleanup.

8 CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, 886 Cluster Phase 2, Part 2 areas (i.e., B875, the below ground portions of the 875 tunnel, and B880), no radiological or chemical contamination exists on the structural surfaces in excess of the PDSP unrestricted release limits. All asbestos containing material, hazardous wastes, and PCB light ballasts have been removed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations. All concrete associated with these Phase 2, Part 2 areas meet the criteria for recycling concrete per the RFCA RSOP for Recycling Concrete. The 875 Plenum Deluge Tank and associated plenum drain piping will be disposed of as LLW, SCO waste during structural demolition debris cleanup.

The Phase 2, Part 2 area PDS was performed in accordance with the DDCP and PDSP, all PDSP DQOs were met, and all data satisfied the PDSP DQA criteria. These areas do not contain radiological, asbestos, hazardous or PCB wastes. 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. To ensure that the Phase 2, Part 2 areas remain free of contamination and that PDS data remain valid, isolation controls have been established, and the facilities are posted accordingly.

9 REFERENCES

DOE/RFFO, CDPHE, EPA, 1996. Rocky Flats Cleanup Agreement (RFCA), July 19, 1996.

DOE Order 5400.5, "Radiation Protection of the Public and the Environment."

DOE Order 414.1A, "Quality Assurance."

EPA, 1994. "The Data Quality Objective Process," EPA QA/G-4.

K-H, 1999. Decommissioning Program Plan, June 21, 1999.

MAN-131-QAPM, *Kaiser-Hill Team Quality Assurance Program*, Rev. 1, November 1, 2001.

MAN-076-FDPM, *Facility Disposition Program Manual*, Rev. 3, January 1, 2002.

MAN-077-DDCP, *Decontamination and Decommissioning Characterization Protocol*, Rev. 3, April 23, 2001.

MAN-127-PDSP, *Pre-Demolition Survey Plan for D&D Facilities*, Rev. 0, April 23, 2001.

MARSSIM - Multi-Agency Radiation Survey and Site Investigation Manual (NUREG-1575, EPA 402-R-97-016).

PRO-475-RSP-16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation, and Closure*, Rev. 1, May 22, 2001.

PRO-476-RSP-16.02, *Pre-Demolition (Final Status) Radiological Surveys of Surfaces and Structures*, Rev. 1, May 22, 2001.

PRO-477-RSP-16.03, *Radiological Samples of Building Media*, Rev. 1, May 22, 2001.

PRO-478-RSP-16.04, *Radiological Survey/Sample Data Analysis for Final Status Survey*, Rev. 1, May 22, 2001.

PRO-479-RSP-16.05, *Radiological Survey/Sample Quality Control for Final Status Survey*, Rev. 1, May 22, 2001.

PRO-563-ACPR, Asbestos Characterization Procedure, Revision 0, August 24, 1999.

PRO-536-BCPR, Beryllium Characterization Procedure, Revision 0, August 24, 1999.

RFETS, Environmental Waste Compliance Guidance #25, Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition.

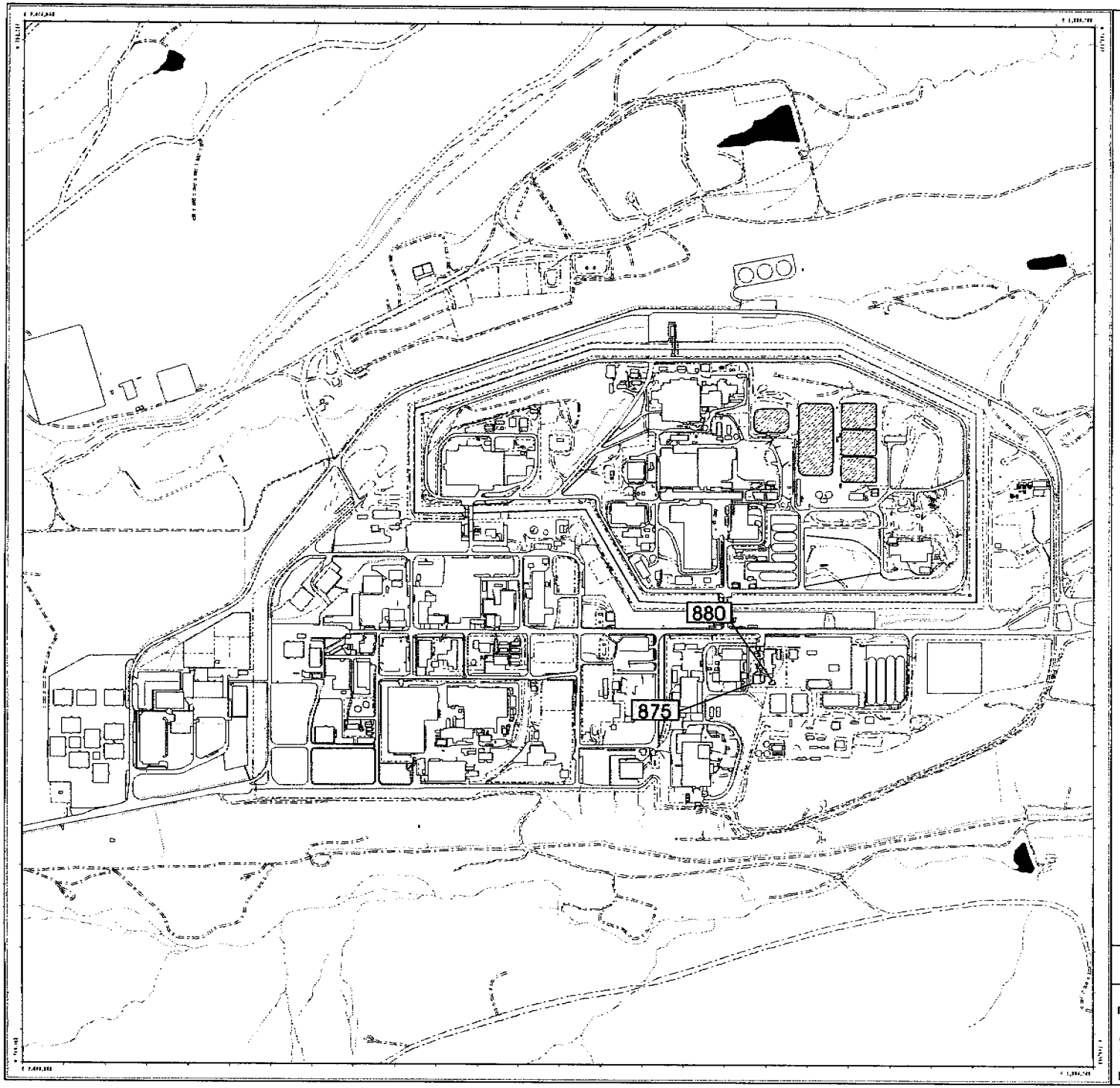
RFETS, Environmental Waste Compliance Guidance #27, Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal.

RFCA Standard Operation Protocol for Recycling Concrete, September 28, 1999.

RFETS, Historical Site Assessment for Building 880, December 2001.

ATTACHMENT A

Facility Location Map



Buildings 875 & 880

Standard Map Features

- Buildings and other structures
- Solar Evaporation Ponds (SEPs)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences and other barriers
- Paved roads
- Dirt roads

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

N

Scale = 1 : 12450
1 inch represents approximately 1038 feet
250 0 500 1000 ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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

GIS Dept. 303-966-7707

Prepared by:
DynCorp
THE ART OF TECHNOLOGY

Prepared for:
KAISER-HILL COMPANY

MAP ID: FY 2002

June 20, 2002

NT_Svr w:/projects/fy2002/02-0148/875-Over.cdr

ATTACHMENT B

Historical Site Assessment Reports

Rocky Mountain Remediation Services, L.L.C.
. . . protecting the environment

RF/RMRS-97-124.UN

RECONNAISSANCE LEVEL CHARACTERIZATION REPORT FOR THE 886 CLUSTER DECOMMISSIONING PROJECT

December 24, 1997
Revision 1

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RECONNAISSANCE LEVEL CHARACTERIZATION REPORT FOR THE 886 CLUSTER DECOMMISSIONING PROJECT

1.0 EXECUTIVE SUMMARY

Building 886 housed the Critical Mass Laboratory and was operated from 1965 until 1987. Since then, operations within the building have been limited to maintaining the safety envelope and compliance with the Basis of Interim Operation. Since Building 886 and its associated facilities have no mission, the cluster is being decommissioned to reduce operating costs and to eliminate hazards within the cluster's buildings. Deactivation activities are not yet complete, but had progressed to the point where a meaningful characterization could be conducted. The purpose of this Reconnaissance Level Characterization Report is to present the historical data and process information pertaining to the 886 Cluster to provide a baseline of information for hazards within the building cluster. The reconnaissance level characterization of the Building 886 Cluster included a review of historical records and the collection of process knowledge and samples to determine the extent of contamination within the cluster.

The characterization of the 886 Cluster has revealed that the cluster has been maintained within the safety envelope required by the Basis for Interim Operation. The hazards which will need to be considered in developing plans for, and executing decommission activities can be summarized in the following list.

- Physical Hazards (i.e., trip and fall hazards, noise hazards, sharp edges, etc.) - Hazards are found in Buildings 886, 875, 888A, 828, and 880.
- Radiological Hazards - Contamination areas are found in Buildings 886, 875, and 880. High contamination areas are found in Buildings 886 and 875.
- Chemical Hazards - Primarily lead and other metals in building paints, and some polychlorinated biphenyls (PCB) sources. No beryllium has been identified associated with the cluster either through process knowledge or analytical results.
- Asbestos Hazards - Asbestos containing materials are found throughout the cluster with the exception of T886A. An asbestos abatement plan will be required as part of the decommissioning activities.
- Pressurized Gas Cylinders Hazards - Only one nitrogen gas container remains in the 886 Cluster.
- Electrical Hazards - Electrical systems are currently in a safe and compliant condition. However, when decommissioning activities begin, significant electrical hazards in Buildings 886, 875, and 888A will need to be addresses.

2.0 INTRODUCTION

The Building 886 Cluster (Figure 1-1) is comprised of Buildings 886, 888A, 880, 875, 828, T886A, and an underground tunnel with ventilation ducts that connects Building 886 to Building 875 (Figure 1-2). Because Building 886 and its associated facilities have no mission, the cluster is being decommissioned to reduce operating costs and to eliminate hazards within the cluster's buildings. Consistent with the Rocky Flats Cleanup Agreement (RFCA), the 886 Cluster Decommissioning Project is being conducted as a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) removal action. The 886 Cluster Decommissioning Project is one of the decommissioning activities at the Rocky Flats Environmental Technology Site (RFETS) selected to meet the site's goals.

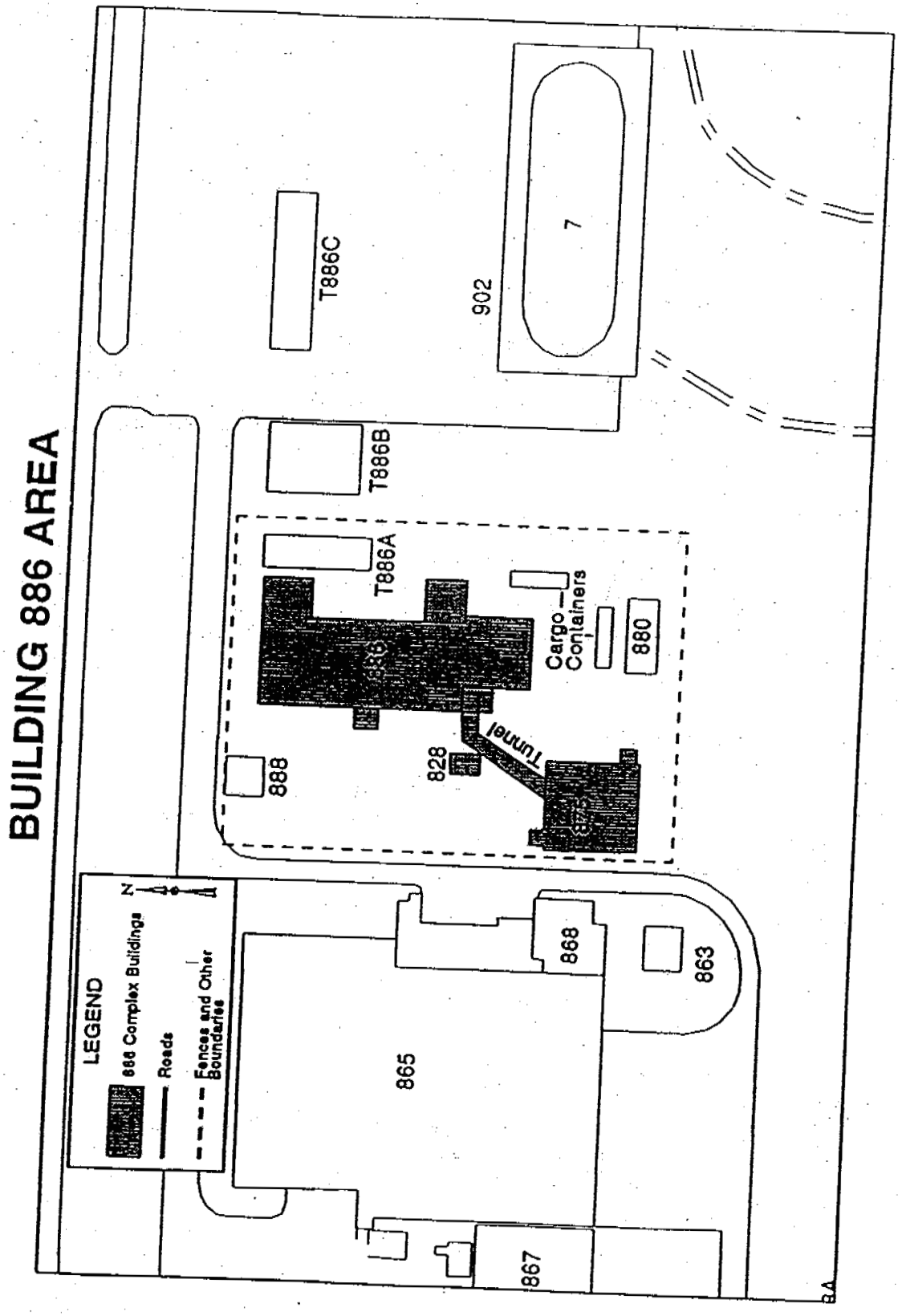

Figure 1-2. 886 Cluster

(PCBs), and lead and metals. The plan was reviewed and approved and the execution was directly supervised by a State of Colorado certified asbestos inspector. Radiological contamination was sufficiently characterized by process knowledge and existing surveys.

3.1 Data Quality Objectives Used

Data Quality Objectives (DQOs) were established and defined in Section 3.0 of the RLCP. Definition of DQOs is a quality requirement as well as a proven tool for optimizing sampling and analysis costs relative to attaining adequate confidence in technical project decisions. The DQO process was designed after EPA (EPA, 1994, G-4) and DOE guidelines. All DQOs were consistent with applicable state and federal regulations governing the contaminants of concern (COCs). A concise summary of the DQOs as presented in the RLCP is given below.

THE PROBLEM

Several contaminants were suspected within the 886 Cluster, but the quantities and concentrations of contaminated media were unknown relative to the requirements associated with D&D activities. Determination of the types and quantities of contamination, and the associated consequent waste streams, are required for successful implementation of D&D. Based on historical process knowledge of the 886 Cluster, the potential COCs are asbestos, PCBs, lead/metals, and radionuclides.

THE DECISIONS

The critical technical decisions for the project were as follows:

- What materials (e.g., paint, concrete, pipe insulation, etc), media (e.g., water, oil, solid, sludge, etc), or equipment within the facility are contaminated or, conversely, not contaminated?
- What are the generic classification categories by which the materials, equipment, and/or media will be managed, relative to an eventual assignment as contaminated (hazardous, radiological, or mixed) or not contaminated (nonhazardous)? In other words, what are the categories of waste streams that will result from the D&D of the 886 Cluster?
- What are the ultimate dispositions (i.e., waste classifications) of the waste streams, including quantities (e.g., a completed summary table)?

INPUTS to the DECISIONS

Inputs to the decisions were designed to be both qualitative and quantitative. Qualitative information consisted of nominal data (e.g., paint color or equipment type) derived from visual observation of buildings' equipment and materials. Quantitative data was produced from analytical and petrographic analyses of samples (for characteristic metals, PCBs, and asbestos). Radiation activities were estimated based on historical surveys.

PROJECT BOUNDARIES

The 886 Building cluster (i.e., the buildings themselves) and all equipment/materials contained within, was relegated as within the project boundaries, whereas environmental media outside the buildings were not.

Lead and Metals

All materials suspected of containing or being coated with lead or other Resource Conservation and Recovery Act (RCRA) regulated metals were representatively sampled. This included paint, gloveboxes, shielding, piping, plates, lead fills in walls, skirting, and additives (e.g., plaster). The bulk samples were collected as described in American Standard for Testing Materials (ASTM) Method E 1729-95 using chisels, scrapers, and cutting tools in accordance with the RLCP. The analysis routinely includes evaluation for beryllium.

3.3 Laboratory Analysis

Table 3-1 summarizes the analytical methods performed on the various samples taken during the characterization effort.

Table 3-1. Laboratory Analysis Methods

Suspected Contaminant	Laboratory Analysis Method
Asbestos	Polarized Light Microscopy
PCBs	SW8081
Lead and Metals	SW6010A

4.0 CLUSTER OPERATING HISTORY

The purpose of the 886 Cluster was to conduct criticality experiments on liquid, powder, and solid forms of fissionable materials. The date of the last criticality experiment was October 1987. These experiments were essential to validate computer models used to establish nuclear criticality safety limits, now called Criticality Safety Operating Limits.

4.1 History of Buildings

The construction of Buildings 886, 875, and 888A was completed in 1964 and commissioned in 1965. The trailer T886A was located east of Building in approximately 1980; a breeze-way connected the two at a later date. The construction date of Building 880 is unknown. The last criticality experiment was conducted in October 1987. Since then the buildings have been maintained within the safety envelope, but the facility is not operational.

4.2 Significant Releases and Events

There reportedly have been five incidents where uranyl nitrate was spilled onto the floor of the Critical Mass Laboratory (CML). The largest spill involved between 50 and 60 gallons of solution. The laboratory floors are sealed and bermed to contain such spills, and in no case did solution escape the building. The solution was recovered for further use. In another case in the late 1960's, an accumulation of uranyl nitrate salt was found inside the base of the ventilation system filter plenum outside of Building 886. This accumulation, about one foot square and one-quarter inch thick, is thought to have most likely resulted from an incident in which some solution overflowed into a vent line and dried, with subsequent air flow over the vent carrying the salt to the filter plenum.

