

NOTICE

All drawings located at the end of the document.



Rocky Flats Environmental Technology Site

RECONNAISSANCE LEVEL CHARACTERIZATION REPORT (RLCR)

BUILDING 443 CLOSURE PROJECT

REVISION 0

April 29, 2002

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



ADMIN RECORD
IA-A-001015

1/80

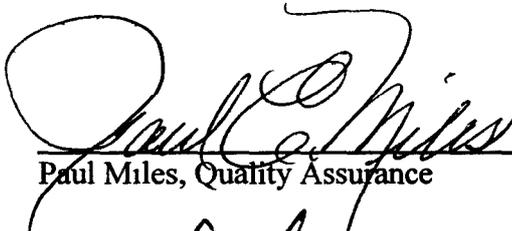
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Reviewed by:


Paul Miles, Quality Assurance

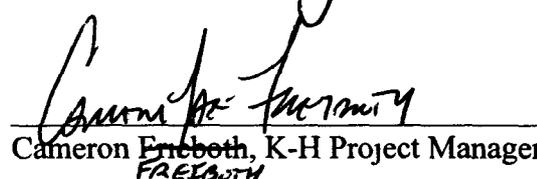
Date: 4/30/02

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TABLE OF CONTENTS

ABBREVIATIONS/ACRONYMS	IV
EXECUTIVE SUMMARY	V
1 INTRODUCTION	1
1 1 PURPOSE	1
1 2 SCOPE	1
1 3 DATA QUALITY OBJECTIVES	1
2 HISTORICAL SITE ASSESSMENT	2
3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS	2
4 CHEMICAL CHARACTERIZATION AND HAZARDS	3
4 1 ASBESTOS	3
4 2 BERYLLIUM (BE)	4
4 3 RCRA/CERCLA CONSTITUENTS [INCLUDING METALS AND VOLATILE ORGANIC COMPOUNDS (VOCs)]	4
4 4 POLYCHLORINATED BIPHENYLS (PCBS)	4
5 PHYSICAL HAZARDS	5
6 DATA QUALITY ASSESSMENT	5
7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES	5
8 FACILITY CLASSIFICATION AND CONCLUSIONS	7
9 REFERENCES	8

ATTACHMENTS

- A Facility Location Map
- B Historical Site Assessment Reports
- C Radiological Data Summaries and Survey Maps
- D Chemical Data Summaries and Sample Maps
- E 1996 Asbestos Report
- F Data Quality Assessment (DQA) Detail

ABBREVIATIONS/ACRONYMS

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

EXECUTIVE SUMMARY

A Reconnaissance Level Characterization (RLC) was performed to enable facility "Typing" per the DPP (10/8/98) and compliant disposition and waste management of Building 443. Because this facility was anticipated to be a Type 1 facility, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). All facility surfaces were characterized in this RLC, including the interior and exterior surfaces [i.e., floors (slabs), walls, ceilings and roofs]. Environmental media beneath and surrounding the facility were not within the scope of this RLCR and will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA.

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

Results indicate that no radiological contamination exists in excess of the PDSP unrestricted release limits of DOE Order 5400.5. Friable and non-friable asbestos containing materials were identified as > 1 % asbestos by volume to include thermal systems insulation, roofing tars, Transite wallboard, "asbestos-free" insulation, and gaskets. All beryllium sample results were less than 0.1 $\mu\text{g}/100\text{cm}^2$. Fluorescent light ballasts may contain PCBs. Any hazardous waste, PCB ballasts, and asbestos containing materials will be removed prior to demolition and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations. All demolition debris will be managed in compliance with regulations governing PCBs (40 CFR 761) and Environmental Compliance Guidance #27, *Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal*, as applicable. All concrete associated with the facility meet the criteria for recycling concrete per the RFCA RSOP for Recycling Concrete.

Based upon this RLCR and subject to concurrence by the CDPHE, Building 443 is considered to be a Type 1 facility. To ensure that the facility remains free of contamination and that RLC data remain valid, isolation controls have been established, and the facility has been posted accordingly.

1 INTRODUCTION

A Reconnaissance Level Characterization (RLC) was performed to enable compliant disposition and waste management of Building 443. Because this facility was anticipated to be a Type 1 facility, a PDS characterization was performed. All facility surfaces were characterized in this RLC, including the interior and exterior surfaces of the facilities [i.e., floors (slabs), walls, ceilings and roofs]. Environmental media beneath and surrounding the facility were not within the scope of this RLC Report (RLCR) and will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA.

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed. Among these is Building 443. The location of this facility is shown in Attachment A. This facility will no longer support the RFETS mission and will need to be removed to reduce Site infrastructure, risks and/or operating costs.

Before the facility can be removed, a Pre-Demolition Survey (PDS) must be conducted, this document presents the PDS results. The PDS was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). The PDS built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report.

1.1 Purpose

The purpose of this report is to communicate and document the results of the RLC 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.

1.2 Scope

This report presents the final radiological and chemical conditions of Building 443. Environmental media beneath and surrounding the facility are not within the scope of this RLCR and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA.

1.3 Data Quality Objectives

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

2 HISTORICAL SITE ASSESSMENT

A facility-specific Historical Site Assessment (HSA) was conducted to understand facility the history and related hazards. The assessment consisted of a facility walkdown, interviews, and document review, including review of the Historical Release Report (refer to the D&D Characterization Protocol, MAN-077-DDCP). Results were used to identify data gaps and needs, and to develop radiological and chemical characterization packages. Results of the facility-specific HSA were documented in a facility-specific Historical Site Assessment Report (HSAR, refer to Attachment B). In summary, the HSAR identified no potential for radiological and chemical hazards, except the potential for asbestos containing materials and PCBs in paint and light ballasts.

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

Building 443 was characterized for radiological hazards per the PDSP. Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on the facility surfaces. Measurements were performed to evaluate the contaminants of concern. Based upon a review of historical and process knowledge, building walk-downs, and MARSSIM guidance, a Radiological Characterization Plan was developed during the planning phase that describes the minimum survey requirements (refer to the RISS Characterization Project files).

Two radiological survey packages were developed: one for the interior and one for the exterior. The survey packages were developed in accordance with Radiological Safety Practices (RSP) 16 01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure*. Total surface activity (TSA), removable surface activity (RSA), 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, and survey locations are presented in Attachment C, Radiological Data Summary and Survey Maps. The radiological survey unit packages [443-A-001 (interior) & 443-B-002 (exterior)] are maintained in the RISS Characterization Project files.

30 TSA measurements, 30 RSA measurements, and scan surveys (5% biased towards areas with the greatest potential for contamination) were performed on the interior and exterior. One interior scan measurement location in Room 101 indicated elevated activity (250 dpm/100 cm² - total, and 109 dpm/100 cm² - square meter average) in excess of transuranic DCGL_w values. One media sample was collected at this location and analyzed using the Canberra ISOCS gamma spectroscopy system. The analytical result showed uranium activity (U235/U238) at the applicable location (refer to Attachment C). No weapons grade plutonium was detected. Therefore, the initial measurement was compared to the Uranium DCGL_w of 5,000 dpm/100 cm², and no further investigation was required. All random/biased TSA and RSA measurements were less than the transuranic DCGL_w. The PDS confirmed that Building 443 does not contain radiological contamination above the surface contamination guidelines provided.

in the PDSP Isolation control postings are displayed to ensure no radioactive materials are introduced

4 CHEMICAL CHARACTERIZATION AND HAZARDS

Building 443 was characterized for chemical hazards per the PDSP Chemical characterization was performed to determine the nature and extent of chemical contamination that may be present on or in the facility Based upon a review of historical and process knowledge, visual inspections, and PDSP DQOs, additional sampling needs were determined A Chemical Characterization Package (refer to RISS Characterization Project files) was developed during the planning phase 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 Refer to Attachment D, Chemical Data Summaries and Sample Maps, for details on sample results and sample locations