Room 103 is the mixing room which serves as a fissile solution mixing and storage area. It is approximately 900 square feet. It has three walls that are reinforced concrete with the west wall constructed of back filled cinder blocks with rebar. The roof is sheet metal with a tar overlay. Approximately half of the room is two to four feet below the building's floor level.

Room 108 is the hallway within the CML connecting Rooms 101, 102, and 103. It is approximately 500 square feet.

Outside of the RCA, Room 111 is the Utility Room and Room 112 is the Control Room. Room 141 is the Stationary Operating Engineer (SOE) Control Room. The remaining rooms within the building are considered office space. The floor of these rooms is a slab on grade and the walls are back filled cinder block with a built up roof.

Recent removal of containers of low enriched uranium oxides and two check sources of Cobalt-60 and one check source of Californium-252 was completed as a risk reduction activity. Highly enriched uranyl nitrate (HEUN) was drained from the tanks in Building 886 and the raschig rings were removed from the tanks in Room 103 as part of a risk reduction activity.

The equipment located in Building 886 is listed in Table 5-1.

Table 5-1. Building 886 Equipment

Equipment	Quantity	Equipment	Quantity
Horizontal Split Table (RCA)	1	Concrete Reflector Panels (RCA)	8
Vertical Split Table (RCA)	1	Solution Transfer Pump (RCA)	6
Solution Base (RCA)	1	Reactor Control Console	1
Water Reflector Apparatus (RCA)	1	Air Compressors	2
Elevated Platform (RCA)	1	Bridgeport Mill	1
Walk-in Hood (RCA)	1	Logan Lathe	1
Stainless Steel Tanks (RCA)	11	Lektriever	1
Glovebox Type Enclosures (RCA)	2		

Building 875

Building 875 is approximately 3,900 square feet and houses the filter plenums that filter air which has been circulated through the Building 886 Exhaust System. The building is cinder block construction with a concrete floor. The roof is tar impregnated felt.

The facility has a concrete pit on the north end which accesses the tunnel. The tunnel connecting 875 and 886 is considered part of this facility. Plenum 501 is a two-stage high efficiency particulate air (HEPA) filter servicing the office area. Plenum 502 is a four-stage HEPA filter plenum servicing the material access area

Table 6-0. Hazard Summary

Bldg./ Room	Description	Square Feet	Hazard	Matrix
B886	General Building (specific rooms detailed below)	10,785	Asbestos	Piping insulation, skim coat on cinder block, floor and ceiling tiles, filler, wiring insulation, roof
			Press. Gas	one cylinder of nitrogen gas
			Lead	Paint (see Appendix B for concentrations for specific paint colors)
			Chromium	Paint (see Appendix B for concentrations for specific paint colors)
			PCBs	Paint (see Appendix B for concentrations for specific paint colors)
101	Critical Mass Laboratory	2,000	Physical	Elevated platform, overhead equipment, falls
			Radiological	Tanks, process lines, ventilation ducts, assembly hood, floor, and equipment
			Hold up	2 tanks with raschig rings, SCRAM tank, annular tank
102	Storage Vault	600	Radiological	Potential fixed contamination in floor
103	Mixing Room	900	Physical	Un-secured ladder, protruding piping and valves
			Radiological	Tanks, process lines, ventilation ducts, glovebox, floor
			Hold up	Pumps
108	Hallway	500	Radiological	Potential loose surface contamination
111	Utility Room	1,000	Physical	Sharp edges, corners, protruding piping and valves
			PCBs	Gasket material from vibration damper
			Electrical	Equipment, electrical panels

6.1 Physical Hazards

The buildings within the 886 Cluster have been maintained within the safety envelope required by the BIO. As a result, there are no physical hazards from damaged or dilapidated infrastructure. However, some physical hazards are intrinsic with portions of the cluster and are described below.

Building 886

Room 101 has an elevated platform with equipment located on it as well as an overhead crane. These may represent an overhead hazard when D&D activities begin. Work on the platform has fall hazards associated with it.

Room 103 has a ladder going to an elevated platform which is not secure and has been barricaded. The room also has protruding piping and valves which represent a hazard to workers when they are working closely around the equipment.

Room 111 has numerous sharp edges, corners, and protruding pieces of equipment, pipes, and valves. Although safe for current operations in that they do not impinge on the walk ways, when workers begin D&D operations in this room, they will need to be cognizant of these hazards.

Room 112 has numerous control boxes and sheet metal with sharp edges.

Throughout the building, and the rest of the cluster, there is sheet metal with sharp edges. Although not normally accessible, as D&D activities begin around the sheet metal, attention to cutting edges will be required.

Building 875

The operation of the air filtration system in Building 875 creates a noise hazard which requires the use of hearing protection within the building when the filter plenum system is in operation.

Building 888A

This enclosure around the electrical substation has razor wire around the top. This represents a hazard to the workers when they proceed with D&D activities.

Building 828

Building 828 is a below grade confined space. Any work within the pit will require a confined space permit. Furthermore, the pit represents a falling hazard if left open and consideration will need to be given during the D&D process to maintaining fall protection or barricades around it.

The pit also contains numerous protruding pipes and valves which will be a hazard for workers in the pit.

Historically, there have been numerous occasions when ground water has enter 828. This water was pumped out, but the pit is wet, muddy, and slick.

The pit is also a natural breeding ground for spiders. Measures have been taken in the past to eliminate the spiders before beginning work in the pit. Similar precautions will be needed for the D&D activities.

Table 6-1. Summary of contamination values for Unrestricted Release

Radionuclide	Average Total (Fixed + Removable) Contamination (dpm/100cm²)	Maximum Total (Fixed + Removable) Contamination (dpm/100cm²)	Removable Contamination (dpm/100cm²)
Transuranic: Ra^{-226}, Ra^{-228}, Th^{-228}, Pa^{-231}, Ac^{-227}, I^{-125}, I^{-129}	100	300	20
Th-Natural: Th^{-232}, Sr^{-90}, Ra^{-223}, Ra^{-224}, U^{-232}, I^{-131}, I^{-133}	1,000	3,000	200
U-Natural: U^{-235}, U^{-238}, and associated decay products, alpha emitters	5,000	15,000	1,000
Beta-gamma emitters (radionuclides with decay modes other than the alpha emission or spontaneous fission) except Sr^{-90} and others noted above.	5,000	15,000	1,000

Isotopes of Concern

The principal DOE isotopes of concern include:

- Uranium-235,
- Uranium-234,
- Uranium-238,
- Plutonium-239, and
- Americium-241.

The specific isotopes were identified based on survey results, personnel interviews, and historical records. Trace amounts of some decay products may be present and will be evaluated during waste characterization.

Surveys Performed/Evaluated

Radiological surveys have been performed in representative areas of the 886 Cluster. The level of detail for specific surveys was based on the radioactive contamination potential for the area. Extensive radiological survey information was used for this characterization effort in lieu of new surveys.

Additional routine surveys were performed in accordance with procedures. In addition to removable alpha surveys, removable beta was also determined. Buildings 875 and 880 were also surveyed in accordance with routine survey procedures. Appendix A contains copies of the surveys that are the basis for this radiological characterization.

As stated previously, the downdraft unit and associated glovebox in Room 103, the assembly hood in Room 101, process piping in Rooms 101 and 103, and the ventilation plenum in Building 875 were not characterized as part of this effort but will be characterized as deactivation activities are completed. These

Miscellaneous asbestos containing material (ACM) discovered during the inspection included nine inch and twelve inch floor tiles dispersed throughout the cold side of the facility, including under the sheet vinyl in the hallways. The adhesive associated with the floor tiles tested negative for asbestos except in Room 110, the janitorial closet. The tiles are in generally good condition and appear to receive regular maintenance.

The predominant pattern of ceiling tiles (2 by 4 feet white with wide latitudinal grooves, pits, and pin holes) tested positive for asbestos. Due to the modular nature of a suspended ceiling, the remaining patterns must be assumed to be contaminated with asbestos. The suspended ceiling system was in good condition at the time of the inspection.

A filler between the HVAC ducts and wall penetrations is 98 percent asbestos. This filler was not observed in all locations, but is predominant throughout the facility. At the time of the inspection, the filler was painted and in good condition where observable.

A previous inspector acquired a sample of the electrical wiring in Room 114 which indicated asbestos in the insulation. Until the building circuits are de-energized and a comprehensive survey can be completed, it must be assumed that all original wiring insulation for the structure, and for the original structures in the cluster, is asbestos containing.

Building 886 has a built up roof system that was specified as containing asbestos in the felt and tar. As such, the roof is assumed to be asbestos containing without the need of sampling. Tar impregnated roofing felts may be disposed of with normal demolition debris under most circumstances.

Building 828

The Building 828 exterior walls are assumed to be asbestos containing based on historical data from other locations on the Site and on the expert judgement of the Certified Asbestos Inspector. The piping associated with the underground storage tanks is not insulated.

Building T886A

T886A is a modular trailer (S.N. 3404) constructed by Elder in 1984. Alan Koenig from G.E. Capital, the parent company of Elder, verified that this particular structure was not constructed with any materials that contained either lead or asbestos.

Building 888

Although not included as part of the 886 Cluster, Building 888 is powered from 886 and will be impacted by the demolition of the 886 Cluster. Because of this, the inspector evaluated the building on the chance that it may be included, or that work may be required on it during the 886 D&D activities. The building is a guard post constructed in the mid 1980's. As such, building materials have a low possibility of containing asbestos. Based on visual inspection, all materials were eliminated as suspect asbestos containing materials except the roofing and the drywall systems. Samples were acquired of the drywall system and the analytical results were non-detects. The built-up roofing can be assumed to be asbestos containing tar impregnated roofing felt, which can be disposed of with the regular construction debris in most cases.

assayed. In addition to this packaged waste, there is some unpackaged waste in Room 101. The majority of this waste is metal and is mainly excess equipment.

7.0 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES

Table 7-1 summarizes the types and quantities of wastes estimated for the deactivation of the 886 Cluster. These estimates were derived from existing documentation regarding equipment and materials in the cluster and from inventories compiled during walk-through of the facilities.

Table 7-1. Estimated Wastes From the 886 Cluster Decommissioning Project

Type of Waste	Primary Matrix	Quantity (cubic meters)	Type of Waste Package	Quantity of Waste Package
Hazardous	Painted materials	3	Standard Crate	1
Asbestos	Insulation, building materials, wiring, etc.	200	Bulk	N/A
Low-level	Paper/Glass/Plastic/Pipe	225	Standard Crate	75
Low-level Mixed	Plastic/Pipe	3	Standard Crate	1
TRU	None	0	N/A	N/A
TRU Mixed	None	0	N/A	N/A
Sanitary	Rubble	1,000	Bulk	N/A

8.0 DATA QUALITY ASSESSMENTS

The purpose of data quality assessment is to determine whether a set of data is adequate for its intended use, especially relative to supporting predefined project decisions with acceptable levels of confidence (after EPA G-9, 1996). EPA's approach to data quality assessment heavily emphasizes the use of statistical methodologies, which incorporate "ratio" data, i.e., data exhibiting a broad range of values relative to action levels. This reconnaissance level characterization, however, hinges primarily on nominal data (e.g., paint colors or equipment /material types), with associated analytical results indicating a nominal outcome from at least one judgmental (i.e., non-statistical) sample: Pass/Fail. Therefore, typical statistical (EPA) methodologies that might be used for comparing a project's data set with a background or baseline to evaluate significance is not well suited for use with most of the contaminants of concern evaluated for the 886 Cluster, with the exception of radionuclides. Based on the availability of previous radiological survey data within the areas of interest, DQOs were not formally presented for this reconnaissance effort, but will be addressed for final decontamination surveys.

Notwithstanding the limited statistical applications to the non-radionuclide contaminants of concern, a data quality analysis is still necessary to determine if the data collected are adequate for their intended use. Table 6-0 exhibits a summary of the hazards based on the samples collected for each contaminant category – by location and by nominal category represented (e.g., paint color).

field duplicate samples, blind to the laboratory, are used to evaluate overall repeatability in the project. Precision results based on the field duplicate samples are given in Table 8-4 (by method); all duplicate values were well within tolerances (40% RPD for solids, 30% RPD for liquids), except for TCLP results, where duplicate samples were not taken. As a result, repeatability of TCLP measurements was indeterminate.

			Metals (mg/kg)							
PAIR #	Sample ID	Asbestos (%)	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	PCBs (ug/kg)
RELATIVE PERCENT DIFFERENCE VALUES										
1										
2			0	3	9	1	1	2	7	0
3		~0								
4		17								
5		~0								
6		~0								

RELATIVE PERCENT DIFFERENCE = [(real result) - (duplicate result)]/{[(real result) + (duplicate result)]/2}

Table 8-5. Summary for Completeness of the Data Set

	Asbestos			Total Metals			TCLP Metals			PCBs		
	Total Acquired	Total Usable	Percent	Total Acquired	Total Usable	Percent	Total Acquired	Total Usable	Percent	Total Acquired	Total Usable	Percent
Real Samples	74	74	100	7	7	100	2	2	100	10	10	100
Duplicate Samples	4	4	100	1	1	100				1	1	100

COMPLETENESS = [(total collected) - (unusable)]/(total collected)

Where: (total collected) = total number of samples collected
(unusable) = number of samples unusable in final reporting

D&D RISS Facility Characterization
Historical Site Assessment Report
December 4, 2001, Rev. 1

Facility ID: Building 880 Storage Shed, Area 1 – Group 15
Anticipated Facility Type (1, 2, or 3): Building 880 Anticipated Type = 1

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 880 has approximately 800 square feet of floor space. Building 880 was acquired/constructed in 1968 and is located directly south of the Building 886. Building 880 is 24 feet wide X 36 feet long X 16 high at the roof eve, which is sloped to south for drainage. Building 880 and its roof covered are with corrugated galvanized metal. Building 880 is constructed on a concrete slab with a large steel roll-up door on the east and a steel personnel entry door or the north. Building 880 has no electrical power, no heating of any kind, and does not have a LSDW System.

Historical Operations
Building 880 has historically been used as a storage facility for the Building 886 Criticality Lab. Building 880 stored low-level contaminated waste drums and contaminated waste crates from Building 886. Building 880 stored contaminated concrete from Building 886. One interviewee said hemi-shells and classified shapes at times were stored in Building 880. Due to the materials stored in Building 880, it was generally posted as a RMA. Occasionally Building 880 was posted as a High Contaminated Area according to one interviewee.

Current Operational Status
Currently Building 880 is being used as a storage facility for Building 886. Building 880 currently has stored contaminated low-level waste drums and waste crates from Building 886. Building 880 currently has a fork-truck stored in the facility. Building 880 appears to be fully operational as a Building 886 Storage Facility.

Contaminants of Concern

Asbestos
Describe any potential, likely, or known sources of Asbestos:
Building 880 has always been locked during walkdowns, but it does not appear to have any asbestos containing materials (ACM) of construction by visual inspection from the window in the personnel entry door. One interviewee said low-level waste drums/crates containing asbestos were stored in Building 880, but that he did not believe the facility had any ACM materials of construction.

Beryllium (Be)
Describe any potential, likely, or known Be production or storage locations:
Building 880 is not on the RFETS list of known Be locations. One interviewee said low-level waste drums/crates containing Be were stored in Building 880.

Summarize any recent Be sampling results:
No known Be sampling has been conducted in Building 880.

Lead
Describe any potential, likely, or known sources of Lead (e.g., paint, shielding, etc.):
Building 880 was constructed in 1968, therefore it may contain lead-based paints. No lead operations were known to have occurred in Building 880.

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RCRA/CERCLA Constituents

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

Building 880 was never used as a chemical storage facility. Building 880 has no WSRIC, but it may have been included in the Building 886 WSRIC at one time. Building 880 is not listed on "The Master List of RCRA Units".

Describe any potential, likely, or known spill locations (and sources, if any): No known chemical spills ever occurred in Building 880.

Describe methods in which spills were mitigated, if any:

N/A

PCBs

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

Building may contain PCB/lead-based paints. Building 880 has no lighting or lighting ballasts. No known equipment containing PCBs were ever located in Building 880.

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

None

Describe methods in which spills were mitigated, if any:

None

Radiological Contaminants

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

Building 880 had no known radiological production areas. Building 880 did store low-level contaminated waste drums and low-level contaminated waste crates. Building 880 also stored contaminated concrete from experiments in building 886.

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

No known sealed radioactive sources were ever stored in Building 880.

Describe methods in which spills were mitigated, if any:

None

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

None

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.):

None

Environmental Restoration Concerns

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

No known IHSSs, PACs, or UBCs are related to Building 880.

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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.):

Building 880 is not listed in the RFETS Historical Release Reports. No WSRIC data currently exists for Building 880.

References

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

Sources reviewed to complete this HSA were the RFETS Facility list, the Historical Release Report, Site Master List of RCRA Units, and the Site IHSS, PAC, and UBC databases. Building 880 does not have a Facility Safety Analysis or a WSRIC. In addition, an exterior facility walkdown was performed. Viewing through the personnel entry door window performed a visual inspection of Building 880. The Facility Manager for Building 880 was interviewed.

Waste Volume Estimates and Material Types For Building 880, Area 1 Group 15

Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
764	None	448	928	None	TBD	None

Further Actions

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

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 Report 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 HSA Report will not be amended. The RLC data will take precedence over the information in this HSA Report. RLC data will appear in the RLCR/PDSR. Please disregard the above waste volume estimates if Building 880 is sold.

Prepared By: Bob Sheets — Bob Sheets — 12/4/2001

Name — Signature — Date

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D&D RISS Facility Characterization
Historical Site Assessment - Interview Checklist

Facility ID: Building 880 Storage Shed, Area 1 – Group 15
Anticipated Facility Type (1, 2, or 3): Building 880 = Type 1

This facility specific Historical Site Assessment (HSA) – Interview Checklist has been conducted in accordance with:
D&D Characterization Protocol, RFETS MAN-077-DDCP, latest version, and
Facility Disposition Program Manual, RFETS MAN-076-FDPM, latest version

Personnel Interviewed (Name, Title, and Function)
Jerry L. Anderson, Shift Manager, Building 886 Facility Manager, and Building 886 Closure Manager

What time frame did the interviewee work in the facility? What was his/her function(s)?
From 1997 to the present Mr. Anderson was assigned as a Facility Manager and Shift Manager for Building 880 and other facilities in the Building 886 area. Mr. Anderson was knowledgeable concerning Building 880 was used and said low-level contaminated drums, low-level contaminated waste crates, contaminated equipment, and contaminated concrete from Criticality Lab experiments in Building 886, were frequently stored in Building 880.

Has the building configuration changed since you worked in the building (e.g., rooms & equipment)? Have there been any building renovations? If so, in what way? Mr. Anderson said that he did remember any configuration changes to Building 880. Mr. Anderson did not remember any changes or modifications to Building 880 but did remember that a fork-truck was frequently store in Building 880 to move contaminated waste crates, contaminated waste drums, and contaminated concrete in and out of Building 886.

What operations/processes were conducted in the building during the interviewee's time in the facility?
Mr. Anderson said to the best of his knowledge Building 880 has always been a storage shed to support Building 886 Criticality Lab. Mr. Anderson said that he did not know of any processes that were ever conducted in Building 880. Mr. Anderson said that low-level radioactive waste drums and low-level waste crates were frequently stored in Building 880.

What types of equipment were used, and where was the equipment located? (specific rooms/areas)
Mr. Anderson said that Building 880 has a large roll-up door on the east end of the building where fork-trucks brought concrete, low-level waste crates, and low-level waste drums in and out of the building.

Were any radioactive materials or equipment handled in the building (e.g., wastes, residues, product, feed material, sealed radioactive sources)? If so, what types and where?
Mr. Anderson had knowledge of radioactive materials being in Building 880 which included the low-level waste drums, low-level waste crates, radioactively contaminated concrete, and contaminated experimental equipment items were frequently stored in Building 880. Mr. Anderson recalled that on several occasions, R&D parts (hemi-shells and classified shapes) Mr. Anderson said that he did not believe that Building 880 ever contained any sealed radioactive sources. Mr. Anderson remembered that on several occasions Building 880 posted as a Radioactive Materials Area, and on one occasion Building 880 was posted as a High Contamination Area.

Were there any Research & Development area (past or present) located in the facility or area? If so, where?
Mr. Anderson had no knowledge of any R&D work ever being done in Building 880, but he said R&D parts and equipment from experiments in Building 886 were stored in the facility.

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D&D RISS Facility Characterization
Historical Site Assessment - Interview Checklist

Were any chemicals (e.g., Beryllium, RCRA/CERCLA Constituents, PCBs, etc.) handled in the building? If so, what types and where? Mr. Anderson was not aware of any beryllium, RCRA/CERCLA constituents and/or PCBs being handled in Building 880. Mr. Anderson said there are no lighting ballasts in Building 880 therefore he did not believe the facility ever contained any PCBs. Mr. Anderson said Building 880, because it was constructed in 1968, might contain some lead-based paints which might also contain trace amounts of PCBs.
Were there any Asbestos Containing Materials (e.g., transite wall board, ceiling tiles, floor tile), lead shielding, equipment utilizing PCB oils (e.g., process equipment, lifts, hydraulic systems, etc.), or any other chemical hazards (past or present)? Mr. Anderson did not know if any of any asbestos construction materials in Building 880. Mr. Anderson said he remembered some asbestos materials in sealed crates being in Building 880. Mr. Anderson was not aware of any lead or lead shielding and/or PCB oils in Building 880.
Did any spills or uncontrolled release of radioactive materials or chemicals occur while you worked in the building? If so, what types, quantities, and where? Mr. Anderson said that radioactive spills occurred in Building 880, but not remember any chemical spills ever occurring. Mr. Anderson said that the floor of Building 880 could have been contaminated from contaminated drums and/or contaminated concrete coming from Building 886.
Were these spills/releases cleaned up or mitigated? If so, how, and to what extent? Mr. Anderson said radioactive spills would have been cleaned up using methods approved by the attending Radiological Control Technician.
Do you know of any additional issues, concerns, or process knowledge that could affect facility characterization? Mr. Anderson said that he had no additional issues or concerns concerning Building 880.

Prepared By: Bob Sheets (Print Name), Bob Sheets (Signature), 11/26/2001 (Date)

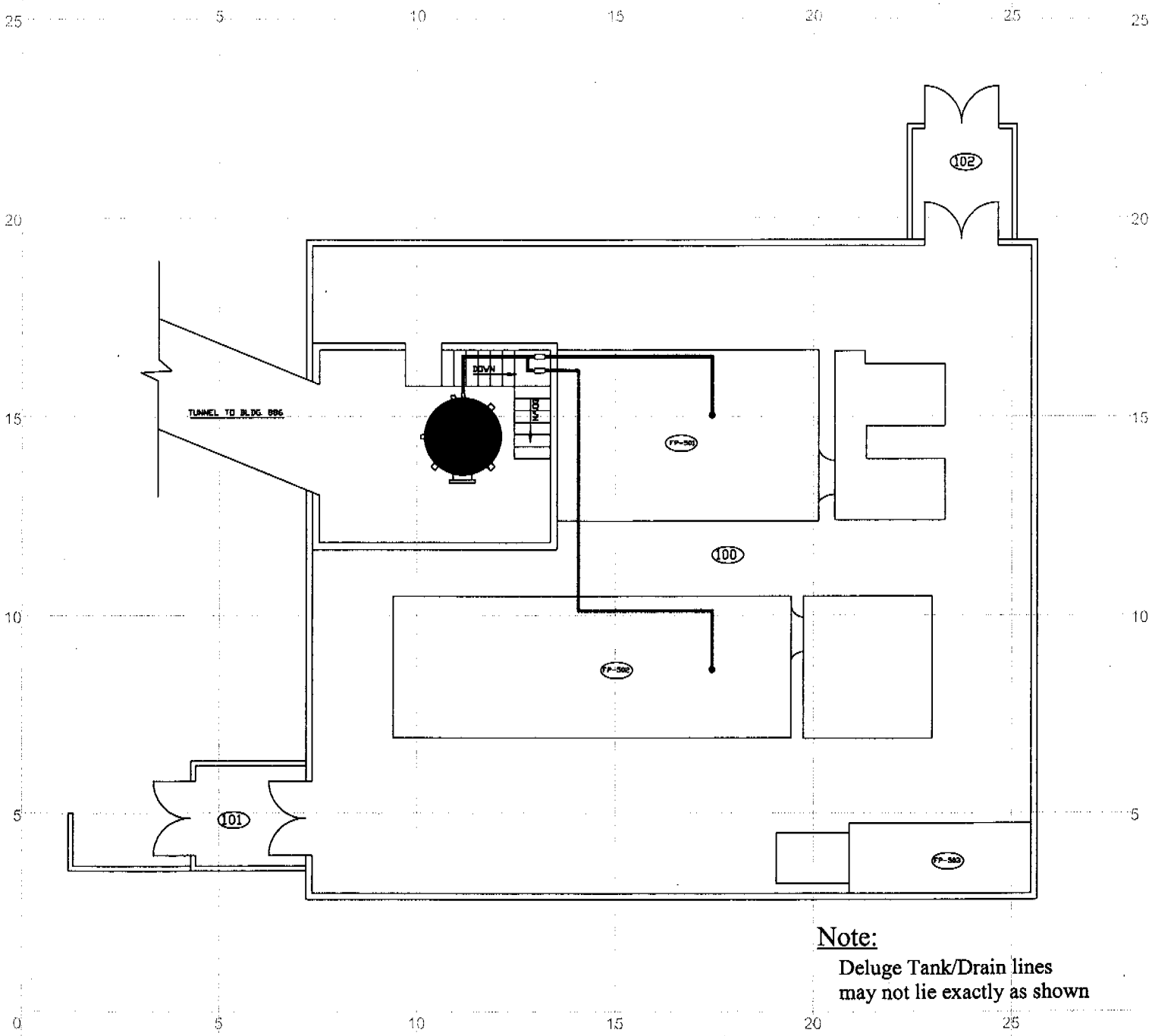
21

ATTACHMENT C

Radiological Data Summaries and Survey Maps

FIGURE C.1

Building: 875



Note:
Deluge Tank/Drain lines may not lie exactly as shown

SURVEY MAP LEGEND

- Plenum Drain
- Plenum Deluge Tank
- Plenum Deluge Tank Line
- Plenum Deluge Drain Line FP-501
- Plenum Deluge Drain Line FP-502
- Open/Inaccessible Area
- Area in Another Survey Unit

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N

0 FEET 0
0 METERS 0

DRAWING NOT TO SCALE

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

Prepared by: GIS Dept. 303-966-7707

DynCorp
THE ART OF TECHNOLOGY

Prepared for:

MAP ID: 02-0099/875-Tank

June 20, 2002

SURVEY UNIT 886-B-007
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B875

39

Total Surface Activity Measurements

	18	18	
	Number Required	Number Obtained	
MIN	-12.6		dpm/100 cm^2
MAX	42.8		dpm/100 cm^2
MEAN	12.9		dpm/100 cm^2
STD DEV	14.1		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	18	18	
	Number Required	Number Obtained	
MIN	-0.3		dpm/100 cm^2
MAX	8.8		dpm/100 cm^2
MEAN	1.5		dpm/100 cm^2
STD DEV	2.4		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

40

SURVEY UNIT B886-B-007
TSA - DATA SUMMARY

Manufacturer:	NE Electra	NE Electra	NE Electra
Model:	DP-6	DP-6	DP-6
Instrument ID#:	8	10	11
Serial #:	3114	1379	1260
Cal Due Date:	8/13/02	11/20/02	8/27/02
Analysis Date:	4/23/02	6/25/02	6/25/02
Alpha Eff. (c/d):	0.208	0.204	0.228
Alpha Bkgd (cpm)	2.7	3.3	2.0
Sample Time (min)	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	10	8.0	39.2	6.7	32.8	13.4
2	8	6.0	28.8	2.0	9.6	3.0
3	10	14.0	68.6	10.0	49.0	42.8
4	10	12.7	62.3	4.7	23.0	36.4
5	10	2.7	13.2	5.3	26.0	-12.6
6	10	8.0	39.2	2.7	13.2	13.4
7	10	9.3	45.6	4.0	19.6	19.8
8	10	10.7	52.5	8.7	42.6	26.6
9	10	7.3	35.8	3.3	16.2	10.0
10	10	3.3	16.2	4.0	19.6	-9.6
11	10	7.3	35.8	2.0	9.8	10.0
12	10	6.7	32.8	8.0	39.2	7.0
13	10	6.7	32.8	2.7	13.2	7.0
14	10	6.7	32.8	5.3	26.0	7.0
15	10	10.7	52.5	8.7	42.6	26.6
16	10	6.0	29.4	4.7	23.0	3.6
17	10	7.3	35.8	6.7	32.8	10.0
18	10	8.7	42.6	5.3	26.0	16.8
					25.8	Sample LAB Average
					MIN	-12.6
					MAX	42.8
					MEAN	12.9
					SD	14.1
					Transuranic DCGL$_W$	100

1 - Average LAB used to subtract from Gross Sample Activity

QC Measurements

1 QC	11	3.0	13.2	2.0	8.8	0.0
11QC	11	7.3	32.0	4.0	17.5	18.9
					13.2	QC LAB Average
					Transuranic DCGL$_W$	100

1 - Average QC LAB used to subtract from Gross Sample Activity

41

SURVEY UNIT B886-B-007
RSC - DATA SUMMARY

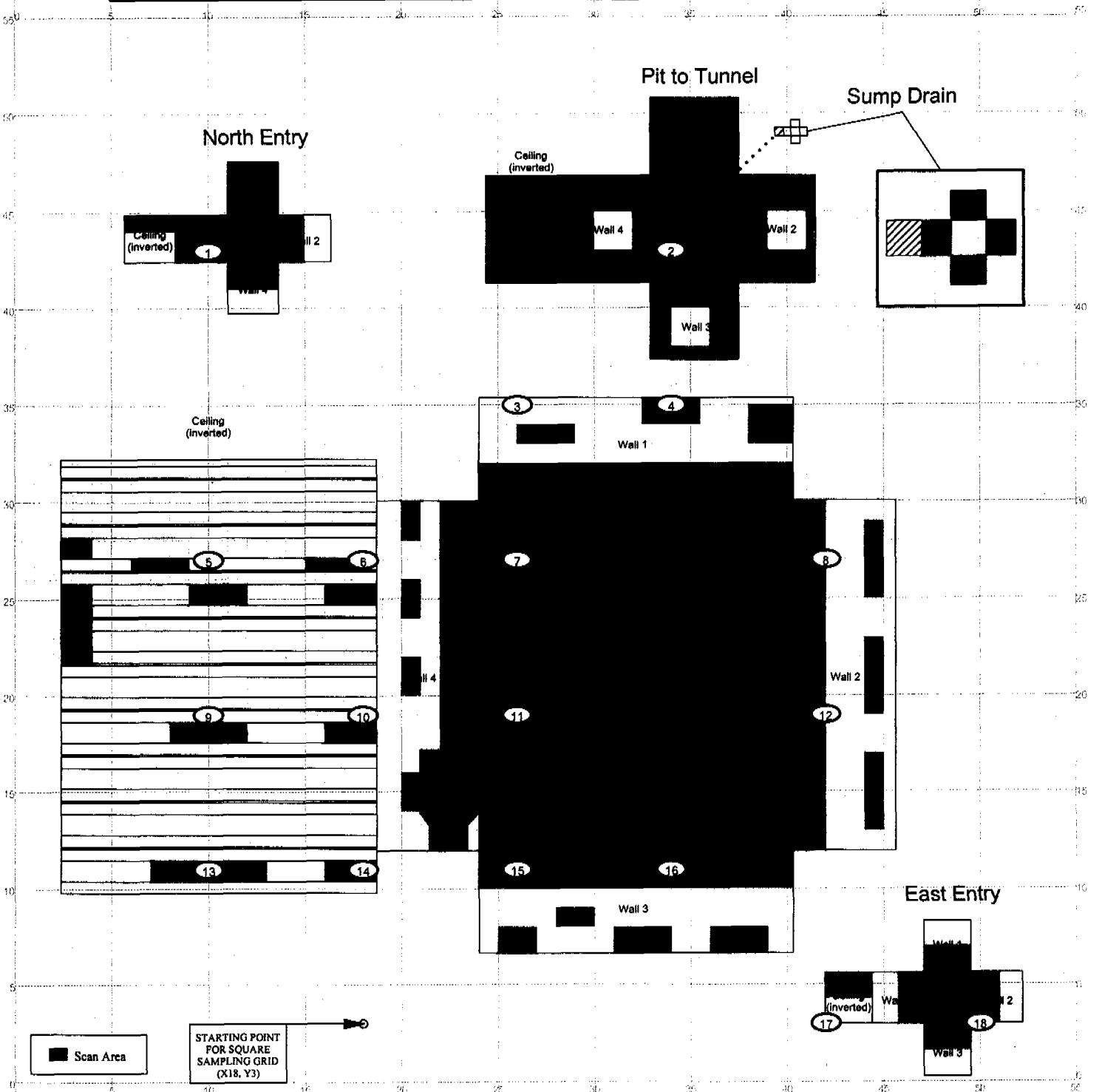
Manufacturer:	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	1	2	3	4
Serial #:	770	851	959	**966**
Cal Due Date:	7/25/02	10/29/02	7/14/02	**11/6/02**
Analysis Date:	6/25/02	6/25/02	6/25/02	**6/25/02**
Alpha Eff. (c/d):	0.33	0.33	0.33	**0.33**
Alpha Bkgd (cpm)	0.1	0.1	0.0	0.0
Sample Time (min)	2	2	2	**2**
Bkgd Time (min)	10	10	10	**10**
MDC (dpm/100cm^2)	7.0	7.0	4.5	**4.5**

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	1	1.0	2.7
2	2	0.0	-0.3
3	3	1.0	3.0
4	4	1.0	3.0
5	1	0.0	-0.3
6	2	0.0	-0.3
7	3	0.0	0.0
8	4	0.0	0.0
9	1	1.0	2.7
10	2	3.0	8.8
11	3	0.0	0.0
12	4	1.0	3.0
13	1	0.0	-0.3
14	2	1.0	2.7
15	3	0.0	0.0
16	4	0.0	0.0
17	1	0.0	-0.3
18	2	1.0	2.7
		MIN	-0.3
		MAX	8.8
		MEAN	1.5
		SD	2.4
		Transuranic $DCGL_W$	**20**

42

PRE-DEMOLITION SURVEY FOR 886

Survey Area: B **Survey Unit: 886-B-007** **Classification: 2**
Building: 875
Survey Unit Description: Interior of Building
Total Area: 1129 sq. m. **Total Floor Area: 271 sq. m.**
Grid Spacing for Survey Points: 8m. X 8m.