4.1 Asbestos

SITEX Environmental, Inc conducted a comprehensive asbestos inspection of Building 443, dated April 22, 1996 It prepared a full report, including an Operations and Maintenance Plan for this facility Based on that report, the following building materials were identified as asbestos containing thermal systems insulation, Transite wallboard, "asbestos-free" insulation, and gaskets After a visual and tactile inspection of this facility, sampling gaps in the SITEX survey were detected built-up roofing materials and flashing, window caulking, and external wall caulking Therefore, additional, limited biased bulk sampling was performed in order to fill these data gaps This survey of building materials suspected of containing asbestos was conducted in the aforementioned building in accordance with the PDSP A CDPHE-certified asbestos inspector conducted the inspection and sampling in accordance with the *Asbestos Characterization Protocol, PRO-563-ACPR, Revision 1* Building materials suspected of containing asbestos were identified for sampling at the discretion of the inspector

Non-friable and friable asbestos containing materials are present in Building 443 The non-friable black, fibrous roofing tar tested positive for Chrysotile by PLM analysis - 4 to 10 % by volume The non-friable rubbery caulking at the vent on the upper, west wing roof is 10 % Chrysotile The non-friable window caulking contains trace amounts of asbestos Asbestos laboratory analysis data and location maps are contained in Attachment D, "Chemical Data Summaries and Sample Maps" Maps that did not contain any sample locations were not included in this report In addition, the SITEX asbestos survey verifies the presence of Amosite and Chrysotile in thermal systems insulation in amounts up to 60 % asbestos by volume Gasket composition is 80 % Chrysotile, and Category II non-friable Transite wallboard is 35 % Chrysotile The 12" x 12" ceiling tiles and mastic, the "straw wall" in Room 106, the drywall and joint compound, the 12" x 12" floor tiles, and the vibration isolators were all "None Detected" for asbestos SITEX Executive Summary and asbestos survey results are presented in Attachment E, and the complete report may be found in the 443 RISS Characterization Project Files

4.2 Beryllium (Be)

Based on the HSAR and personnel interviews, Building 443 was an anticipated Type 1 facility. There was not, however, adequate historical and process knowledge to conclude that beryllium was not used or stored in this building. Therefore, biased beryllium sampling was performed in accordance with the PDSP and the *Beryllium Characterization Procedure, PRO-536-BCPR, Revision 0, September 9, 1999*. Biased sample locations corresponded with the most probable areas of dust accumulation (including beryllium dust), assuming airborne deposition.

All beryllium smear sample results were less than $0.1 \mu\text{g}/100\text{cm}^2$. Beryllium laboratory sample data and location maps are contained in Attachment D, "Chemical Data Summaries and Sample Maps." Maps that did not contain any sample locations were not included in this report.

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

Based on the HSAR, interviews and facility walkdowns of Building 443, no building surfaces should be contaminated with RCRA/CERCLA constituents. Sulfuric acid and sodium hydroxide spills occurred and were cleaned up using approved clean-up methods. Demolition debris will not exhibit any RCRA hazardous waste characteristics and will not contain any RCRA listed wastes. The building may contain 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, and these items will be removed prior to demolition and managed in accordance with the Colorado Hazardous Waste Act.

Sampling for lead in paint in Building 443 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 HSAR, interviews and facility walkdowns of Building 443, no PCB-containing equipment were ever present in the building, making the potential for PCB contamination resulting from spills highly unlikely. Therefore, PCB sampling was not performed. Based on the age of Building 443 (constructed prior to 1980), paints used may contain PCBs, and 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.

Because Building 443 may contain fluorescent light ballasts containing PCBs, fluorescent light fixtures will be inspected to identify PCB ballasts during removal operations. PCB ballasts will be identified based on factors such as labeling (e.g., PCB-containing and non-PCB-containing), manufacturer, and date of manufacturing. All ballasts that do not indicate non-PCB-containing are assumed to be PCB-containing and will be disposed of as PCB Bulk Product Waste.

5 PHYSICAL HAZARDS

Physical hazards associated with Building 443 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). There are no unique hazards associated with the facility. The facility has been relatively well maintained and is in good physical condition, and therefore, does not present hazards associated with building deterioration. Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practices.

6 DATA QUALITY ASSESSMENT

Data used in making management decisions for decommissioning of Building 443, and consequent waste management, are of adequate quality to support the decisions documented in this report. The data presented in this report (Attachments C and D) were verified and validated relative to DOE quality requirements, applicable EPA guidance, and original DQOs of the project.

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

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

Details of the DQA are provided in Attachment F.

7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES

The demolition and disposal of Building 443 will generate a variety of wastes. Estimated waste types and waste volumes are presented below. All wastes can be disposed of as sanitary waste, except asbestos-containing material, PCB Bulk Product Waste, and small quantities of hazardous waste (e.g., mercury thermostats, fluorescent light bulbs, mercury vapor light bulbs, mercury-containing gauges, circuit boards, leaded glass, and lead-acid batteries). There is no radioactive waste. Asbestos, PCB ballasts and any hazardous waste will be managed pursuant to Site asbestos abatement and waste management procedures.

Waste Volume Estimates and Material Types, B443						
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)
66,000	100	85,000	13,000	1,200	Non-friable roof insulation – 2,500 Category II non-friable Transite – 810 Gaskets – 81	Floor Tile 100 Ceiling Tile 200 Window Glass 60 Wall Insulation 12,600
Waste Volume Estimates and Material Types, Interior Equipment and Tanks						
None	None	161,000	None	None	Pipe, fitting, & tank insulation – 4,000	None
Waste Volume Estimates and Material Types, Exterior Equipment and Tanks						
13,200	300	39,000	None	None	Pipe, fitting, and tank insulation – 3,000	None

11

8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, Building 443 is classified as a RFCA Type 1 facility pursuant to the RFETS Decommissioning Program Plan (DPP, K-H, 1999). The Type 1 classification is based on a review of historical and process knowledge, and newly acquired RLC data, and will be subject to concurrence by the Colorado Department of Public Health and the Environment (CDPHE).

The RLC of Building 443 was performed in accordance with the DDCP and PDSP, all PDSP DQOs were met, and all data satisfied the PDSP DQA criteria. The facility does not contain radiological materials in excess of applicable DCGL's. Any PCB ballasts, asbestos containing material, and hazardous-waste items will be removed prior to demolition and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations. All demolition debris will be managed in compliance with regulations governing PCBs (40 CFR 761), and Environmental Compliance Guidance #27, *Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal*, as applicable. All concrete associated with this facility meet the criteria for recycling concrete per the RFCA RSOP for Recycling Concrete. Environmental media beneath and surrounding the facility will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA.

To ensure that the Type 1 facility remains free of contamination and that RLC data remain valid, isolation controls have been established, and the facility is 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 "
- 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 1, 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 Report for Building 443, December 17, 2001

ATTACHMENT A

Facility Location Map

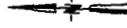
Building 443

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 RS, Las Vegas. Digitized from the orthophotograph, 1/95



Scale - 1:12450
 1 inch represents approximately 1038 feet
 150' 100' 50' 0' 50' 100' 150'
 State Plane Coordinate Projection
 Colorado Central Zone
 Datum: NAD27

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

Cell No. 20-048-7707

Prepared by

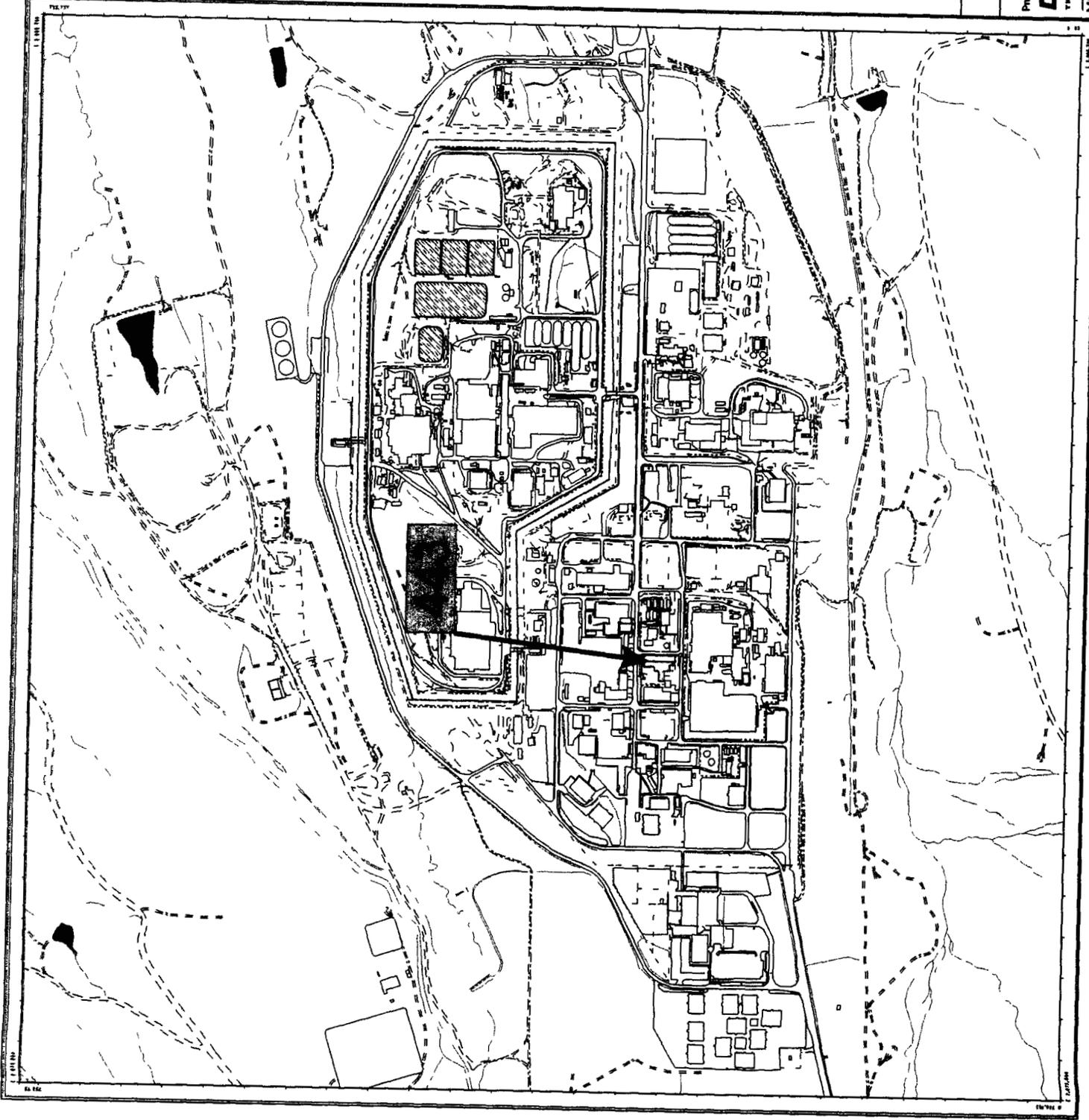


THE ART OF TECHNOLOGY

MAP ID: RY 2002



April 11, 2002



ATTACHMENT B

Historical Site Assessment Report

**D&D RISS Facility Characterization
Historical Site Assessment Report
December 17, 2001, Rev. 0**

Facility ID: Building 443 Steam Plant Cluster, Area 3 – Group 23, Includes Building 443 Steam Plant, Steam Condensate Storage Tank 240, Sulfuric Acid Storage Tank 096, Sodium Hydroxide Tank 097, Elevated Condensate Tank 098 (these four tanks are all east of Building 443) Tank 025 South #6 Fuel Oil, Tank 027 North #6 Fuel Oil (these two fuel oil tanks are west of Building 443), TK-13A, aka Tank 028, Diesel Fuel Storage (NE of B443), TK-9A, aka Tank, 031 Diesel Fuel Storage (SE of B443) Tank 090 UST foamed in place (SE of B443), Tank 091 UST foamed in place (NE of B443), Tank 092 Abandoned UST #6 Fuel Oil, Tank 093 UST #6 Fuel Oil, Tank 094 UST #6 Fuel Oil, Tank 095 Abandoned UST #6 Fuel Oil (these 4 UST tanks are east of B443)

Anticipated Facility Type (1, 2, or 3): Building 443 Type = 1, Tank 240 = Type 1, Tank 096 = Type 1, Tank 097 = Type 1, Tank 098 = Type 1, Tank 025 = Type 1, Tank 027 = Type 1, TK-13A = Type 1, TK-9A = Type 1, Tank 090 = Type 1, Tank 091 = Type 1, Tank 092 = Type 1, Tank 093 = Type 1, Tank 094 = Type 1, Tank 095 = 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 443 has approximately 14,673 square feet of floor space on the first floor plus 3,933 square feet on the second/third floor Mezzanines for a total of 18,606 square feet of floor space. Building 443 is a T-shaped building that is approximately 142'6" wide X 193' long. The north-section, Room 101, is the original Building 443 and was a rectangular-shaped facility before approximately four building modifications were added over the years. This original Building 443 section is an all steel-reinforced concrete structure which is approximately 44' Wide X 76' long X 24' feet high. Building 443 was constructed in 1953 and is located at Central Avenue and Fifth Street. Building 443 has exterior Transite® panels under the windows on both the First Floor and the Second Floor. The original Building 443 section has a steel-reinforced poured concrete ceiling/roof, with rigid-board insulation and built-up layered-roof that is tar sealed and topped with gravel. The rest of the Building 443 ceiling/roofs are 20-gage metal roof deck with rigid-board insulation, 1.5-inch lightweight concrete, and built-up layered roof that is tar sealed and topped with gravel. Building 443 has five roof sections, Roof #1, Roof #2, Roof #3, Roof #4, and Roof #5 that range in heights above ground from 25', 40', 42', 24' and 20' respectively. Building 443 has two roof categories, Low Roof and High Roof (20'-25' and 40'-45'). Low Roof #4 has three 5' diameter X 100' high steel stacks and High Roof #1 has one 5' diameter X 100' high steel stack. The Building 443 south Steam Shed Section has an all-metal roof with an 18" diameter X 20' high stack. The rest of Building 443 is steel I-beam construction and the walls are insulation-sandwiched corrugated-metal. Roof #3 has a large HVAC Unit and all 5 roofs have many roof vents, sanitary sewer vents, moisture diffusers, roof drain gutters, roof drain gutter downspouts, etc. Building 443 has personnel entry doors on the east, west, north, and south sides of the facility, the facility has a roll-up dock doors on the east and north side of Room 105 and the east side has a truck double-door entrance on the east side of Room 104.

Valve Vault Drawings indicate Building 443 has a process waste transfer line leading to VV-16, but this line may be blanked and/or disconnected. The poured steel-reinforced concrete floors throughout Building 443 contain many sanitary floor drains and the floor in Rooms 103/104 Service Trenches that service the three boilers, the Service Trenches are covered with steel deck-plates. These Service Trenches contain insulated/heated #6 Fuel Oil pipes to Boilers #4, #5, and #6. All boilers in Building 443 have natural gas piped to them as the normal fuel source and #6 Fuel Oil as the alternate fuel source. Feed water for the boilers in Building 443 comes from recycled condensate solutions and/or raw Plant water that has to be treated with water softener salts.

The entire Building 443 Group has an eight-foot chain-link Security Fence. Building 443 has steam-heaters throughout the facility. 24 Building 443 has a Plant Fire Sprinkler and Alarm System. Building 443 has a LSDW System.