SURVEY MAP LEGEND

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

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N

0 FEET 30
0 METERS 10

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

Scan Survey Information
Survey Instrument ID #(s): 7,9,12,19,20,21,22
RCT ID #(s): 3, 4, 5, 6, 8, 9

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

Prepared by: GIS Dept. 303-966-7707

DynCorp
THE ART OF TECHNOLOGY

Prepared for:

MAP ID: 02-0099/B875 **April 15, 2002**

N3

SURVEY UNIT 886-B-011
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B875 Tunnel

Total Surface Activity Measurements

	19	19	
	Number Required	Number Obtained	
MIN	-1.9		dpm/100 cm^2
MAX	46.5		dpm/100 cm^2
MEAN	14.3		dpm/100 cm^2
STD DEV	13.2		dpm/100 cm^2
TRANSURANIC $DCGL_W$	100		dpm/100 cm^2

Removable Activity Measurements

	19	19	
	Number Required	Number Obtained	
MIN	-0.3		dpm/100 cm^2
MAX	3.0		dpm/100 cm^2
MEAN	0.8		dpm/100 cm^2
STD DEV	1.5		dpm/100 cm^2
TRANSURANIC $DCGL_W$	20		dpm/100 cm^2

45

SURVEY UNIT B886-B-011
TSA - DATA SUMMARY

Manufacturer:	NE Electra	NE Electra
Model:	DP-6	DP-6
Instrument ID#:	9	10
Serial #:	3114	1136
Cal Due Date:	8/13/02	8/6/02
Analysis Date:	4/5/02	4/5/02
Alpha Eff. (c/d):	0.218	0.214
Alpha Bkgd (cpm)	2.0	2.0
Sample Time (min)	1.5	1.5
LAB Time (min)	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	9	8.0	36.7	4.7	21.6	22.2
2	9	7.3	33.5	0.0	0.0	18.9
3	9	10.7	49.1	4.0	18.3	34.5
4	10	7.3	34.1	2.7	12.6	19.6
5	9	6.7	30.7	4.7	21.6	16.2
6	9	4.7	21.6	4.0	18.3	7.0
7	10	9.3	43.5	3.3	15.4	28.9
8	9	3.3	15.1	4.0	18.3	0.6
9	9	5.3	24.3	5.3	24.3	9.8
10	10	4.7	22.0	0.0	0.0	7.4
11	9	13.3	61.0	5.3	24.3	46.5
12	9	8.0	36.7	5.3	24.3	22.2
13	10	6.0	28.0	2.0	9.3	13.5
14	9	3.3	15.1	5.3	24.3	0.6
15	10	7.3	34.1	2.0	9.3	19.6
16	10	3.3	15.4	2.0	9.3	0.9
17	10	2.7	12.6	1.3	6.1	-1.9
18	10	4.7	22.0	2.0	9.3	7.4
19	10	2.7	12.6	2.0	9.3	-1.9
					14.5	Sample LAB Average
					MIN	-1.9
					MAX	46.5
					MEAN	14.3
					SD	13.2
					Transuranic DCGL$_W$	100

1 - Average LAB used to subtract from Gross Sample Activity

QC Measurements

150C	9	8.0	36.7	5.3	24.3	15.4
100C	9	5.3	24.3	4.0	18.3	3.0
					21.3	QC LAB Average
					Transuranic DCGL$_W$	100

1 - Average QC LAB used to subtract from Gross Sample Activity

211

SURVEY UNIT B886-B-011
RSC - DATA SUMMARY

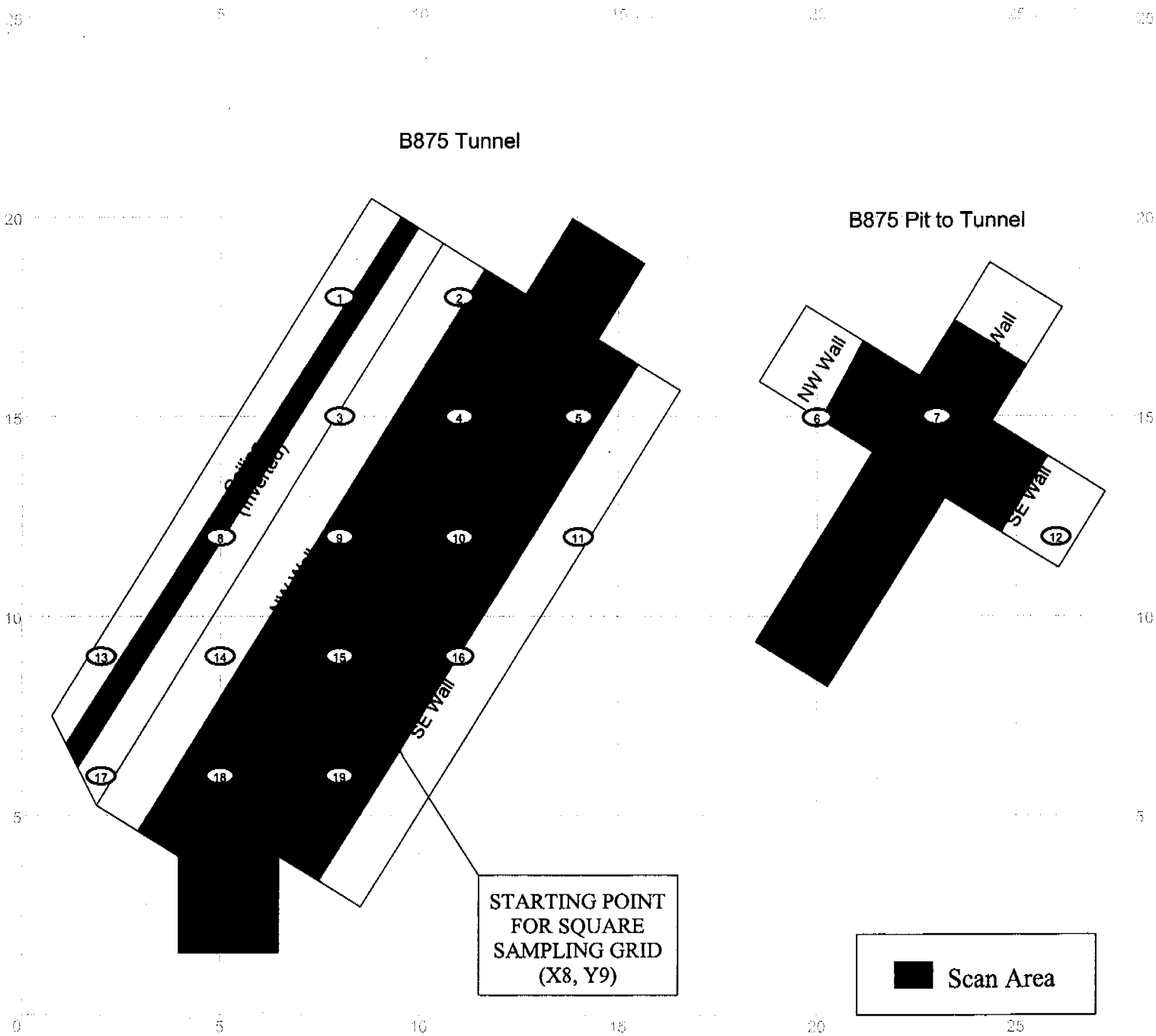
Manufacturer:	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	1	2	3	4
Serial #:	767	1164	770	959
Cal Due Date:	4/30/02	5/13/02	7/25/02	7/14/02
Analysis Date:	4/5/02	4/5/02	4/5/02	4/5/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.1	0.0	0.0	0.1
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	7.0	4.5	4.5	7.0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	1	1.0	2.7
2	2	0.0	0.0
3	3	0.0	0.0
4	4	0.0	-0.3
5	1	0.0	-0.3
6	2	1.0	3.0
7	3	1.0	3.0
8	4	0.0	-0.3
9	1	0.0	-0.3
10	2	0.0	0.0
11	3	0.0	0.0
12	4	0.0	-0.3
13	1	0.0	-0.3
14	2	0.0	0.0
15	3	1.0	3.0
16	4	1.0	2.7
17	1	1.0	2.7
18	2	0.0	0.0
19	3	0.0	0.0
		MIN	-0.3
		MAX	3.0
		MEAN	0.8
		SD	1.5
		Transuranic $DCGL_W$	20

2IM

PRE-DEMOLITION SURVEY FOR B886

Survey Area: B **Survey Unit: 886-B-011** **Classification: 2**
Building: 875 Tunnel
Survey Unit Description: Interior of Tunnel
Total Area: 174.4 sq. m. **Total Floor Area: 39 sq. m.**
Grid Spacing for Survey Points: 3m. X 3m.



SURVEY MAP LEGEND

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

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N

0 FEET 15
0 METERS 5

1 inch = 12 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s): 7, 8, 9, 10,11,12
RCT ID #(s): 1,2,3, 4, 5

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

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

DynCorp
THE ART OF TECHNOLOGY

MAP ID: 02-0099/875-TUN-SC April 4, 2002

SURVEY UNIT G15-A-001
RADIOLOGICAL DATA SUMMARY

Survey Unit Description: Interior of B880

219

Total Surface Activity Measurements

	Number Required	Number Obtained	
	20	20	
MIN	-13.7		dpm/100 cm^2
MAX	37.1		dpm/100 cm^2
MEAN	16.9		dpm/100 cm^2
STD DEV	13.1		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	Number Required	Number Obtained	
	20	20	
MIN	-0.6		dpm/100 cm^2
MAX	6.1		dpm/100 cm^2
MEAN	1.4		dpm/100 cm^2
STD DEV	2.1		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

SURVEY UNIT G15-A-001
TSA DATA SUMMARY

Manufacturer:	NE Electra	NE Electra
Model:	DP-6	DP-6
Instrument ID#:	7	8
Serial #:	394	3114
Cal Due Date:	6/6/02	8/13/02
Analysis Date:	5/8/02	5/8/02
Alpha Eff. (c/d):	0.222	0.218
Alpha Bkgd (cpm)	6.0	6.0
Sample Time (min)	1.5	1.5
LAB Time (min)	1.5	1.5
MDC (dpm/100cm^2)	50.9	51.9

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	8	8.0	36.7	4.0	18.3	19.7
2	8	7.3	33.5	3.3	15.1	16.5
3	7	4.7	21.2	3.8	17.1	4.2
4	8	8.0	36.7	7.3	33.5	19.7
5	7	9.3	41.9	9.3	41.9	24.9
6	8	3.3	15.1	5.3	24.3	-1.8
7	8	0.7	3.2	1.3	6.0	-13.7
8	7	8.0	36.0	4.7	21.2	19.1
9	8	4.7	21.6	4.0	18.3	4.6
10	8	8.7	39.9	2.7	12.4	23.0
11	8	6.0	27.5	0.7	3.2	10.6
12	7	11.3	50.9	5.3	23.9	33.9
13	8	4.0	18.3	3.3	15.1	1.4
14	8	6.0	27.5	2.7	12.4	10.6
15	8	7.3	33.5	2.7	12.4	16.5
16	7	12.0	54.1	4.0	18.0	37.1
17	8	10.0	45.9	2.0	9.2	28.9
18	8	10.0	45.9	4.0	18.3	28.9
19	8	9.3	42.7	2.0	9.2	25.7
20	8	10.0	45.9	2.0	9.2	28.9
					17.0	Sample LAB Average
					MIN	-13.7
					MAX	37.1
					MEAN	16.9
					SD	13.1
					Transuranic $DCGL_W$	100

1 - Average LAB used to subtract from Gross Sample Activity

QC Measurements

20QC	7	16.7	75.2	8.0	36.0	42.1
19QC	7	16.7	75.2	6.7	30.2	42.1
					33.1	QC LAB Average
					Transuranic $DCGL_W$	100

1 - Average QC LAB used to subtract from Gross Sample Activity

51

SURVEY UNIT G15-A-001
SMEAR DATA SUMMARY

Manufacturer:	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	1	2	3	4
Serial #:	770	851	959	1164
Cal Due Date:	7/25/02	10/29/02	7/14/02	5/13/02
Analysis Date:	5/13/02	5/13/02	5/13/02	5/13/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.1	0.1	0.0	0.2
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	7.0	7.0	4.5	8.0

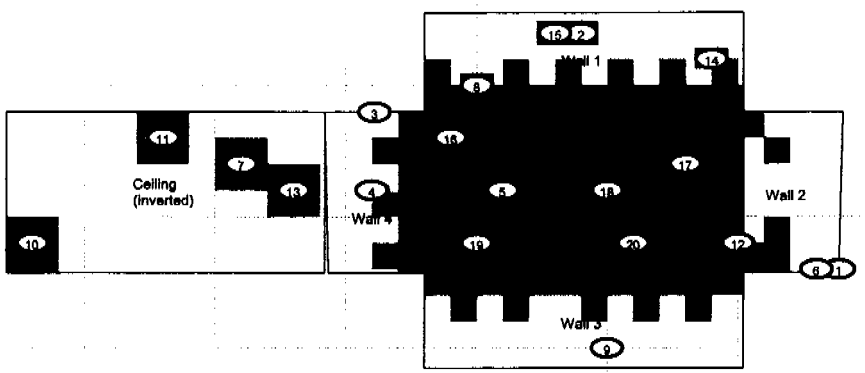
Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	3	0.0	0.0
2	2	2.0	5.8
3	4	1.0	2.4
4	3	2.0	6.1
5	2	0.0	-0.3
6	1	1.0	2.7
7	2	0.0	-0.3
8	2	0.0	-0.3
9	1	1.0	2.7
10	4	0.0	-0.6
11	4	0.0	-0.6
12	4	0.0	-0.6
13	3	1.0	3.0
14	1	0.0	-0.3
15	3	0.0	0.0
16	1	1.0	2.7
17	3	0.0	0.0
18	2	1.0	2.7
19	4	1.0	2.4
20	1	0.0	-0.3
		MIN	-0.6
		MAX	6.1
		MEAN	1.4
		SD	2.1
		Transuranic $DCGL_W$	20

52

PRE-DEMOLITION SURVEY

Survey Area: A **Survey Unit: G15-A-001** **Classification: 3**
Building: 880
Survey Unit Description: Interior
Total Area: 285 sq. m. **Total Roof & Floor Area: 74 sq. m.**

880 Interior



Scan Area

SURVEY MAP LEGEND

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

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N

0 FEET 30
0 METERS 10

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

Scan Survey Information
Survey Instrument ID #(s): 7, 8, 9
RCT ID #(s): 1, 2, 3

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

Prepared by: GIS Dept. 303-966-7707

DynCorp
THE ART OF TECHNOLOGY

Prepared for:

MAP ID: 02-0148/880-IN-SC

May 16, 2002

53

SURVEY UNITG15-B-002
RADIOLOGICAL DATA SUMMARY

Survey Unit Description: Exterior of B880

54

Total Surface Activity Measurements

	15	15	
	Number Required	Number Obtained	
MIN	-5.9		dpm/100 cm^2
MAX	72.1		dpm/100 cm^2
MEAN	45.4		dpm/100 cm^2
STD DEV	28.0		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	15	15	
	Number Required	Number Obtained	
MIN	-0.6		dpm/100 cm^2
MAX	12.1		dpm/100 cm^2
MEAN	2.7		dpm/100 cm^2
STD DEV	4.1		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

• The roof of B880 had initial alpha activity greater than the Transuranic DCGLW (100 dpm/100 cm2) at sample locations # 5 and #15 (155.8 dpm/100 cm2 and 173.8 dpm/100 cm2, respectively). Two roof coupons/samples were collected and analyzed using the Canberra ISOCS gamma spectroscopy system. Results did not indicate/detect any DOE enhanced radioactive material. Therefore, the net activity for these sample locations were reported as 0 dpm/100 cm2, and no further investigation is required. The exterior surfaces of B880 are acceptable for unrestricted release. Gamma spectroscopy results are included as a part of this survey package.

SURVEY UNIT G15-B-002
TSA DATA SUMMARY

Manufacturer:	NE Electra	NE Electra
Model:	DP-6	DP-6
Instrument ID#:	7	8
Serial #:	1513	394
Cal Due Date:	10/23/02	6/6/02
Analysis Date:	5/9/02	5/9/02
Alpha Eff. (c/d):	0.218	0.222
Alpha Bkgd (cpm)	4.0	4.7
Sample Time (min)	1.5	1.5
LAB Time (min)	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)
1	7	22.3	102.3	5.3	24.3	72.1
2	8	18.0	81.1	5.3	23.9	50.9
3	8	22.7	102.3	5.3	23.9	72.0
4	8	22.7	102.3	10.7	48.2	72.0
5 *	8	41.3	186.0	4.7	21.2	0 *
6	7	10.7	49.1	10.0	45.9	18.9
7	7	10.7	49.1	6.7	30.7	18.9
8	7	8.7	39.9	8.0	36.7	9.7
9	8	22.7	102.3	5.3	23.9	72.0
10	7	12.7	58.3	6.0	27.5	28.1
11	8	20.0	90.1	12.0	54.1	59.9
12	7	22.3	102.3	2.7	12.4	72.1
13	7	5.3	24.3	5.3	24.3	-5.9
14	7	17.3	79.4	9.6	44.0	49.2
15 *	8	45.3	204.1	2.7	12.2	0 *

1 - Average LAB used to subtract from Gross Sample Activity

30.2	Sample LAB Average
MIN	-5.9
MAX	72.1
MEAN	45.4
SD	28.0
Transuranic DCGL$_W$	100

QC Measurements

9QC	7	20.0	91.7	7.3	33.5	61.5
14QC	8	17.3	77.9	6.0	27.0	47.7

1 - Average QC LAB used to subtract from Gross Sample Activity

30.3	QC LAB Average
Transuranic DCGL$_W$	100

* The roof of B880 had initial alpha activity greater than the Transuranic DCGLW (100 dpm/100 cm2) at sample locations # 5 and #15 (155.8 dpm/100 cm2 and 173.8 dpm/100 cm2, respectively). Two roof coupons/sample were collected and analyzed using the Canberra ISOCS gamma spectroscopy system. Results did not indicate/detect any DOE enhanced radioactive material. Therefore, the net activity for these sample locations were reported as 0 dpm/100 cm2, and no further investigation is required. The exterior surfaces of B880 are acceptable for unrestricted release. Gamma spectroscopy results are included as a part of this survey package.

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SURVEY UNIT
G15-B-002
SMEAR DATA SUMMARY

Manufacturer:	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	1	2	3	4
Serial #:	770	851	959	1164
Cal Due Date:	7/25/02	10/29/02	7/14/02	5/13/02
Analysis Date:	5/13/02	5/13/02	5/13/02	5/13/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.1	0.1	0.0	0.2
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	7.0	7.0	4.5	8.0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	1	4.0	11.8
2	4	0.0	-0.6
3	4	0.0	-0.6
4	4	0.0	-0.6
5	2	1.0	2.7
6	3	4.0	12.1
7	1	0.0	-0.3
8	1	0.0	-0.3
9	2	1.0	2.7
10	1	1.0	2.7
11	2	0.0	-0.3
12	3	1.0	3.0
13	3	1.0	3.0
14	1	1.0	2.7
15	2	1.0	2.7
		MIN	-0.6
		MAX	12.1
		MEAN	2.7
		SD	4.1
		Transuranic $DCGL_W$	20

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GAMMA SPECTROSCOPY

ANALYTICAL RESULTS

RISS RFETS	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	COC: 02S0170#001 02S0170#001z	Page 1 of 1

Sampler(s) (time/date)	Contact/Requester JOHNSEN, SHELLY/BRITTEN, JAY	Telephone No. 6401/3050
RIN 02S0170	Sampling Origin BLDG. 880 ROOF COUPONS	Purchase Order/Charge Code EED80162
Project Title ~~5000~~ SB 5/15/02 ~~6005~~ METAL ROOF COUPONS	Logbook No.	Ice Chest No. Temp.
To (Lab) Canberra Mobile Lab Service	Method of Shipment	Bill of Lading/Air Bill No.
Protocol	Related COC (if any)	PRE

POSSIBLE SAMPLE HAZARDS/REMARKS

Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES NO
Are other known hazardous substances present? YES NO
** ** **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time

PLEASE SHOOT ~~EACH~~ SAMPLE WITH A FOUR HOUR COUNT AND REPORT AS INDICATED ON THE COC, 02S0170-001.001 is sample #1 and #2.