**D&D RISS Facility Characterization
Historical Site Assessment Report
December 17, 2001, Rev. 0**

Physical Description: (Con't)

Equipment items in Building 443 and located in the following rooms: Room 104A contains Emergency Generator #1, Room 101D contains Emergency Generator #2, Rooms 103/104 contain Boilers #4, #5, and #6, Room 105 contains Boiler #7 and the fourth 5' diameter X 100' high stack, Room 106 is the Building 443 Steam Plant Control Room, on Level-3 Mezzanine, Rooms 302, 303, 304, and 305 are Forced Draft Rooms with large fan/motor blowers in each, Level 2 Mezzanine, Room 202 contains a Water Test-Lab and workbench, several air-compressors and air-dryers are located throughout Building 443, several large vertical and horizontal condensate tanks are located throughout Building 443, several chemical cleaning tanks are located in Rooms 103 and 104, many Steam Plant water and #6 Fuel Oil pumps are throughout the facility, floor-level work platforms exist throughout the facility, steel-stairways lead to the Second Floor, Level-2 Mezzanine and Level-3 Mezzanine, boiler to stack ducting exists throughout the steam generating rooms, electrical control panels and motor control panels are located throughout the facility, the Building 443 Steam Shed has two Steam Turbines and Steam Distribution piping and valves, wall-mounted power transformers, and many other miscellaneous equipment items are located throughout Building 443. The Building 443 Steam Plant also a Cooling Tower operating inside the facility up on the Mezzanine Levels. Building 443 has redundant UPS Systems to keep power going to the boiler controls during temporary power outages until the emergency power generators power comes on line. Building 443 has a 7,000-gallon concrete tank lined with PVC under the floor in Room 103 which was designed as a neutralizing tank, but is currently used as a waste water tank and it is hooked to and drains to the Plant Sanitary Sewer Line.

Physical Description of Tanks and Equipment Outside:

Steam Condensate Storage Tank 240, 300,000 gallon-capacity and this tank is in service

Sulfuric Acid Storage, Tank 096, is empty and Out of Service

Sodium Hydroxide, Tank 097, is empty and Out of Service

Elevated Condensate Tank 098 this tank is in service (these four tanks are all east of Building 443)

Tank 025 South #6 Fuel Oil, 5,000 gallon-capacity and this tank is in service

Tank 027 North #6 Fuel Oil, 5,000 gallon-capacity and this tank is in service (these two fuel oil tanks are west of Building 443)

TK-13A, aka Tank 028, Diesel Fuel Storage, 1550 gallon-capacity and this tank is in service. (NE of B443)

TK-9A, aka Tank, 031 Diesel Fuel Storage, 1550 gallon-capacity and this tank is in service. (SE of B443)

Tank 090 UST foamed in place (SE of B443)

Tank 091 UST foamed in place (NE of B443),

Tank 092 Abandoned UST #6 Fuel Oil Tank is Out of Service This UST tank is east of B443

Tank 093 UST #6 Fuel Oil Tank is Out of Service. This UST tank is east of B443.

Tank 094 UST #6 Fuel Oil Tank is Out of Service This UST tank is east of B443

Tank 095 Abandoned UST #6 Fuel Oil Tank is empty, foamed in place, and Out of Service This UST tank is east of B443

Building 443 has its own 13,800-Volt Substation/Transformer, Transformer 443-1, that is located outside near the northwest corner of the building and this high voltage Substation/Transformer is separately fenced

Building 443 Cooling Tower, taken Out of Service in Winter, outside directly east of Tanks 025 and 027 (vertical #6 Fuel Oil tanks)

Historical Operations

Building 443 has operated since 1953 (approximately 48 years) producing steam for the various production and administrative buildings at RFETS

8

**D&D RISS Facility Characterization
Historical Site Assessment Report
December 17, 2001, Rev. 0**

Current Operational Status

Currently Building 443 is fully operational with three of the existing boilers (Boilers #4, #6, and #7 are operational, Boiler #5 is Out of Service) producing steam. The Building 443 Steam Plant operates 24 hours per day, 7 days per week. Building 443 currently houses approximately ten Steam Plant Boiler Ventilation Operators, Foreman, and other management personnel for the 24-hour 7 days a week operation.

Contaminants of Concern

Asbestos

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

The north section of Building 443, which was the part of the building that was constructed in 1953, has exterior Transite® panels under the building windows. These Transite® are known to be asbestos containing materials (ACM). One interviewee said that asbestos insulating materials would be found on all insulated steam and oil pipes throughout the interior of Building except Steam Room #7, Room 105, which is said to be asbestos free. Asbestos sample data exists for Building 443 in the Industrial Hygiene (IH) Asbestos Library in Office Trailer T-130E. The 1989/1991 asbestos sample data is for asbestos bulk and air sample data. The IH Asbestos Library also contains a Building 443 Asbestos Inspection and Operations and Maintenance Plan, which is dated April 22, 1996.

Beryllium (Be)

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

Building 443 is not on the RFETS List of Known Be Locations, Historical and Present.

Summarize any recent Be sampling results.

No known Be sampling has been conducted in Building 443.

Lead

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

Building 443 was constructed in 1953, therefore it may contain lead-based paints. No lead operations were known to have occurred in Building 443. Electrical equipment in Building 443 may contain lead-solder. Both emergency diesel generators in Building have double banks of lead-acid batteries for starting the diesel engines during Plant power outages.

RCRA/CERCLA Constituents

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

Building 443 stores chemicals that are used as cleaning agents and water treatment. Building 443 has a WSRIC. Building 443 is not listed on "The Master List of RCRA Units". Building 443 has an outside underground (UST) #6 Fuel Oil Tank, #4 (assumed to be UST Tank 095) that is listed in Appendix 1A - 1999 Idle Equipment with Non-hazardous Materials Inventory. This tank is listed as filled with foam.

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

No known chemical spills have occurred inside Building 443, as per interviewee. There are chemical reagent cleaning tanks located in several areas of Building 443. Sulfuric acid, sodium hydroxide, diesel fuel, and #6 Fuel Oil spills have happened numerous times outside Building 443, to the east.

Describe methods in which spills were mitigated, if any.

These spills were cleaned up using Plant approved and/or Haz-Mat Team approved clean-up methods.

**D&D RISS Facility Characterization
Historical Site Assessment Report
December 17, 2001, Rev. 0**

PCBs

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

Building 443 may contain PCB/lead-based paints Building 443 have lighting ballasts that might contain PCBs No known equipment containing PCBs were ever located in Building 443

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

None for inside Building A PCB leak outside Building 443, PAC 400-800, was detected at Transformer 443-1 on June 30, 1987 The leaking Transformer 443-1 was replaced in 1987

Describe methods in which spills were mitigated, if any

Unknown

Radiological Contaminants

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

Building 443 had no known radiological production areas

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 443

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).

IHSS 400-129, is for the known #6 Fuel Oil Spills east of Building 443, both above and below ground

PAC 400-187 is for Sulfuric acid spills outside at Building 443.

PAC 400-800, is a known PCB leak at Transformer 443-1 (outside, NE of Building 443) *

PAC 400-811, is a known PCB leak at Transformer 443-2 (No information is available) *

PAC 400-805, a fuel leaks outside Building 443 *

PAC 400-193, a steam condensate leak outside Building 443 to the east, was found to contain amines (a group of organic compounds)**

*No Further Action Recommendation Approved (unknown if this includes D&D and soil excavation)

**OU 16 CAD/ROD¹² (August, 1994)

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 443 is listed in the RFETS Historical Release Reports A WSRIC currently exists for Building 443

**D&D RISS Facility Characterization
Historical Site Assessment Report
December 17, 2001, Rev. 0**

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 443 does not have a Facility Safety Analysis Report, but it is included in the Site Safety Analysis Report. The Building 443 WSRIC was reviewed In addition, an exterior facility walkdown was performed. The Facility Manager for Building 443 was interviewed Appendix 1 – Idle Equipment With Hazardous Materials Inventory Appendix 1A – Idle Equipment With Non-Hazardous Materials Inventory

Waste Volume Estimates and Material Types For Building 443, Area 3 Group 23

Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
66,000	100	85,000	13,000	1,200	TBD	2,500 cu ft Roof Insulation 100 cu ft Floor Tile 200 cu ft ceiling Tile 60 cu ft window Glass 12,600 cu ft Wall Insulation

Waste Volume Estimates and Material Types For Equipment and Tanks Inside Building 443, Area 3 Group 23

Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
None	None	161,000	None	None	TBD	4,000 cu ft Pipe Insulation

Waste Volume Estimates and Material Types For Equipment and Tanks Outside Building 443, Area 3 Group 23

Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
13,200	300	39,000	None	None	TBD	3,000 cu ft Piping Insulation

Further Actions

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

Begin the RLC/PDS process

21

**D&D RISS Facility Characterization
Historical Site Assessment Report
December 17, 2001, Rev. 0**

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.

Prepared By: _____

Bob Sheets
Name

Signature

Bob Sheets 12/17/2001
Date

22

ATTACHMENT C

Radiological Data Summaries and Survey Maps

SURVEY UNIT 443-A-001
RADIOLOGICAL DATA SUMMARY

Survey Unit Description: Interior of B443

**443-A-001
Radiological
Data Summary**

<u>Total Surface Activity Measurements</u>			<u>Removable Activity Measurements</u>		
	30	30		30	30
	Number Required	Number Obtained		Number Required	Number Obtained
MIN	-13.5	dpm/100 cm ²	MIN	-0.3	dpm/100 cm ²
MAX	46.8	dpm/100 cm ²	MAX	5.8	dpm/100 cm ²
MEAN	8.5	dpm/100 cm ²	MEAN	0.8	dpm/100 cm ²
STD DEV	14.8	dpm/100 cm ²	STD DEV	1.8	dpm/100 cm ²
TRANSURANIC DCGL_w	100	dpm/100 cm ²	TRANSURANIC DCGL_w	20	dpm/100 cm ²

25

**SURVEY UNIT 443-A-001
TSA DATA SUMMARY**

Manufacturer	NE Electra	NE Electra
Model	DP-6	DP-6
Instrument ID#	7	8
Serial #	1379	3114
Cal Due Date	5/6/02	8/15/02
Analysis Date	2/20/02	2/20/02
Alpha Eff (c/d)	0.202	0.216
Alpha Bkgd (cpm)	6.0	5.3
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/100cm ²)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm ²)	Sample Net Activity (dpm/100cm ²) ¹
1	8	73	33.8	47	21.8	7.8
2	8	100	46.3	16.0	74.1	20.3
3	7	93	46.0	4.0	19.8	20.0
4	7	93	46.0	13.3	65.8	20.0
5	8	27	12.5	5.3	24.5	13.5
6	7	80	39.6	4.0	19.8	13.6
7	7	120	59.4	6.0	29.7	33.4
8	8	60	27.8	2.7	12.5	1.8
9	8	80	37.0	4.7	21.8	11.0
10	8	27	12.5	4.0	18.5	13.5
11	8	53	24.5	4.7	21.8	1.5
12	7	73	36.1	5.3	26.2	10.1
13	7	147	72.8	4.0	19.8	46.8
14	8	47	21.8	2.0	9.3	-4.2
15	8	80	37.0	4.7	21.8	11.0
16	7	120	59.4	7.3	36.1	33.4
17	8	87	40.3	4.0	18.5	14.3
18	7	67	33.2	6.0	29.7	7.2
19	7	113	55.9	8.0	39.6	29.9
20	8	67	31.0	2.0	9.3	5.0
21	8	73	33.8	5.3	24.5	7.8
22	7	40	19.8	5.3	26.2	-6.2
23	8	53	24.5	3.3	15.3	1.5
24	8	47	21.8	6.0	27.8	-4.2
25	7	40	19.8	8.0	39.6	-6.2
26	8	40	18.5	2.0	9.3	7.5
27	7	87	43.1	4.7	23.3	17.1
28	8	33	15.3	4.7	21.8	10.7
29	8	67	31.0	4.0	18.5	5.0
30	7	67	33.2	6.7	33.2	7.2

¹ Average LAB used to subtract from Gross Sample Activity

26.0	Sample LAB Average
MIN	13.5
MAX	46.8
MEAN	8.5
SD	14.8
Transuranic DCGL _w	100

QC Measurements

15QC	7	11.3	55.9	7.3	36.1	31.2
17QC	7	2.0	9.9	2.7	13.4	14.9
					24.8	QC LAB Average

¹ Average QC LAB used to subtract from Gross Sample Activity

**SURVEY UNIT
443-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 #	767	1164	770	959
Cal Due Date	4/30/02	5/13/02	7/25/02	7/14/02
Analysis Date	2/21/02	2/21/02	2/21/02	2/21/02
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	0.0	-0.3
2	2	0.0	-0.3
3	1	0.0	-0.3
4	4	1.0	3.0
5	4	0.0	0.0
6	1	1.0	2.7
7	1	1.0	2.7
8	4	0.0	0.0
9	2	0.0	-0.3
10	2	0.0	-0.3
11	3	0.0	0.0
12	3	0.0	0.0
13	4	0.0	0.0
14	1	2.0	5.8
15	2	0.0	-0.3
16	3	0.0	0.0
17	2	0.0	-0.3
18	1	2.0	5.8
19	3	0.0	0.0
20	3	0.0	0.0
21	2	0.0	-0.3
22	4	0.0	0.0
23	2	0.0	-0.3
24	4	1.0	3.0
25	4	1.0	3.0
26	1	1.0	2.7
27	2	0.0	0.3
28	1	0.0	0.3
29	3	0.0	0.0
30	3	0.0	0.0
	MIN		0.3
	MAX		5.8
	MEAN		0.8
	SD		1.8
	Transuranic DCGL _w		20

SURVEY UNIT 443-B-002
RADIOLOGICAL DATA SUMMARY

Survey Unit Description: Exterior of B443

**443-B-002
Radiological
Data Summary**

<u>Total Surface Activity Measurements</u>			<u>Removable Activity Measurements</u>		
	30	30		30	30
	Number Required	Number Obtained		Number Required	Number Obtained
MIN	-5.5	dpm/100 cm ²	MIN	-0.9	dpm/100 cm ²
MAX	84.3	dpm/100 cm ²	MAX	6.1	dpm/100 cm ²
MEAN	27.4	dpm/100 cm ²	MEAN	1.0	dpm/100 cm ²
STD DEV	18.8	dpm/100 cm ²	STD DEV	1.9	dpm/100 cm ²
TRANSURANIC DCGL _w	100	dpm/100 cm ²	TRANSURANIC DCGL _w	20	dpm/100 cm ²

**SURVEY UNIT 443-B-002
TSA DATA SUMMARY**

Manufacturer	NE Electra	NE Electra	NE Electra	NE Electra
Model	DP-6	DP-6	DP-6	DP-6
Instrument ID#	7	8	9	10
Serial #	3114	1379	3114	1589
Cal Due Date	8/13/02	5/6/02	8/13/02	5/15/02
Analysis Date	2/19/02	2/21/02	2/21/02	2/21/02
Alpha Eff (c/d)	0.216	0.202	0.216	0.211
Alpha Bkgd (cpm)	3.3	3.3	2.0	0.0
Sample Time (min)	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5
MDC (dpm/100cm ²)	48.0	48.0	48.0	48.0