SB 5/15/02

Bottle No.	Customer Number	Matrix	Date/Time	Location	Container (size/type)	Sample Analysis [Field-Filtered] LIC (Method Title) [TAT]/(Parameter List)	Preservative; Packing
02S0170 -001.001	4 HOUR COUNT	SOLID		BLDG. 880 ROOF COUPONS	1-SAMPLE N/A	RC10B019 (GS-I-N/S-Lab-Nstd ISOCS-Solid) [24hrR] (AM241, U235, U238)	None; None
~~02S0170 -002.001~~	~~4 HOUR COUNT~~	~~SOLID~~		~~BLDG. 880 ROOF COUPONS~~	~~1-SAMPLE N/A~~	~~RC10B019 (GS-I-N/S-Lab-Nstd ISOCS-Solid) [24hrR] (AM241, U235, U238)~~	~~None; None~~

SB 5/15/02

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	5/15/02 0830	[signature]	5/15/02 0830	[signature]	5/15/02 0830	[signature]	5-15-02 0830
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., returned to customer, disposed of per lab procedure, used in analytical process)	Disposed By	Date/Time COC printed: 05/14/02 15:14 (Version:coc_r17.rpt)

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COVER PAGE

RC10B, On-Site Radiological Screening by Gamma Spectrometry

Gamma Spectrometry

PROJECT SAMPLE IDENTIFICATION CROSS-REFERENCE TO CMLS SAMPLE LABORATORY IDs

BATCH 0205154453
Subcontract KH001076OZ

COC NUMBER	PROJECT SAMPLE ID NUMBER	SITE SAMPLE NUMBER(S)	CMLS SAMPLE ID NUMBER(S)	OBJECT NUMBER(S) CMLS	LINE ITEM CODE(S)
02S0170#001	02S0170-001.001	02S0170-001.001, 002.001	CMLS-1141	Obj00428	RC10B019

Calibration Package ID: Object individually modeled using ISOCS.

Comments:

Sample was counted in T130A using BEGe Detector LI009.

Certification Statement:

"I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this sample data package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature."