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm ²)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm ²)	Sample Net Activity (dpm/100cm ²) ¹
1	8	8.0	39.6	6.0	29.7	9.5
2	7	11.3	52.3	6.0	27.8	22.3
3	9	7.3	33.8	0.7	3.2	3.7
4	9	12.0	55.6	4.0	18.5	25.5
5	9	15.3	70.8	3.3	15.3	40.8
6	8	8.7	43.1	8.7	43.1	13.0
7	9	8.0	37.0	5.3	24.5	7.0
8	7	16.0	74.1	12.7	58.8	44.0
9	7	12.7	58.8	7.3	33.8	28.7
10	9	5.3	24.5	4.7	21.8	5.5
11	7	12.7	58.8	13.3	61.6	28.7
12	9	24.7	114.4	7.7	35.6	84.3
13	8	16.7	82.7	3.3	16.3	52.6
14	7	18.0	83.3	13.3	61.6	53.3
15	7	11.3	52.3	5.3	24.5	22.3
16	7	10.0	46.3	8.7	40.3	16.2
17	8	11.3	55.9	4.0	19.8	25.9
18	9	11.3	52.3	2.0	9.3	22.3
19	7	16.7	77.3	6.0	27.8	47.3
20	8	8.0	39.6	8.7	43.1	9.5
21	7	13.3	61.6	6.0	27.8	31.5
22	7	8.7	40.3	5.3	24.5	10.2
23	7	11.3	52.3	7.3	33.8	22.3
24	7	16.0	74.1	5.3	24.5	44.0
25	7	10.7	49.5	8.7	40.3	19.5
26	7	17.3	80.1	3.3	15.3	50.0
27	7	12.0	55.6	7.3	33.8	25.5
28	7	15.3	70.8	6.7	31.0	40.8
29	8	8.7	43.1	6.3	31.2	13.0
30	8	8.7	43.1	4.7	23.3	13.0

¹ Average LAB used to subtract from Gross Sample Activity

30.1	Sample LAB Average
MIN	5.5
MAX	84.3
MEAN	27.4
SD	18.8
Transuranic DCGL _w	100

QC Measurements

4QC	10	4.0	19.0	2.0	9.5	3.1
13QC	10	16.7	79.1	7.3	34.6	57.1
					22.0	QC LAB Average

¹ Average QC LAB used to subtract from Gross Sample Activity

**SURVEY UNIT
443-B-002
SMEAR DATA SUMMARY**

Manufacturer	Eberline							
Model	SAC-4							
Instrument ID#	1	2	3	4	5	6	13	14
Serial #	767	1164	770	959	767	1164	770	959
Cal Due Date	4/30/02	5/13/02	7/25/02	7/14/02	4/30/02	5/13/02	7/25/02	7/14/02
Analysis Date	2/19/02	2/19/02	2/19/02	2/19/02	2/21/02	2/21/02	2/21/02	2/21/02
Alpha Eff (c/d)	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.3	0.1	0.0	0.1	0.1	0.1	0.0	0.0
Sample Time (min)	2	2	2	2	2	2	2	2
Bkgd Time (min)	10	10	10	10	10	10	10	10
MDC (dpm/100cm ²)	8.8	7.0	4.5	7.0	7.0	7.0	4.5	4.5

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm ²)
1	5	0.0	-0.3
2	4	0.0	-0.3
3	5	1.0	2.7
4	6	1.0	2.7
5	14	0.0	0.0
6	6	0.0	-0.3
7	14	0.0	0.0
8	2	1.0	2.7
9	3	0.0	0.0
10	14	0.0	0.0
11	3	0.0	0.0
12	6	0.0	-0.3
13	13	0.0	0.0
14	4	0.0	-0.3
15	3	0.0	0.0
16	4	1.0	2.7
17	13	0.0	0.0
18	5	1.0	2.7
19	3	1.0	3.0
20	6	0.0	-0.3
21	1	0.0	-0.9
22	1	0.0	-0.9
23	2	0.0	0.3
24	2	1.0	2.7
25	1	2.0	5.2
26	2	0.0	-0.3
27	4	1.0	2.7
28	1	1.0	2.1
29	5	0.0	-0.3
30	13	2.0	6.1
	MIN		-0.9
	MAX		6.1
	MEAN		1.0
	SD		1.9
	Transuranic DCGL _w		20



B443 INTERIOR
GAMMA SPECTROSCOPY
ANALYTICAL RESULTS



COVER PAGE
RC10B, On-Site Radiological Screening by Gamma Spectrometry

Gamma Spectrometry

**PROJECT SAMPLE IDENTIFICATION
CROSS-REFERENCE
TO CMLS SAMPLE LABORATORY IDs**

**BATCH 0204094453
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)
02D1146#001	02D1146-001 001	02D1146-001 001	CMLS-1054	Obj00380	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 4/10/02

Laboratory Director
Title

CASIS		REETS		COC: 02D1146#001		Page 1 of 1	
Sampler(s) <i>B. S. Shillikoff</i>		Contract/Requester JOHNSEN, SHELLY/BRITTEN, JAY		Telephone No. 64043060			
BIN 02D1146		Sampling Origin 443		Purchase Order/Charge Code E4430CHR			
Project Title B443, STEAM PLANT PAINT SAMPLES		Logbook No. <i>06 Van</i>		Iss. Chest No. -		Temp. -	
To (Lab) Canberra Mobile Lab Service		Method of Shipment <i>C.A.S.</i>		Bill of Lading/Air Bill No. -			
Protocol <i>CAS-SEP-003</i>		Related COC (if any) -		P&E -			
POSSIBLE SAMPLE HAZARDS/REMARKS		SCREENING REQUIRED <input type="checkbox"/>		SPECIAL INSTRUCTIONS Hold Time			
Are acid preserved samples DOT hazardous per 49 CFR Part 126.3 Table II? YES NO				EVENT WILL CONSIST OF 1 PAINT SAMPLE FOR A 16 HR GAMMA SHOT			
Are other known hazardous substances present? YES NO							
Bottle No 02D1146 -001 001		Customer Number -		Date/Time <i>4/07/02</i> <i>0832</i>		Container (size/type) 1-SAMPL E	
Matrix SOLID		Location 443		Field-Filtered] LJC (Method Title) [TAT]/(Parameter List)		Preservative/ Packaging None None	
				Sample Analytical			
				RC10B019 (GS-I-N/S-Lab-Nstd [SDCS-Solid] [48hrs]) (AM241, U235, U238)			

Requested By <i>B. S. Shillikoff</i>	Date/Time 49-02 0945	Received By <i>T. J. A. Ref 2</i>	Date/Time 4/02/02 0950	Requested By <i>Ref 15</i>	Date/Time 4/02/02 0950
Requested By <i>B. S. Shillikoff</i>	Date/Time 49-02 0952	Received By <i>Shelli Chambers</i>	Date/Time 4/02/02 0952	Requested By	Date/Time
Requested By	Date/Time	Received By	Date/Time	Requested By	Date/Time
FINAL SAMPLE DISPOSITION		Disposal Method (6.9 - retained in container, disposed of per lab procedures, used in analytical process)		Date/Time COC printed: 04/08/02 12:32	

7



 ***** GAMMA SPECTRUM ANALYSIS *****
 ** Canberra Mobile Laboratory Services **

Report Generated On 4/10/2002 8 52 40 AM

RIN Number 02D1146
 Analytical Batch ID 0204094453
 Line Item Code RC10B019

Filename A \OBJ00380 CNF

Sample Number 02D1146-001 001
 Lab Sample Number CMLS-1054
 Sample Receipt Date 4/09/2002
 Sample Volume Received 4 83E+001 Grams

Result Identifier N/A

Peak Locate Threshold 3 00
 Peak Locate Range (in channels) 100 - 8192
 Peak Area Range (in channels) 100 - 8192
 Identification Energy Tolerance 1 500 keV

Sample (Final Aliquot Size) 4 830E+001 Grams
 Sample Quantity Error 0 000E+000
 Systematic Error Applied 0 000E+000

Sample Taken On 4/09/2002 8 30 00 AM
 Acquisition Started 4/09/2002 12 31 55 PM

Count Time 57600 0 seconds
 Real Time 57606 5 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 4/09/02
 Efficiency Geometry ID 02D1146-001 001

Analyzed By Marilyn Umbaugh Date 4/10/02

Reviewed By Sheri Chambers Date 4/10/02

38



Sample and QC Sample Results Summary

Site Sample ID 02D1146-001 001
Analytical Batch ID 0204094453
Sample Type (Result Identifier) OBJ
Lab Sample Number CMLS-1054
Geometry ID 02D1146-001 001
Filename A \OBJ00380 CNF
Detector Name BEGE

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

Table with 4 columns: Analyte, Activity (pCi/Grams), 2-Sigma Uncertainty (pCi/Grams), MDA (pCi/Grams). Rows include K-40, TL-208, PO-210, BI-212, PB-212, BI-214, PB-214, RA-226, AC-228, TH-230, Th-231, PA-234, PA-234M, U-235, U238/234, AM-241.