Larry Umbaugh
Signature

Date: 5/16/02

Laboratory Director
Title

CANBERRA


```
***********************************************************************
*****        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 : 5/16/2002 6:01:29 AM

RIN Number : 02S0170
Analytical Batch ID : 0205154453
Line Item Code : RC10B019

Filename: A:\OBJ00428.CNF

Sample Number : 02S0170-001.001
Lab Sample Number : CMLS-1141
Sample Receipt Date : 5/15/2002
Sample Volume Received : 2.81E+001 Grams

Result Identifier : N/A

Peak Locate Threshold : 2.25
Peak Locate Range (in channels) : 100 - 8192
Peak Area Range (in channels) : 100 - 8192
Identification Energy Tolerance : 1.000 keV

Sample (Final Aliquot Size) : 2.810E+001 Grams
Sample Quantity Error : 0.000E+000
Systematic Error Applied : 0.000E+000

Sample Taken On : 5/09/2002 7:00:00 AM
Acquisition Started : 5/15/2002 2:21:01 PM

Count Time : 14400.0 seconds
Real Time : 14401.2 seconds
Dead Time : 0.01 %

Energy Calibration Used Done On : 4/04/02
Energy = -0.150 + 0.250*ch + -5.18E-008*ch^2 + 4.20E-012*ch^3

Corrections Applied:
None

Efficiency Calibration Used Done On : 5/16/02
Efficiency Geometry ID : 02S0170-001.001

Analyzed By: Marilyn Umbaugh Date: 5/16/02

Reviewed By: Sheri Chambers Date: 5/16/02

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

Site Sample ID : 02S0170-001.001

Analytical Batch ID : 0205154453

Sample Type (Result Identifier): OBJ

Lab Sample Number : CMLS-1141

Geometry ID : 02S0170-001.001

Filename: A:\OBJ00428.CNF

Detector Name: BEGE

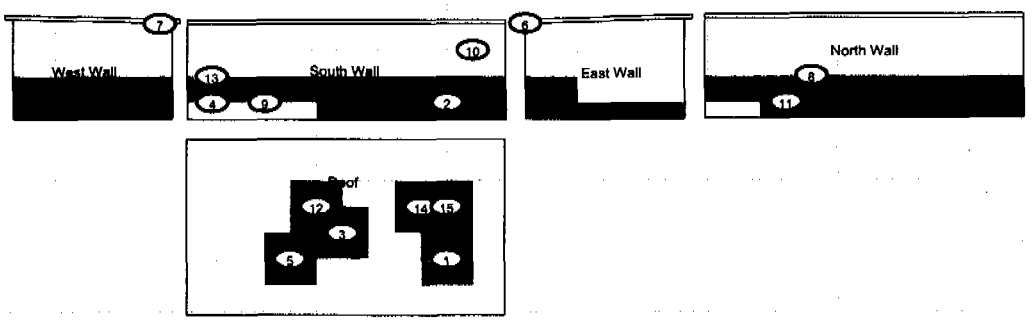
MDA = Curie method as specified in Genie-2000 Customization Tools Manual Appendix B; Basic Algorithms.

Analyte	Activity (pCi/Grams)	2-Sigma Uncertainty (pCi/Grams)	MDA (pCi/Grams)
K-40	0.00E+000	0.00E+000	1.90E+000
TL-208	0.00E+000	0.00E+000	1.18E-001
PO-210	0.00E+000	0.00E+000	1.23E+004
BI-212	0.00E+000	0.00E+000	1.73E+000
PB-212	4.85E-002	5.73E-002	9.61E-002
BI-214	0.00E+000	0.00E+000	2.76E-001
PB-214	0.00E+000	0.00E+000	1.83E-001
RA-226	0.00E+000	0.00E+000	1.35E+000
AC-228	0.00E+000	0.00E+000	4.49E-001
TH-230	0.00E+000	0.00E+000	5.34E+000
Th-231	0.00E+000	0.00E+000	3.52E-001
PA-234	0.00E+000	0.00E+000	9.63E-002
PA-234M	0.00E+000	0.00E+000	1.28E+001
U-235	0.00E+000	0.00E+000	8.24E-002
U238/234	0.00E+000	0.00E+000	4.57E-001
AM-241	0.00E+000	0.00E+000	5.26E-002

PRE-DEMOLITION SURVEY

Survey Area: B **Survey Unit: G15-B-002** **Classification: 3**
Building: 880
Survey Unit Description: Exterior
Total Area: 224 sq. m. **Total Roof & Floor Area: 82 sq. m.**

880 Exterior



Scan Area

SURVEY MAP LEGEND
- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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.

N

0 FEET 30
0 METERS 10

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

Scan Survey Information
Survey Instrument ID #(s): 7, 8
RCT ID #(s): 1, 2

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

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

DynCorp
THE ART OF TECHNOLOGY

MAP ID: 02-0148/880-EX-SC May 16, 2002

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☐ Property ☒ Waste ☐ Sample

RELEASE EVALUATION FORM

Release Evaluation No.: 020416-00883-001 **EXTENDED:** NO **EXPIRES.:** _____ **Charge No.:** n/a

PART I SENDER/CUSTODIAN ACKNOWLEDGEMENT

Description of Property/Waste/Sample To Be Released/Transferred:
Filter plenums FP-501 & FP-503 from B875 of the 886 Cluster (used for non-radiological purposes)

Current Location: B875

Destination: Republic Services, Front Range Landfill, Erie, Colorado

New Recipient/Custodian: Republic Services, Front Range Landfill, Erie, Colorado

History/Process Knowledge: The materials described in this release evaluation were installed from the manufacturer in B875 Plenum of the 886 Facility. The areas that this plenum system filtered were not posted or controlled as CA/HCA/ARA. FP-501 was used to provide negative draw from the front office areas of B886. This area has been routinely surveyed over the last several years and has never shown presence of DOE controlled radioactive materials. In addition, the front office areas were released from radiological controls via the MARSSIM/PDS process at RFETS. FP-503 was used to provide negative draw on B875 itself. Air monitoring equipment, effluent surveys, and routine radiological surveys in B875 have never shown the presence of DOE controlled radioactive materials. Both plenum systems have been routinely surveyed (interior and exterior) and have never shown the presence of DOE controlled radioactive materials. **There is a very low probability that these items are radiologically contaminated.**

Has the specified material ever been in an RMMA/RBA/CA or contacted DOE controlled radioactive materials? UNKNOWN

1) By signing below, I certify information provided in Part I of this release evaluation to be true and accurate.
2) By signing below, I agree to comply with the specific requirements noted in Part II of this release evaluation.

Sender/Custo[redacted]Date: 6/26/02 Ext 6438

COPY

☐ Property ☒ Waste ☐ Sample

RELEASE EVALUATION FORM

Release Evaluation No.: 020416-00883-001 EXTENDED: NO EXPIRES.: _____ Charge No.: n/a

PART II **RADIOLOGICAL ENGINEERING**

SPECIFIC REQUIREMENTS AND/OR COMMENTS:

SURVEYS REQUIRED

COPY

The items described in this release evaluation have a low potential for presence of DOE controlled radioactive material. All items have been reviewed and inspected by B883 Radiological Engineering (R. Neveau, x3461) and meet requirements for unrestricted release of property (i.e., original paint, relatively free of grease/oil) and may be considered for unrestricted release from radiological controls.

Survey Requirements:
The equipment described in this release evaluation shall be surveyed for unrestricted release in accordance with RSP 07.02 and 09.01. A representative survey shall be performed for both fixed and removable contamination and shall be defined as follows:
(All surveys shall be performed for both alpha and beta total and removable activity.)
SURVEY REQUIREMENTS:

- Minimum scan survey (alpha and beta) on 100% of accessible interior surfaces of entire unit. Minimum scan survey of 50% of all accessible exterior surfaces of each plenum system.
- A minimum of fifteen (15) PAT surveys (fixed, alpha +beta) and fifteen (15) swipe survey (using disc smear counted on a SAC/BC-4, Ludlum-2929, or equivalent) shall be performed on the interior surfaces of EACH stage or chamber. Focus shall be on the floors, horizontal surfaces, and surfaces where airflow would have impinged any potentially contaminated airflow.

NOTE:ALL FILTER MEDIA SHALL BE SURVEYED AND REMOVED PRIOR TO PERFORMANCE OF THE INTERIOR SURVEYS OF THIS SPECIFIC AREA OF EACH STAGE.

- RCT may use professional judgement on any additional PAT/swipe surveys for the items covered in this release evaluation.

NOTE: In addition to the survey requirements listed above, RCT(s) shall map the unit to provide information on the location of all survey points. All surveys and accompanying maps SHALL be forwarded to Radiological Engineering for review.

Evalua[redacted] Date: 06-24-02 Ext: 3461 Pager 212 2581

APPROVAL FOR TRANSFER/SHIPMENT

This equipment and materials may be released from radiological controls and sent to sanitary landfill.

Approv[redacted] Date 6/26/02 Ext: 5825 Pager 212 2852

PROPERTY/WASTE RELEASE EVALUATION SIGNATURE REQUIREMENTS

Release Evaluation #: 020416-00883-001 **Page 3 of** 21

Release Evaluation for Waste:

A Release Evaluation for Waste requires an evaluation and unrestricted release approval signature. The evaluation signature is by the Radiological Engineer (RE) providing the methods or criteria for unrestricted release (i.e., survey requirements, analytical requirements, no survey required, etc.). The unrestricted release approval signature for a Release Evaluation for Waste shall be a RE authorized to provide unrestricted release approval. In addition, the evaluation and unrestricted release approval signatures shall not be the same RE. The intent of this provision is to provide peer review of the evaluation and method of unrestricted release. It is important the RE take the peer review process seriously and not become a "rubber stamp" for their fellow engineer.

Release Evaluation for Property:

A Release Evaluation for Property requires an evaluation and unrestricted release approval signature. For a Release Evaluation for Property, the evaluation and unrestricted release signature may be the same RE. In the past, only one signature was required for property for which a RE could provide an unrestricted release on the basis of process knowledge/history.

Release Evaluation for Samples:

COPY

Samples are any waste or material that is being shipped to an off-site facility for analysis. Samples that may be provided with an unrestricted release using process knowledge/history or standard contamination survey techniques may be authorized for shipment to an off-site facility using the signatory requirements specified for property. Samples which cannot be provided with an unrestricted release using process knowledge/history or standard contamination survey techniques shall be authorized for shipment from the Site using the methodology specified for waste, i.e., second signature being provided by a RE authorized to perform peer review and approval for shipment.

The approval for transfer/shipment section of a Sample Release Evaluation (SRE) shall be revised as noted below for samples which cannot be provide with an unrestricted release.

"The samples specified in Part 1 of this release evaluation are being provided with authorization for transport as non-radioactive materials in accordance with Department of Transportation (49 CFR) regulation. This authorization for shipment does not constitute an unrestricted release."

Additional Documentation:

Number of lines per section may be modified or additional pages attached to ensure adequate documentation of information necessary to perform release evaluation.

Additional pages or attachments to a release evaluation shall have the evaluation number, Page __ of __, initials of Radiological Engineer signing approval for transfer/shipment and date.

COPY

RS FORMS 07.02-01

[redacted]

INSTRUMENT DATA

Mfg.	Ludlum	Mfg.	NE Electra	Mfg.	NE Electra
Model	2929	Model	DP-6	Model	DP-6
Serial #	176082	Serial #	3552	Serial #	3248
Cal Due	6/11/02	Cal Due	4/25/02	Cal Due	9/2/02
Bkg	0.4 cpm	Bkg	7 cpmα	Bkg	7 cpmα
Eff.	33.9 %	Eff.	21.5 %	Eff.	22.1 %
MDA	18 dpm	MDA	70 dpmα	MDA	68 dpmα
Mfg.	Ludlum	Mfg.	NE Electra	Mfg.	NE Electra
Model	2929	Model	DP-6	Model	DP-6
Serial #	176082	Serial #	3552	Serial #	3248
Cal Due	6/11/02	Cal Due	4/25/02	Cal Due	9/2/02
Bkg	110.9 cpm	Bkg	659 cpmβ	Bkg	728 cpmβ
Eff.	39.2 %	Eff.	32.3 %	Eff.	30 %
MDA	205 dpm	MDA	378 dpmβ	MDA	427 dpmβ

Survey Type: Contamination
Building: 875
Location: 501 Plenum (Inside)
Purpose: Release Evaluation Survey

RWP #: N/A

Date: 4/17/02 Time: 1530

[redacted]

PRN/REN # : 020416-00883-001 p.4 of 21

Comments: Isotope of concern is HUEN. All accessible surfaces scanned with no readings above background noted.

COPY

SURVEY RESULTS

Swipe #		ALPHA Swipe dpm/100cm2	ALPHA Direct dpm/100cm2	ALPHA Wipe dpm/wipe	BETA Swipe dpm/100cm2	BETA Direct dpm/100cm2	BETA Wipe dpm/wipe
1	Wall	<18	<70	N/A	<205	<427	N/A
2	Wall	<18	<70	N/A	<205	<427	N/A
3	Wall	<18	<70	N/A	<205	<427	N/A
4	Wall	<18	<70	N/A	<205	<427	N/A
5	Wall	<18	<70	N/A	<205	<427	N/A
6	Wall	<18	<70	N/A	<205	<427	N/A
7	Filter Rack	<18	<70	N/A	<205	<427	N/A
8	Filter Rack	<18	<70	N/A	<205	<427	N/A
9	Filter Rack	<18	<70	N/A	<205	<427	N/A
10	Wall	<18	<70	N/A	<205	<427	N/A
11	Wall	<18	<70	N/A	<205	<427	N/A
12	Door	<18	<70	N/A	<205	<427	N/A
13	Floor	<18	<70	N/A	<205	<427	N/A
14	Floor	<18	<70	N/A	<205	<427	N/A
15	Ceiling	<18	<70	N/A	<205	<427	N/A
16	Filter Rack	<18	<70	N/A	<205	<427	N/A
17	Filter Rack	<18	<70	N/A	<205	<427	N/A
18	Filter Rack	<18	<70	N/A	<205	<427	N/A
19	Wall	<18	<70	N/A	<205	<427	N/A
20	Wall	<18	<70	N/A	<205	<427	N/A

Date Reviewed: 4-22-02 RS Supervision: [redacted]

COPY

~~Rev. 02/00~~ JA 4/30/02
3-PRO-RSP-07.01 (EFFECTIVE 7/12/01)

JA 4/30/02
~~Page 1 of 7~~

@RAH JA 4/30/02
PAGE 1 OF 7

COPY

PRE# 020416-00813-001 p. 5 of 21

SURVEY RESULTS

Swipe #	LOCATION	ALPHA Swipe dpm/100cm2	ALPHA Direct dpm/100cm2	ALPHA Wipe dpm/wipe	BETA Swipe dpm/100cm2	BETA Direct dpm/100cm2	BETA Wipe dpm/wipe
21	Wall	<18	<70	N/A	<205	<427	N/A
22	Filter Rack	<18	<70	N/A	<205	<427	N/A
23	Filter Rack	<18	<70	N/A	<205	<427	N/A
24	Filter Rack	<18	<70	N/A	<205	<427	N/A
25	Wall	<18	<70	N/A	<205	<427	N/A
26	Door	<18	<70	N/A	<205	<427	N/A
27	Wall	<18	<70	N/A	<205	<427	N/A
28	Floor	<18	<70	N/A	<205	<427	N/A
29	Floor	<18	<70	N/A	<205	<427	N/A
30	Ceiling	<18	<70	N/A	<205	<427	N/A
31	Wall	<18	<70	N/A	<205	<427	N/A
32	Wall	<18	<70	N/A	<205	<427	N/A
33	Wall	<18	<70	N/A	<205	<427	N/A
34	Wall	<18	<70	N/A	<205	<427	N/A
35	Wall	<18	<70	N/A	<205	<427	N/A
36	Wall	<18	<70	N/A	<205	<427	N/A
37	Wall	<18	<70	N/A	<205	<427	N/A
38	Wall	<18	<70	N/A	<205	<427	N/A
39	Wall	<18	<70	N/A	<205	<427	N/A
40	Wall	<18	<70	N/A	<205	<427	N/A
41	Wall	<18	<70	N/A	<205	<427	N/A
42	Door	<18	<70	N/A	<205	<427	N/A
43	Floor	<18	<70	N/A	<205	<427	N/A
44	Floor	<18	<70	N/A	<205	<427	N/A
45	Ceiling	<18	<70	N/A	<205	<427	N/A
46	Filter Rack	<18	<70	N/A	<205	<427	N/A
47	Filter Rack	<18	<70	N/A	<205	<427	N/A
48	Filter Rack	<18	<70	N/A	<205	<427	N/A
49	Wall	<18	<70	N/A	<205	<427	N/A
50	Wall	<18	<70	N/A	<205	<427	N/A
51	Wall	<18	<70	N/A	<205	<427	N/A
52	Filter Rack	<18	<70	N/A	<205	<427	N/A
53	Filter Rack	<18	<70	N/A	<205	<427	N/A
54	Filter Rack	<18	<70	N/A	<205	<427	N/A
55	Wall	<18	<70	N/A	<205	<427	N/A
56	Wall	<18	<70	N/A	<205	<427	N/A
57	Wall	<18	<70	N/A	<205	<427	N/A
58	Floor	<18	<70	N/A	<205	<427	N/A
59	Floor	<18	<70	N/A	<205	<427	N/A
60	Ceiling	<18	<70	N/A	<205	<427	N/A
61	Wall	<18	<70	N/A	<205	<427	N/A
62	Wall	<18	<70	N/A	<205	<427	N/A
63	Wall	<18	<70	N/A	<205	<427	N/A

[redacted]

SURVEY RESULTS

Swipe #	LOCATION	ALPHA Swipe dpm/100cm2	ALPHA Direct dpm/100cm2	ALPHA Wipe dpm/wipe	BETA Swipe dpm/100cm2	BETA Direct dpm/100cm2	BETA Wipe dpm/wipe
64	Wall	<18	<70	N/A	<205	<427	N/A
65	Wall	<18	<70	N/A	<205	<427	N/A
66	Wall	<18	<70	N/A	<205	<427	N/A
67	Wall	<18	<70	N/A	<205	<427	N/A
68	Wall	<18	<70	N/A	<205	<427	N/A
69	Wall	<18	<70	N/A	<205	<427	N/A
70	Wall	<18	<70	N/A	<205	<427	N/A
71	Wall	<18	<70	N/A	<205	<427	N/A
72	Door	<18	<70	N/A	<205	<427	N/A
73	Floor	<18	<70	N/A	<205	<427	N/A
74	Floor	<18	<70	N/A	<205	<427	N/A
75	Ceiling	<18	<70	N/A	<205	<427	N/A
76	Wall	<18	<70	N/A	<205	<427	N/A
77	Wall	<18	<70	N/A	<205	<427	N/A
78	Wall	<18	<70	N/A	<205	<427	N/A
79	Wall	<18	<70	N/A	<205	<427	N/A
80	Wall	<18	<70	N/A	<205	<427	N/A
81	Wall	<18	<70	N/A	<205	<427	N/A
82	Wall	<18	<70	N/A	<205	<427	N/A
83	Wall	<18	<70	N/A	<205	<427	N/A
84	Wall	<18	<70	N/A	<205	<427	N/A
85	Filter Rack	<18	<70	N/A	<205	<427	N/A
86	Filter Rack	<18	<70	N/A	<205	<427	N/A
87	Filter Rack	<18	<70	N/A	<205	<427	N/A
88	Floor	<18	<70	N/A	<205	<427	N/A
89	Floor	<18	<70	N/A	<205	<427	N/A
90	Ceiling	<18	<70	N/A	<205	<427	N/A
91	Wall	>18	<70	N/A	<205	<427	N/A
92	Wall	<18	<70	N/A	<205	<427	N/A
93	Wall	<18	<70	N/A	<205	<427	N/A
94	Wall	<18	<70	N/A	<205	<427	N/A
95	Wall	<18	<70	N/A	<205	<427	N/A
96	Door	<18	<70	N/A	<205	<427	N/A
97	Wall	<18	<70	N/A	<205	<427	N/A
98	Wall	<18	<70	N/A	<205	<427	N/A
99	Wall	<18	<70	N/A	<205	<427	N/A
100	Wall	<18	<70	N/A	<205	<427	N/A
101	Wall	<18	<70	N/A	<205	<427	N/A
102	Door	<18	<70	N/A	<205	<427	N/A
103	Floor	<18	<70	N/A	<205	<427	N/A
104	Floor	<18	<70	N/A	<205	<427	N/A
105	Ceiling	<18	<70	N/A	<205	<427	N/A
NA	NA	NA	NA	NA	NA	NA	NA

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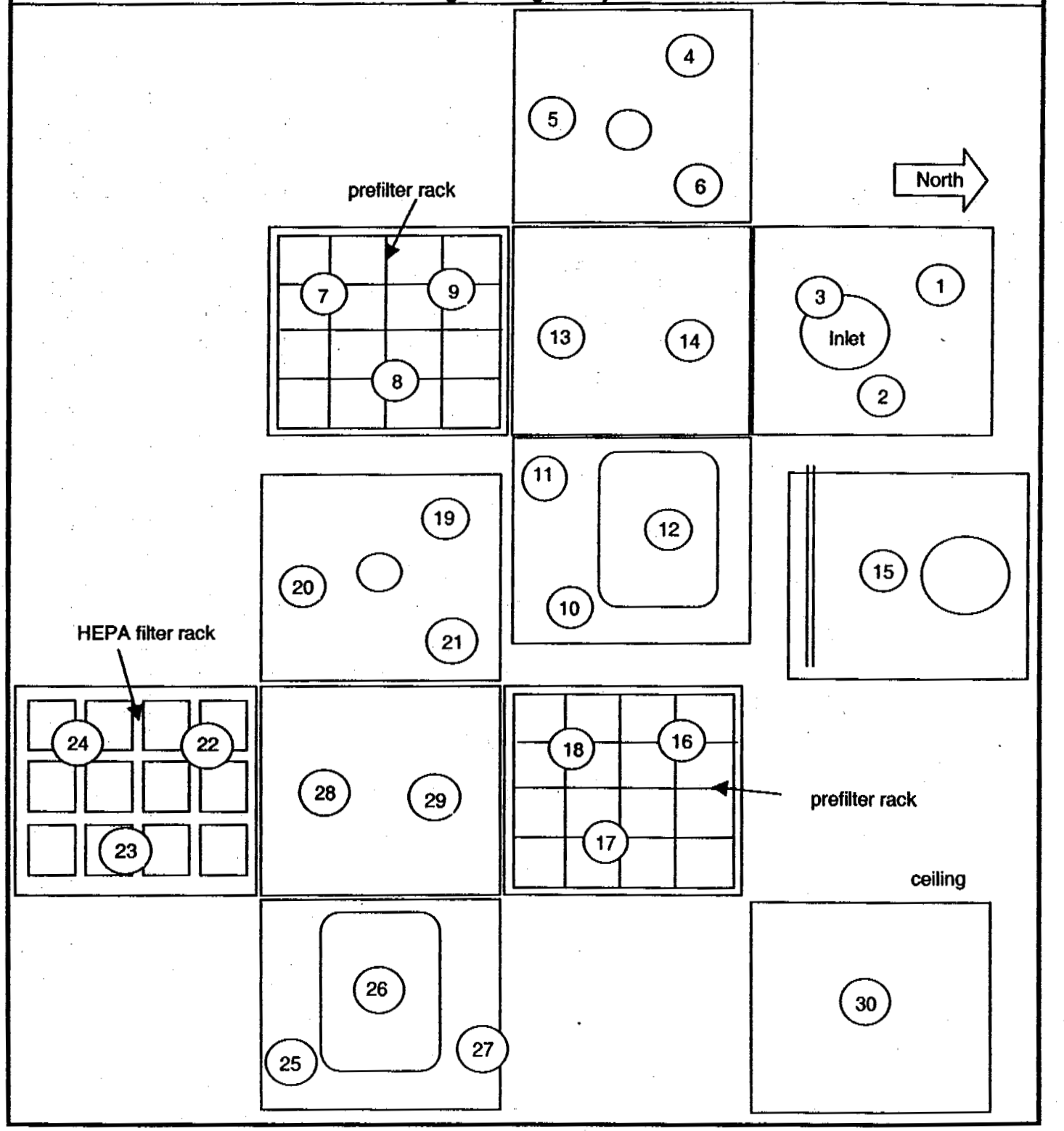
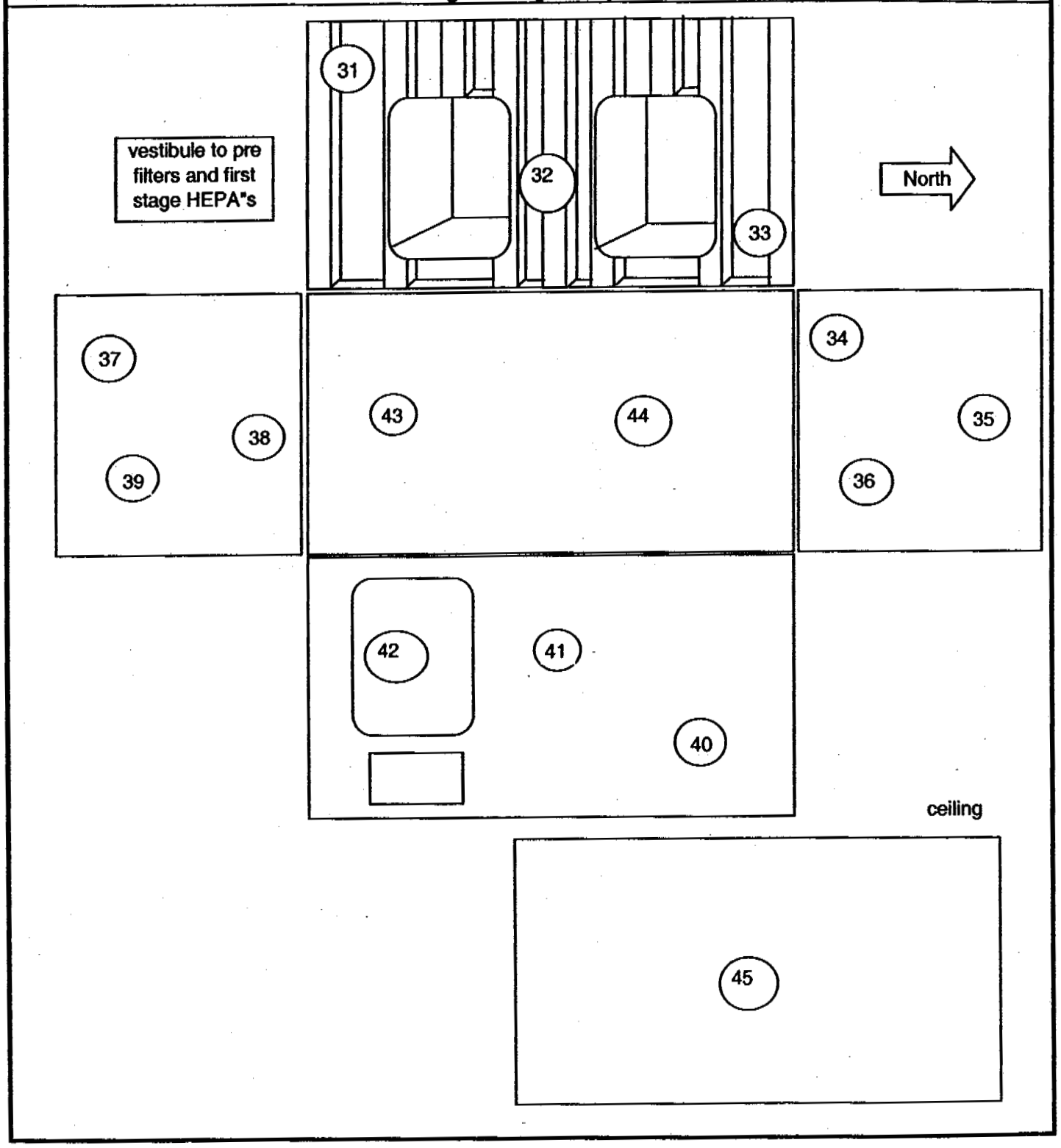
Drawing Showing Survey Points



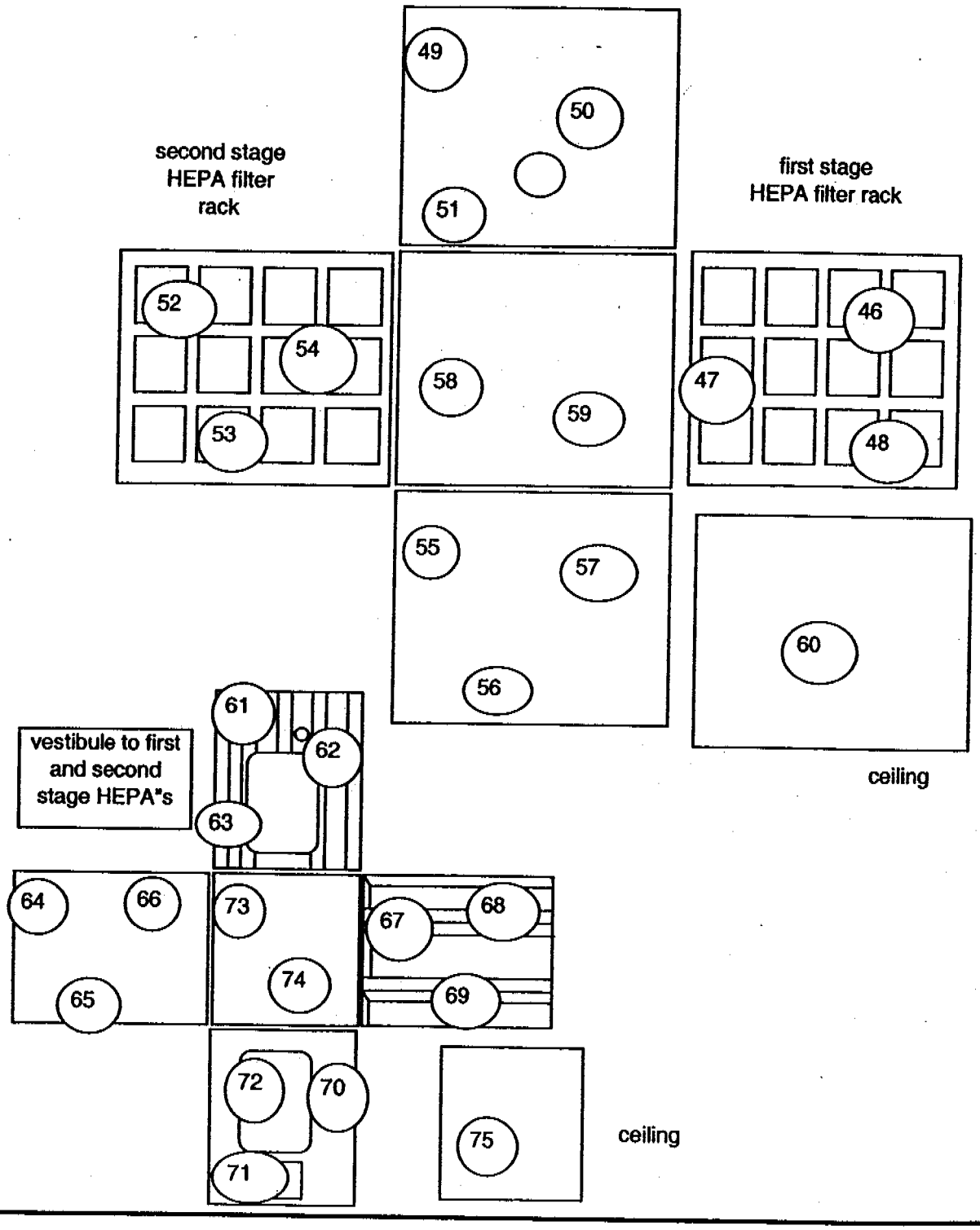
PREH 020416-0083-001 p 8 of 21

Drawing Showing Survey Points



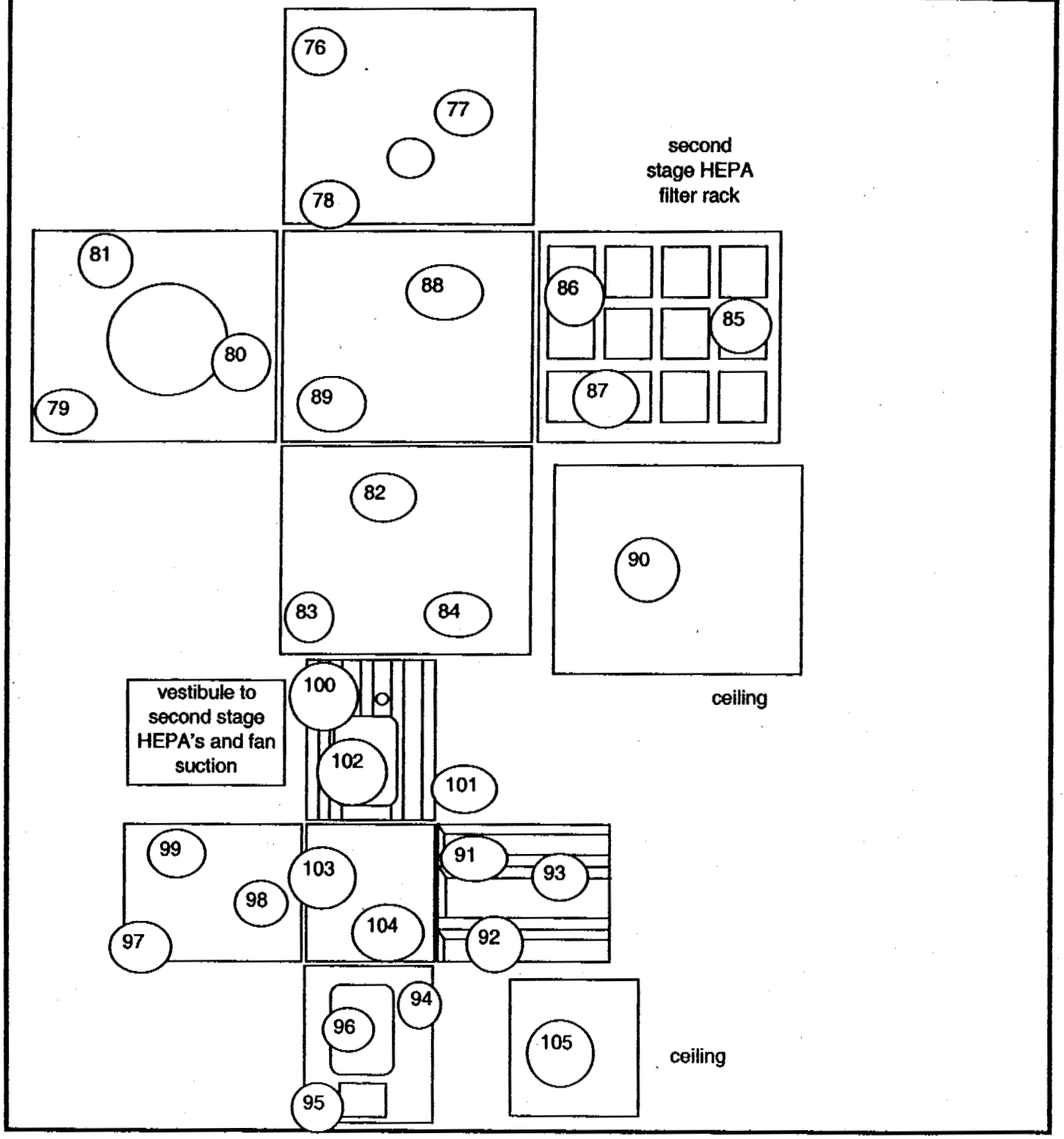
PREH:020416-00883-001 p. 9 of 21

Drawing Showing Survey Points



PRE# 020416-00883-001 p. 10 of 21

Drawing Showing Survey Points



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ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg.	Ludlum	Mfg.	NE Electra	Mfg.	NE Electra
Model	2929	Model	DP-6	Model	DP-6
Serial #	176082	Serial #	3552	Serial #	3248
Cal Due	6/11/02	Cal Due	4/25/02	Cal Due	9/2/02
Bkg	0.4 cpmα	Bkg	7 cpmα	Bkg	7 cpmα
Eff.	33.9 %	Eff.	21.5 %	Eff.	22.1 %
MDA	18 dpmα	MDA	70 dpmα	MDA	68 dpmα
Mfg.	Ludlum	Mfg.	NE Electra	Mfg.	NE Electra
Model	2929	Model	DP-6	Model	DP-6
Serial #	176082	Serial #	9/21/09	Serial #	3248
Cal Due	6/11/02	Cal Due	4/25/02	Cal Due	9/2/02
Bkg	110.9 cpmα	Bkg	659 cpmβ	Bkg	728 cpmβ
Eff.	39.2 %	Eff.	32.3 %	Eff.	30 %
MDA	205 dpmα	MDA	378 dpmβ	MDA	427 dpmβ

Survey Type: Contamination
Building: 875
Location: 501 Plenum (Outside)
Purpose: Release Evaluation Survey
RWP #: N/A
Date: 4/17/02 **Time:** 1530

[redacted]

PRN/REN # : 020416-00883-001
Comments: Isotope of concern is HUEN. All accessible surfaces scanned with no readings above background noted.

SURVEY RESULTS

Swipe #	LOCATION	ALPHA Swipe dpm/100cm2	ALPHA Direct dpm/100cm2	ALPHA Wipe dpm/wipe	BETA Swipe dpm/100cm2	BETA Direct dpm/100cm2	BETA Wipe dpm/wipe
1	See Map	<18	<70	N/A	<205	<427	N/A
2	See Map	<18	<70	N/A	<205	<427	N/A
3	See Map	<18	<70	N/A	<205	<427	N/A
4	See Map	<18	<70	N/A	<205	<427	N/A
5	See Map	<18	<70	N/A	<205	<427	N/A
6	See Map	<18	<70	N/A	<205	<427	N/A
7	See Map	<18	<70	N/A	<205	<427	N/A
8	See Map	<18	<70	N/A	<205	<427	N/A
9	See Map	<18	<70	N/A	<205	<427	N/A
10	See Map	<18	<70	N/A	<205	<427	N/A
11	See Map	<18	<70	N/A	<205	<427	N/A
12	See Map	<18	<70	N/A	<205	<427	N/A
13	See Map	<18	<70	N/A	<205	<427	N/A
14	See Map	<18	<70	N/A	<205	<427	N/A
15	See Map	<18	<70	N/A	<205	<427	N/A
16	See Map	<18	<70	N/A	<205	<427	N/A
17	See Map	<18	<70	N/A	<205	<427	N/A
18	See Map	<18	<70	N/A	<205	<427	N/A
19	See Map	<18	<70	N/A	<205	<427	N/A
20	See Map	<18	<70	N/A	<205	<427	N/A

Date Reviewed: 4-22-02 **RS Supervision:** [redacted]

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ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

SURVEY RESULTS

Swipe #	LOCATION	ALPHA Swipe dpm/100cm2	ALPHA Direct dpm/100cm2	ALPHA Wipe dpm/wipe	BETA Swipe dpm/100cm2	BETA Direct dpm/100cm2	BETA Wipe dpm/wipe
21	See Map	<18	<70	N/A	<205	<427	N/A
22	See Map	<18	<70	N/A	<205	<427	N/A
23	See Map	<18	<70	N/A	<205	<427	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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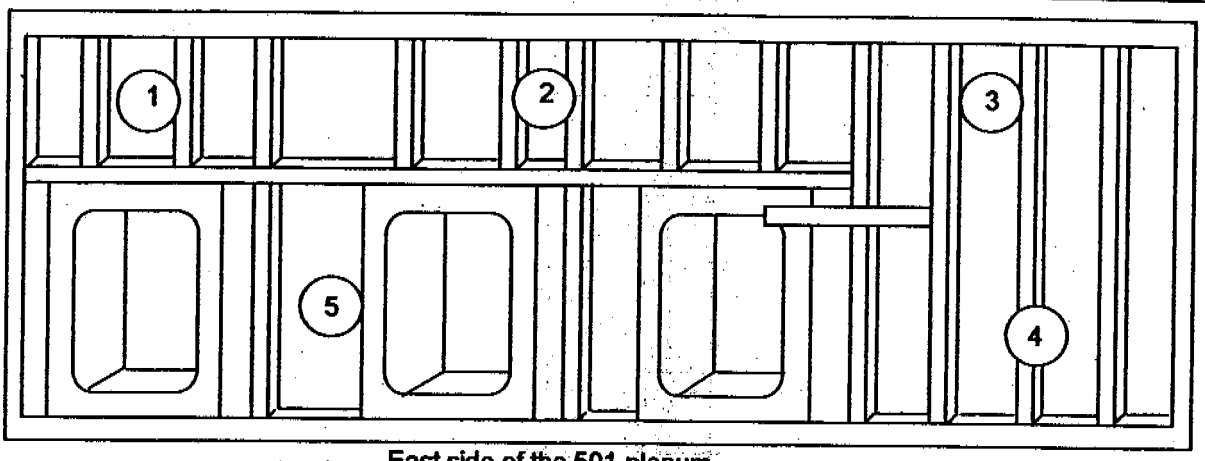
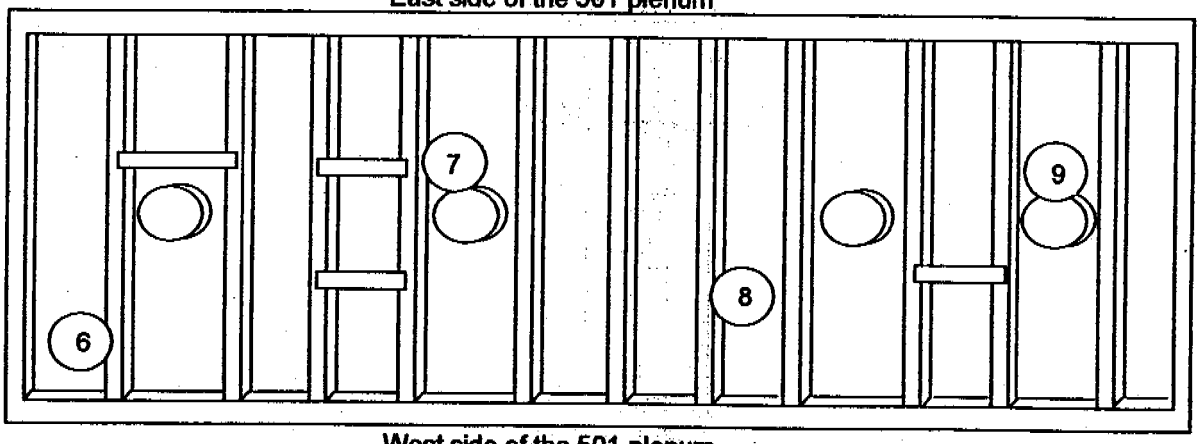
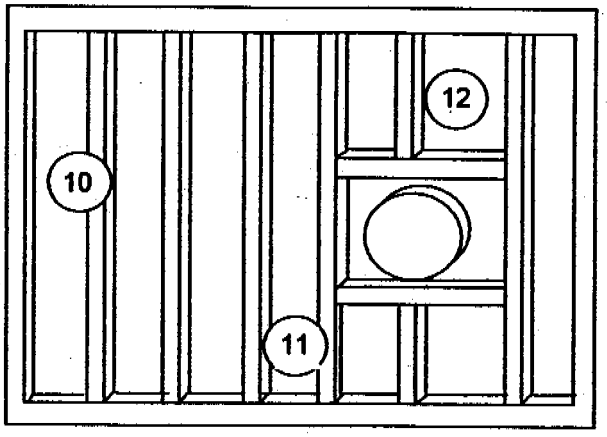
Drawing Showing Survey Points



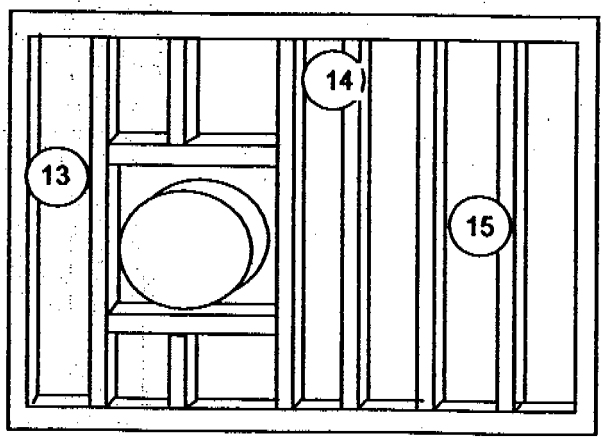
East side of the 501 plenum



West side of the 501 plenum



North end of plenum



South end of plenum

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Drawing Showing Survey Points

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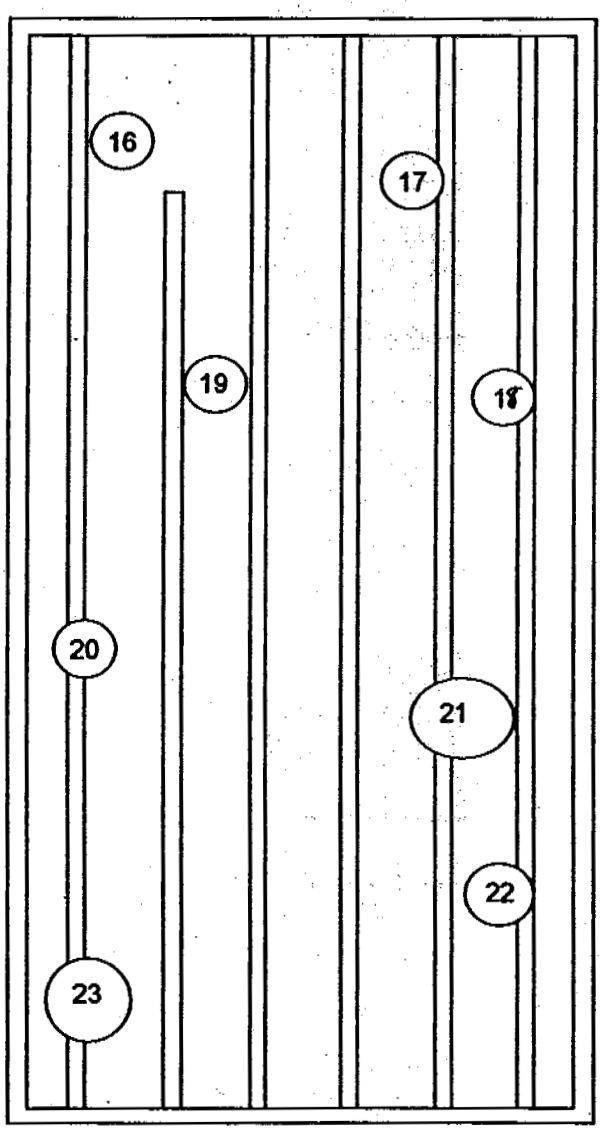

Top Side of
501 Plenum

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FOGGY BLUFFS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg.	Ludlum	Mfg.	NE Electra	Mfg.	NE Electra
Model	2929	Model	DP-6	Model	DP-6
Serial #	176102	Serial #	3102	Serial #	3248
Cal Due	6/10/02	Cal Due	7/15/02	Cal Due	9/2/02
Bkg	0.3 cpmα	Bkg	4 cpmβ	Bkg	7 cpmα
Eff.	33.9 %	Eff.	23.4 %	Eff.	22.1 %
MDA	18 dpmα	MDA	51 dpmβ	MDA	68 dpmα

Mfg.	Ludlum	Mfg.	NE Electra	Mfg.	NE Electra
Model	2929	Model	DP-6	Model	DP-6
Serial #	176102	Serial #	3102	Serial #	3248
Cal Due	6/10/02	Cal Due	7/15/02	Cal Due	9/2/02
Bkg	110.5 cpmα	Bkg	698 cpmβ	Bkg	728 cpmβ
Eff.	39.2 %	Eff.	31.7 %	Eff.	30 %
MDA	205 dpmα	MDA	396 dpmβ	MDA	427 dpmβ

Survey Type: Contamination
Building: 875
Location: 503 Plenum (Inside)
Purpose: Release Evaluation Survey

RWP #: N/A

Date: 4/18/02 Time: 1530

[redacted]

PRN/REN # : 020416-00883-001
Comments: Scan survey performed on 100% of accessible surfaces with no readings above background noted. Isotopes of concern are HUEN.

SURVEY RESULTS

Swipe #	LOCATION	ALPHA Swipe dpm/100cm2	ALPHA Direct dpm/100cm2	ALPHA Wipe dpm/wipe	BETA Swipe dpm/100cm2	BETA Direct dpm/100cm2	BETA Wipe dpm/wipe
1	Ceiling	<18	<68	N/A	<205	<427	N/A
2	Wall	<18	<68	N/A	<205	<427	N/A
3	Wall	<18	<68	N/A	<205	<427	N/A
4	Wall	<18	<68	N/A	<205	<427	N/A
5	Wall	<18	<68	N/A	<205	<427	N/A
6	Wall	<18	<68	N/A	<205	<427	N/A
7	Wall	<18	<68	N/A	<205	<427	N/A
8	Wall	<18	<68	N/A	<205	<427	N/A
9	Wall	<18	<68	N/A	<205	<427	N/A
10	Wall	<18	<68	N/A	<205	<427	N/A
11	Floor	<18	86	N/A	<205	<427	N/A
12	Floor	<18	109	N/A	<205	<427	N/A
13	Wall	<18	<68	N/A	<205	<427	N/A
14	Wall	<18	<68	N/A	<205	<427	N/A
15	Wall	<18	<68	N/A	<205	<427	N/A
16	Wall	<18	<68	N/A	<205	<427	N/A
17	Wall	<18	<68	N/A	<205	<427	N/A
18	Wall	<18	<68	N/A	<205	<427	N/A
19	Wall	<18	<68	N/A	<205	<427	N/A
20	Wall	<18	<68	N/A	<205	<427	N/A

Date Reviewed: 4-22-02 RS Supervision: [redacted]

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ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

SURVEY RESULTS

Swipe #	LOCATION	ALPHA Swipe dpm/100cm2	ALPHA Direct dpm/100cm2	ALPHA Wipe dpm/wipe	BETA Swipe dpm/100cm2	BETA Direct dpm/100cm2	BETA Wipe dpm/wipe
21	Wall	<18	<68	N/A	<205	<427	N/A
22	Wall	<18	<68	N/A	<205	<427	N/A
23	Wall	<18	<68	N/A	<205	<427	N/A
24	Wall	<18	<68	N/A	<205	<427	N/A
25	Wall	<18	<68	N/A	<205	<427	N/A
26	Wall	<18	<68	N/A	<205	<427	N/A
27	Wall	<18	<68	N/A	<205	<427	N/A
28	Floor	<18	<68	N/A	<205	<427	N/A
29	Floor	<18	<68	N/A	<205	<427	N/A
30	Ceiling	<18	<68	N/A	<205	<427	N/A
31	Wall	<18	<68	N/A	<205	<427	N/A
32	Wall	<18	<68	N/A	<205	<427	N/A
33	Wall	<18	<68	N/A	<205	<427	N/A
34	Wall	<18	<68	N/A	<205	<427	N/A
35	Wall	<18	<68	N/A	<205	<427	N/A
36	Wall	<18	<68	N/A	<205	<427	N/A
37	Floor	<18	<68	N/A	<205	<427	N/A
38	Floor	<18	<68	N/A	<205	<427	N/A