ATTACHMENT D

Chemical Data Summaries and Sample Maps

Asbestos Data Summary

Sample Number	Map Survey Point Location	Material Sampled & Location	Analytical Results
Building 443			
443-03192002-315-201	201	Room 101D - Light blue pain on cinderblock, south exterior wall	None Detected
443-03192002-315-202	202	Room 101 - West wall window caulking	Trace Chrysotile 0.25 Point Count
443-03192002-315-203	203	Room 101 - East wall window caulking	Trace Chrysotile <0.25 Point Count
443-03192002-315-204	204	Room 101D - Light blue paint on cinderblock, east exterior wall	None Detected
443-03192002-315-205	205	Room 101 - East wall window caulking	Trace Chrysotile <0.25 Point Count
443-03192002-315-206	206	Room 101D - Light blue paint on cinderblock, west exterior wall	None Detected
443-03192002-315-207	207	Room 106 - Drywall, bottom of south exterior wall	None Detected
443-03192002-315-208	208	Room 104A - White paint on cinderblock, north exterior wall	None Detected
443-03192002-315-209	209	Room 104A - White paint on cinderblock, north exterior wall	None Detected
443-03192002-315-210	210	Room 104A - White paint on cinderblock, west exterior wall	None Detected
443-03192002-315-211	211	Room 304 - Gray paint on cinderblock, east exterior wall	None Detected
443-03192002-315-212	212	Room 302 - Gray paint on cinderblock, east exterior wall	None Detected
443-03192002-315-213	213	Room 302 - Gray paint on cinderblock, south exterior wall	None Detected
443-03192002-315-214	214	Room 304 - Light brown paint on cinderblock, south wall	None Detected
443-03192002-315-215	215	Room 304 - Light brown paint on cinderblock, north wall	None Detected
443-03192002-315-216	216	Room 302 - Light brown paint on cinderblock, south wall	None Detected
443-03192002-315-217	217	Roof - Silver roof flashing & black tar at base of southern stack	Silver Paint - Trace Chrysotile, <0.25 Point Count
443-03192002-315-218	218	Roof - Black tar at vent pipe	Black fibrous tar - 4 % Chrysotile
443-03192002-315-219	219	Roof - Black tar & silver paint at bottom of middle stack	None Detected
443-03192002-315-220	220	Roof - Rubbery caulking at exhaust vent	10 % Chrysotile
443-03192002-315-221	221	Roof - Silver paint & black tar at vent, upper west wing	Trace Chrysotile 0.25 Point Count
443-03192002-315-222	222	Roof - Rubbery caulking at vent, upper west wing	Trace Chrysotile <0.25 Point Count
443-03192002-315-223	223	Roof - Black tar and mesh fabric at west gutter, upper west wing	10 % Chrysotile
443-03192002-315-224	224	Roof - Black tar & silver paint at vent	8 % Chrysotile
443-03192002-315-225	225	Room 102A - Blue and white speckled linoleum in restroom	Trace Chrysotile <0.25 Point Count
443-03192002-315-225	225		None Detected

Beryllium Data Summary

Sample Number	Map Survey Point Location	Sample Location	Result ($\mu\text{g}/100 \text{ cm}^2$)
Building 443			
443-03192002-315-101	101	Room 201 – Top of concrete ledge, south wall of north end mezzanine	<0.1
443-03192002-315-102	102	Room 101 – Top of red, fire suppression pipe	<0.1
443-03192002-315-103	103	Room 105 – Top of elbow at Fuel Oil Surge tank, east wall	<0.1
443-03192002-315-104	104	Room 105 – Top of fluorescent light fixture by east wing boiler	<0.1
443-03192002-315-105	105	Room 105 – Top of 4422 Flammables cabinet	<0.1
443-03192002-315-106	106	Room 105 – Top of T at far south boiler	<0.1
443-03192002-315-107	107	Room 105 – Top of Lubrication cabinet 2, south end	<0.1
443-03192002-315-108	108	Mezzanine – Top of green, Process Cold Water Valve	<0.1
443-03192002-315-109	109	Mezzanine – Top ledge of white breaching jacket, south side	<0.1
443-03192002-315-110	110	Mezzanine – Top of HVAC metal ductwork	<0.1
443-03192002-315-111	111	Room 305 – Top of horizontal I-beam support, south wall	<0.1
443-03192002-315-112	112	Fan Room above 302 – Top of horizontal I-beam support, west wall	<0.1
443-03192002-315-113	113	Mezzanine – Top of condensate steam fitting, north end of boiler	<0.1
443-03192002-315-114	114	Mezzanine – Top of ledge of white boiler jacket, north side	<0.1
443-03192002-315-115	115	Mezzanine – Top of orange metal exhaust duct	<0.1

ATTACHMENT E

1996 Asbestos Report

SITEX Environmental, Inc.

Executive Summary and Laboratory
Data

ASBESTOS INSPECTION
AND
OPERATIONS AND MAINTENANCE PLAN
FOR
BUILDING 443
ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
GOLDEN, COLORADO

SECTION I
(INTRODUCTION, METHODOLOGY, ASBESTOS INSPECTION)

PREPARED FOR
U.S. DEPARTMENT OF ENERGY
ROCKY FLATS FIELD OFFICE, BUILDING B131
P.O. BOX 928
GOLDEN, COLORADO 80402

PROJECT NO. 108230

APRIL 22, 1996

 **SITEX**
Environmental, Inc.

11905 Borman Drive
St. Louis MO 63146

(314) 569-1119

METHODOLOGY

Building 443 was inspected for suspect asbestos-containing materials which included surfacing materials, thermal system insulation and miscellaneous materials. Each material was identified by space number, quantified and then assessed for condition. Bulk material samples were collected of each suspect material utilizing AHERA and OSHA sampling protocols. Homogeneous determinations were made for asbestos-containing thermal system insulation which extended into more than one building space. All other materials (surfacing and miscellaneous) were described for each building space which eliminated the need to identify homogeneous spaces. The advantage of this strategy was to allow the users of this report immediate information regarding the asbestos-containing materials in any given space and not have to rely on a group of functional spaces which would define a homogeneous area.

Bulk material samples of suspect asbestos-containing materials were analyzed by polarized light microscopy (PLM) analysis with dispersion staining (DS) using EPA Method 600 IR-93/116 which is the present analytical method recommended by EPA. Analysis was performed by International Asbestos Testing Laboratory (IATL) located at 16000 Horizon Way, Unit 100 in Mount Laurel, New Jersey. IATL is accredited or approved by the National Institute of Science and Technology-National Voluntary Laboratory Accreditation Program (NIST-NVLAP), American Industrial Hygiene Association (AIHA) and Proficiency Analytical Testing (PAT) program. Laboratory analysis and qualifications for IATL are presented in Appendix F.

The O&M plan was developed using a combination of OSHA regulations and industry standards which are published in a variety of EPA documents. Recommended response actions were determined according to asbestos material condition; whether it was friable and its potential for present and future release of asbestos fibers. The adopted rating system was based on a subjective evaluation which included "low", "moderate" and "high" priority. Low would indicate a priority of concern less than moderate or high. Moderate would indicate a priority of concern higher than low and less than high and so on for high. Some ratings were also presented as a combination of low, moderate and high such as low to moderate or moderate to high.

ASBESTOS INSPECTION

The findings of the asbestos inspection and assessment determinations for at Building 443 are documented on the Space Inventory and Recommended Response Action form, the Bulk Sample Results and Photographic Log form and the Present and Future Exposure Potential forms.

Space Inventory and Recommended Response Action Form

The Space Inventory and Recommended Response Action form includes the space number, asbestos material, material classification, approximate quantity, material condition and recommended response action. The space number indicates the area which was inspected for suspect asbestos-containing materials. Asbestos materials refer to the confirmed asbestos-containing materials which were in the inspected space. Material classification describes whether the asbestos material

ASBESTOS INSPECTION (CONT.)

Space Inventory and Recommended Response Action Form (Cont.)

was friable, Category I nonfriable or Category II nonfriable which are defined in Section II of this report. The approximate quantity indicates the amount of the particular asbestos material present in a space. Present condition indicates the present condition of the asbestos material and the type and amount of damage, if any. The recommended response action was based on material classification and present condition. The recommended response action was chosen to minimize fiber exposure to the environment.

Bulk Sample Results and Photographic Log Form

The Bulk Sample Results and Photographic Log form is composed of the space number, description of area, sample number, material sampled, photograph number and results. The space number is the same as previously mentioned. The description of area provides recognizable names which indicate the activity or function of the space. The sample number consists of the building number followed by standard counting numbers to indicate a unique sample number. Material sampled refers to the actual sampled material in a particular space. The photograph number indicates the photographs taken of bulk material samples and details of building spaces. Results are the laboratory analysis of the collected bulk material samples.

Present and Future Exposure Potential Form

The Present and Future Exposure Potential form consists of headings stating space number, asbestos material, friable, present condition, damage potential and exposure potential. Exposure potential is subdivided into headings of present (no response action); future (response action completed); and future (response action not completed). The space number, asbestos material and present condition were previously defined. Friable warrants a yes or no response based on whether the material is friable or nonfriable. Damage potential is indicated as low, moderate or high priority which is based on damage from physical contact, material location and deterioration factors such as air movement, vibration and water damage. The exposure potential also indicated as low, moderate or high is based on the asbestos material, whether it is friable, the present condition and the damage potential. Exposure potential is further defined as present with no response action being performed and future with and without the recommended response action being completed.

Inspection Findings

The completed Space Inventory and Recommended Response Action form, Bulk Sample Results and Photographic Log form and Present and Future Exposure Potential form for Building 443 are as follows. Also presented are building drawings which indicate space numbers, asbestos materials present and photograph numbers. The photographs which are referred to in the Space Inventory and Recommended Response Action form, the Bulk Sample Results and Photographic Log form and the drawings are presented following the drawings.

BUILDING 443

Space Inventory and Recommended Response Action

SPACE INVENTORY AND RECOMMENDED RESPONSE ACTION

Building No. 443

Location: Rocky Flats

Page No 1

Date: April 22, 1996

Inspector's Identification No. _____

Sylvester B. Douglas
Name

Sylvester Douglas
Signature of Inspector

ZONE 1							
101	P	Friable	450 linear feet	5 linear feet/Damage	Repair/Operations and Maintenance		
101A	P	Friable	15 linear feet	3 linear feet/Damage	Repair/Operations and Maintenance		
101A	PE	Friable	10	2/Damage	Repair/Operations and Maintenance		
101B	P	Friable	10 linear feet	No Damage	Operations and Maintenance		
101C	P	Friable	50 linear feet	2 linear feet/Damage	Repair/Operations and Maintenance		
101E	P	Friable	10 linear feet	No Damage	Operations and Maintenance		
101E	PE	Friable	3	1/Damage	Repair/Operations and Maintenance		
201	P	Friable	30 linear feet	5 linear feet/Damage	Repair/Operations and Maintenance		
201	ET	Friable	<2 square feet	No Damage	Operations and Maintenance		

SPACE INVENTORY AND RECOMMENDED RESPONSE ACTION

Building No 443 (Cont)
 Location: Rocky Flats

Page No. 2
 Date: April 22, 1996

Inspector's Identification No. _____

Sylvester B. Douglas
 Name

SD
 Signature of Inspector

ZONE 2						
102	Piping	Friable	1,300 linear feet	10 linear feet/ Damage; 5 square feet/ Significant Damage	Repair, Removal/Operations and Maintenance	
102	Duct Insulation	Friable	800 cubic feet	<3 square feet/Damage	Repair/Operations Maintenance	
ZONE 3						
103	Piping	Friable	1,200 linear feet	30 linear feet/Damage; <3 linear feet/ Significant Damage	Repair/Operations and Maintenance Remove/Operations and Maintenance	
103	Duct Insulation	Friable	600 cubic feet	<2 square feet/ Significant Damage	Repair/Operations and Maintenance	
ZONE 4						
104	Piping	Friable	1,100 linear feet	20 linear feet/Damage	Repair/Operations and Maintenance	

SPACE INVENTORY AND RECOMMENDED RESPONSE ACTION

Building No: 443 (Cont.)
 Location: Rocky Flats

Page No 3
 Date: April 22, 1996

Inspector's Identification No. _____

Sylvester B. Douglas
 Name

SD
 Signature of Inspector

Zone	Item	Condition	Quantity	Damage	Response
ZONE 4 (Cont.)					
104 (Cont.)	Pipe elbow/fittings	Friable	4	2/Damage	Repair/Operations and Maintenance
104	Duct Insulation	Friable	900 cubic feet	30 square feet/Damage	Repair/Operations and Maintenance
202	Piping	Friable	100 square feet	<3 linear feet/Damage	Repair/Operations and Maintenance
202	Tank	Friable	130 square feet	No Damage	Operations and Maintenance
202	Expansion Tank	Friable	7 linear feet	No Damage	Operations and Maintenance
ZONE 5					
106A	Piping	Friable	1,400 linear feet	10 linear feet/Damage; 3 linear feet/Significant Damage	Repair/Operations and Maintenance
106A	Tank (2)	Friable	600 square feet	6 square feet/Damage	Repair/Operations and Maintenance

SPACE INVENTORY AND RECOMMENDED RESPONSE ACTION

Building No 443 (Cont.)
 Location: Rocky Flats

Inspector's Identification No. _____

Sylvester B. Douglas
 Name

SD
 Signature of Inspector

ZONE 5 (Cont.)							
301	Piping	Friable	500 linear feet	10 linear feet/Damage	Repair/Operations and Maintenance		
301	Tank	Friable	350 square feet	<3 square feet/Damage	Repair/Operations and Maintenance		
ZONE 6							
104A	Exhaust Stack	Friable	20 linear feet	No Damage	Operations and Maintenance		
104C	Piping	Friable	525	5 linear feet/Damage	Repair/Operations and Maintenance		
104C	Pipe elbow/fittings	Friable	20	<3/Damage	Repair/Operations and Maintenance		
304	Transite	Category II, nonfriable	150 square feet	<1 square feet/Damage	Repair/Operations and Maintenance		
304A	Piping	Friable	50 linear feet	<2 linear feet/Damage	Repair/Operations and Maintenance		

SPACE INVENTORY AND RECOMMENDED RESPONSE ACTION

Building No. 443 (Cont.)
 Location. Rocky Flats

Page No 5
 Date April 22, 1996

Inspector's Identification No. _____
 Name Sylvester B. Douglas
 Signature of Inspector SD

ZONE 6 (Cont.)				
304A (Cont.)	Pipe elbow/fittings	Friable	10	3/Damage Repair/Operations and Maintenance
304A	Tank	Friable	750 square feet	No Damage Operations and Maintenance
ZONE 7				
305	Gasket	Category I, nonfriable	<10 square feet	<1 square foot/Damage Removal/Operations and Maintenance

Asbestos-containing building materials were not found in Spaces 101D, 104B, 105, 106, 302, 303 and 306

BUILDING 443

Bulk Sample Results and Photograph Log

BULK SAMPLE RESULTS AND PHOTOGRAPHIC LOG

Building No: 443
 Location: Rocky Flats

Page No 1
 Date April 22, 1996

Zone	Sample No.	Location	Material	Sample No.	Result
ZONE 1					
101	443-078	Mechanical Area	black vinyl vibration isolator	37	None Detected
101	443-079	Mechanical Area	white vinyl vibration isolator	38	None Detected
101	443-092	Mechanical