39	Wall	<18	<68	N/A	<205	<427	N/A
40	Wall	<18	<68	N/A	<205	<427	N/A
41	Floor	<18	<68	N/A	<205	<427	N/A
42	Floor	<18	<68	N/A	<205	<427	N/A
43	Wall	<18	<68	N/A	<205	<427	N/A
44	Wall	<18	<68	N/A	<205	<427	N/A
45	Wall	<18	<68	N/A	<205	<427	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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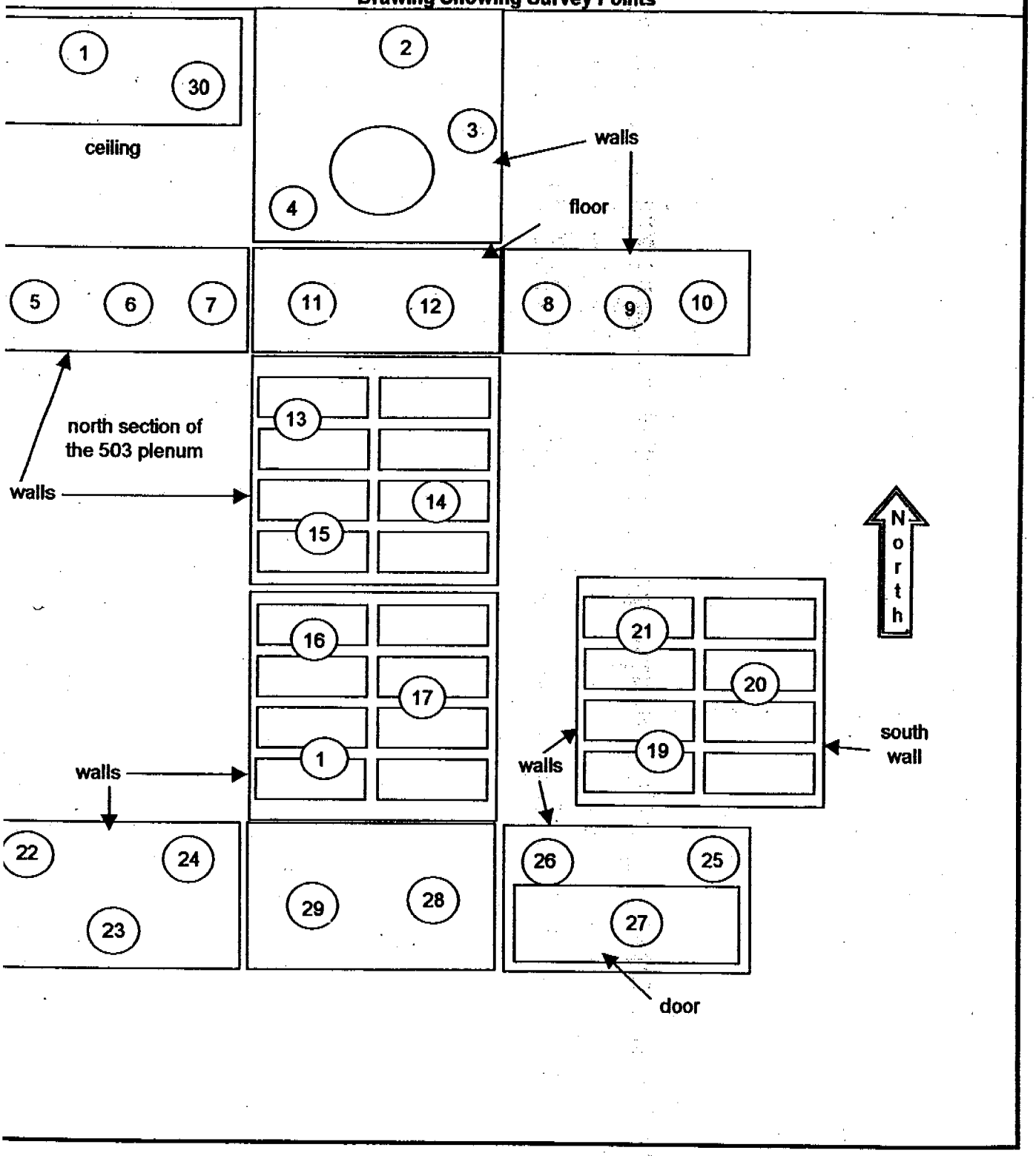
ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

Drawing Showing Survey Points



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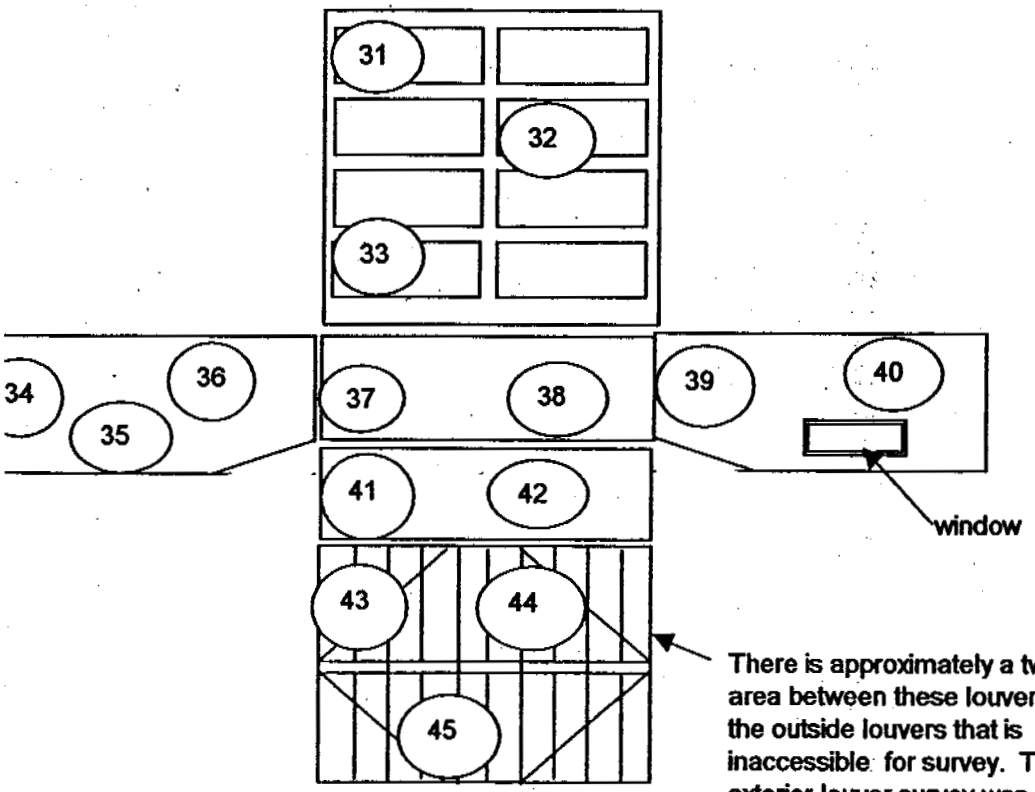
Drawing Showing Survey Points



There is approximately a two foot area between these louvers and the outside louvers that is inaccessible for survey. The exterior louver survey was documented on the survey on the exterior of the plenum.

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ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg.	Ludlum	Mfg.	NE Electra	Mfg.	NE Electra
Model	2929	Model	DP-6	Model	DP-6
Serial #	176082	Serial #	3102	Serial #	3248
Cal Due	6/11/02	Cal Due	7/15/02	Cal Due	9/2/02
Bkg	0.3 cpmα	Bkg	4 cpmα	Bkg	7 cpmα
Eff.	33.9 %	Eff.	23.4 %	Eff.	22.1 %
MDA	18 dpmα	MDA	51 dpmα	MDA	68 dpmα
Mfg.	Ludlum	Mfg.	NE Electra	Mfg.	NE Electra
Model	2929	Model	DP-6	Model	DP-6
Serial #	176082	Serial #	3102	Serial #	3248
Cal Due	6/11/02	Cal Due	7/15/02	Cal Due	9/2/02
Bkg	110.5 cpmα	Bkg	698 cpmβ	Bkg	728 cpmβ
Eff.	39.2 %	Eff.	31.7 %	Eff.	30 %
MDA	205 dpmα	MDA	396 dpmβ	MDA	427 dpmβ

Survey Type: Contamination
Building: 875
Location: 503 Plenum (Outside)
Purpose: Release Evaluation Survey

RWP #: NA

Date: 4/18/02 Time: 1500

[redacted]

PRN/REN # : 020416-00883-001

Comments: The isotope of concern is HEUN. All accessible surfaces scanned, no readings above background were noted.

SURVEY RESULTS

Swipe #	LOCATION	ALPHA Swipe dpm/100cm2	ALPHA Direct dpm/100cm2	ALPHA Wipe dpm/wipe	BETA Swipe dpm/100cm2	BETA Direct dpm/100cm2	BETA Wipe dpm/wipe
1	See Map	<18	<68	N/A	<205	<427	N/A
2	See Map	<18	<68	N/A	<205	<427	N/A
3	See Map	<18	<68	N/A	<205	<427	N/A
4	See Map	<18	<68	N/A	<205	<427	N/A
5	See Map	<18	<68	N/A	<205	<427	N/A
6	See Map	<18	<68	N/A	<205	<427	N/A
7	See Map	<18	<68	N/A	<205	<427	N/A
8	See Map	<18	<68	N/A	<205	<427	N/A
9	See Map	<18	<68	N/A	<205	<427	N/A
10	See Map	<18	<68	N/A	<205	<427	N/A
11	See Map	<18	<68	N/A	<205	<427	N/A
12	See Map	<18	<68	N/A	<205	<427	N/A
13	See Map	<18	<68	N/A	<205	<427	N/A
14	See Map	<18	<68	N/A	<205	<427	N/A
15	See Map	<18	<68	N/A	<205	<427	N/A
16	See Map	<18	<68	N/A	<205	<427	N/A
17	See Map	<18	<68	N/A	<205	<427	N/A
18	See Map	<18	<68	N/A	<205	<427	N/A
19	See Map	<18	<68	N/A	<205	<427	N/A
20	See Map	<18	<68	N/A	<205	<427	N/A

Date Reviewed: 4-22-02 RS Supervision: [redacted]

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ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

SURVEY RESULTS

Swipe #	LOCATION	ALPHA Swipe dpm/100cm2	ALPHA Direct dpm/100cm2	ALPHA Wipe dpm/wipe	BETA Swipe dpm/100cm2	BETA Direct dpm/100cm2	BETA Wipe dpm/wipe
21	See Map	<18	<68	N/A	<205	<427	N/A
22	See Map	<18	<68	N/A	<205	<427	N/A
23	See Map	<18	<68	N/A	<205	<427	N/A
24	See Map	<18	<68	N/A	<205	<427	N/A
25	See Map	<18	<68	N/A	<205	<427	N/A
26	See Map	<18	<68	N/A	<205	<427	N/A
27	See Map	<18	<68	N/A	<205	<427	N/A
28	See Map	<18	<68	N/A	<205	<427	N/A
29	See Map	<18	<68	N/A	<205	<427	N/A
30	See Map	<18	<68	N/A	<205	<427	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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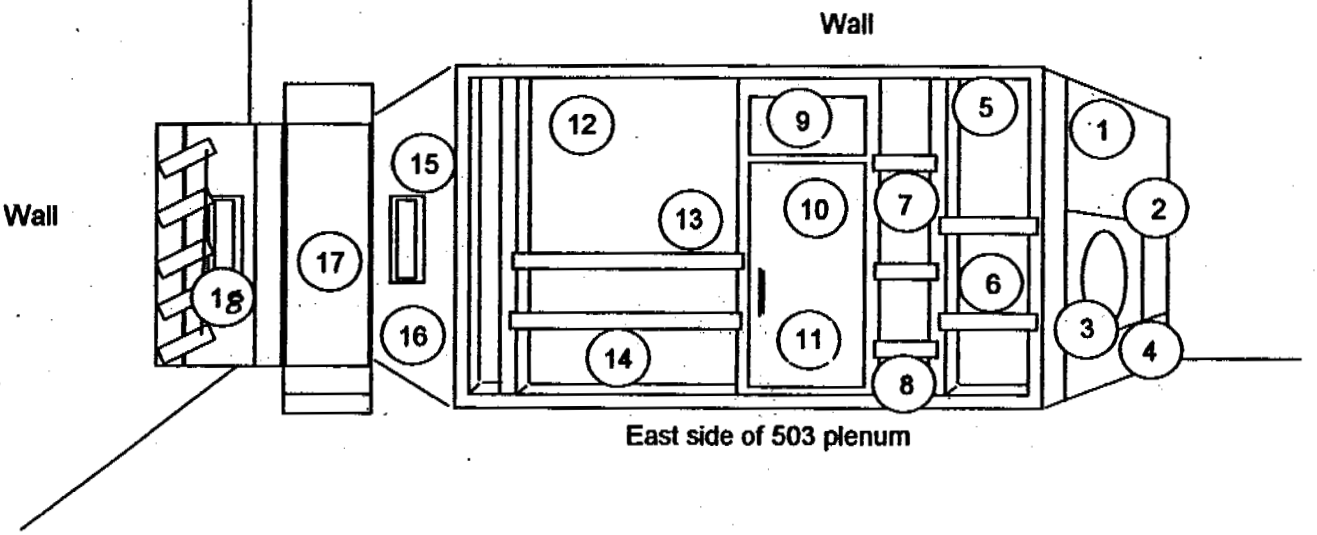
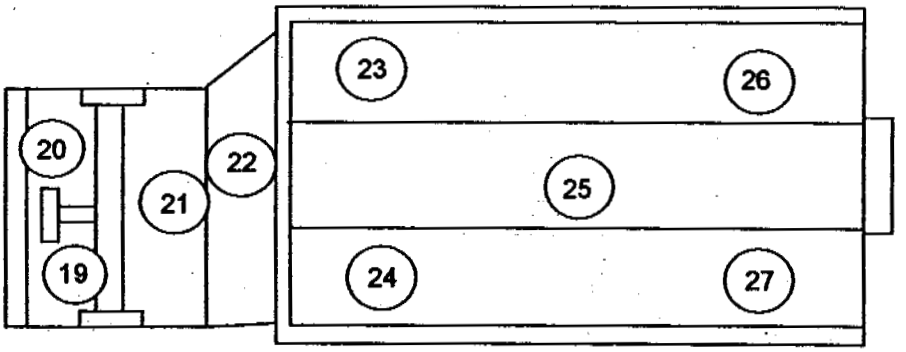
ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

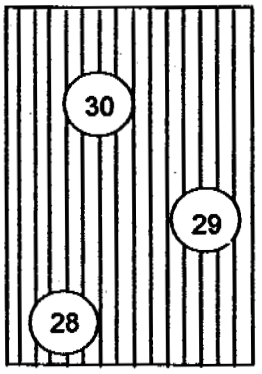
Drawing Showing Survey Points



East side of 503 plenum



Top side of 503 plenum



Vent louvers on the outside of the south side of the bldg.

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ATTACHMENT D

Data Quality Assessment (DQA) Detail

DATA QUALITY ASSESSMENT (DQA)

VERIFICATION & VALIDATION (V&V) OF RESULTS

V&V of the data confirm that appropriate quality controls are implemented throughout the sampling and analysis process, and that any substandard controls result in qualification or rejection of the data in question. The required quality controls and their implementation are summarized in a tabular, checklist format for each radiological survey.

DQA criteria and results are provided in a tabular format for each suite of surveys; the radiological survey assessment is provided in Table D-1 and the data completeness summary for all results is given in Table D-2.

All relevant Quality records supporting this report are maintained in a 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.

No beta/gamma survey designs were implemented for 886 Cluster facilities based on the conservatism of the transuranic limits used as DCGLs in the unrestricted release decision process. Stated differently, based on the well-established suite of actinides historically used at the RFETS, all of these actinides would emit alpha radiation in exceedance of the applicable transuranic DCGLs before other DCGLs would be exceeded for their respective Uranium species – Technical Basis Document 00162, Rev. 0, *Technical Justification for Types of Surveys Performed During Reconnaissance Level Characterization Surveys and Pre-Demolition Surveys in RISS Facilities,* corroborates the use of this approach.

Consistent with EPA's G-4 DQO process, the radiological survey design was performed per PDS requirements and 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 quality requirements and the 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 uncertainties except for the following anomaly:

- Two sample locations #5 and #15 on the exterior roof of B880 had initial alpha activity greater than the Transuranic $DCGL_W$ (dpm/100cm^2.) Initial readings were 155.8 dpm/100cm^2 and 173.8 dpm/100cm^2 respectively. Two roof coupon samples were taken and analyzed by Canberra ISOCS gamma spectroscopy. Results indicated no DOE Added enhanced radioactive materials, therefore, net activity for these two sample locations were reported as 0 dpm/100cm^2. No further investigation is required as all samples meet unrestricted release criteria.

- The PDS of the 875 exterior (survey unit 886-A-001) was performed as part of the Phase 1 PDS effort and the data can be found in the Phase 1 PDSR; all 875 exterior results were less than the PDSP unrestricted release limits.

Completion of this PDSR confirmed that PDS contamination release guidelines were met. Level 1 Isolation Control postings are displayed in affected areas to ensure PDSR integrity. In summary, the 886 Cluster PDSR Phase 2, Part 2 facilities (i.e., 880, 875 and the 875 tunnel) meet the unrestricted release criteria with the confidences stated herein.

RM

Table D-1 V&V of Radiological Surveys – 886 Cluster, Phase 2 - Part 2

V&V CRITERIA, RADIOLGICAL SURVEYS			K-H RSP 16.00 Series MARSSIM (NUREG-1575)		
QUALITY REQUIREMENTS					
	Parameters		Measure	frequency	COMMENTS
ACCURACY	initial calibrations		90%<x<110%	≥1	multi-point calibration through the measurement range encountered in the field
	daily source checks		80%<x<120%	≥1/day	No comment
	local area background	Field	Typically < 10 dpm	≥1/day	all local area backgrounds were within expected ranges (i.e., none anomalouosly high)
PRECISION	field duplicate measurements for TSA		≥5% of real survey points	≥10% of reals	No comment
REPRESENTATIVENESS	MARSSIM gridding methodology: Survey Units 886-B-011, G15-A-001, G15-B-002 and 886-B-007		statistical and biased	NA	random w/ statistical confidence; biased to improve confidence
	Survey Maps			NA	random and biased measurement locations documented to ± 1m.
	Controlling Documents (Characterization Pkg; RSPs)		qualitative	NA	See original Radiological Characterization Package (planning document) for field/sampling procedures; thorough documentation of the planning, sampling/analysis process, and data reduction into formats
COMPARABILITY	units of measure		dpm/100cm^2	NA	Use of standardized engineering units in the reporting of measurement results
COMPLETENESS	Plan vs. Actual surveys usable results vs. unusable		>95% >95%	NA	see Table D-2 for details
SENSITIVITY	detection limits		TSA: ≤50 dpm/100cm^2 RA: ≤10 dpm/100cm^2	All measures	PDS MDAs ≤ 50% DCGLw

Table D-2 Data Completeness Summary For B886 Phase 2 – Part 2

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Radiological	Survey Area A Survey Unit: G15-A-001 B880 (interior)	20 ά TSA (15 random and 5 biased) and 20 ά Smears (15 random and 5 biased) 2 QC TSA 50% scan of floor/10% scan of walls and ceiling	20 ά TSA (15 random and 5 biased) and 20 ά Smears (15 random and 5 biased) 2 QC TSA 50% scan of floor/10% scan of walls and ceiling	No contamination at any location; all values below unrestricted release levels	No results above $DCGL_W$ or $DCGL_{EMC}$ action level (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum).
Radiological	Survey Area B Survey Unit: G15-B-002 B880 (exterior)	15 ά TSA and 15 α Smears (random) 2 QC TSA 5% scan	15 ά TSA and 15 α Smears (random) 2 QC TSA 5% scan	No contamination at any location; all values below unrestricted release levels	No results above $DCGL_W$ or $DCGL_{EMC}$ action level (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum). RIN#02S0170: sample locations #5 and #15 on the exterior roof of B880 had initial alpha activity greater than the Transuranic $DCGL_W$ (dpm/100cm^2.) Initial readings were 155.8 dpm/100cm^2 and 173.8 dpm/100cm^2 respectively. Two roof coupon samples were taken and analyzed by gamma spectroscopy. Results indicated no DOE Added enhanced radioactive materials, therefore, net activity for these two sample locations were reported as 0 dpm/100cm^2. No further investigation is required as all samples met the unrestricted release criteria.

Table D-2 Data Completeness Summary For B886 Phase 2 – Part 2

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Radiological	Survey Area B Survey Unit: 886-B-011 B875 Tunnel (interior)	19 ά TSA and 19 ά Smears (systematic) 2 QC TSA 100% scan of floor/50% scan of walls and ceiling	19 ά TSA and 19 ά Smears (systematic) 2 QC TSA 100% scan of floor/50% scan of walls and ceiling	No contamination at any location; all values below unrestricted release levels	No results above $DCGL_W$ or $DCGL_{EMC}$ action level (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum).
Radiological	Survey Area B Survey Unit: 886-B-007 B875 (interior)	18 ά TSA and 18 ά Smears (systematic) 2 QC TSA 100% scan of floor/50% scan of walls and ceiling	18 ά TSA and 18 ά Smears (systematic) 2 QC TSA 100% scan of floor/50% scan of walls and ceiling	No contamination at any location; all values below unrestricted release levels	No results above $DCGL_W$ or $DCGL_{EMC}$ action level for Transuranic (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum).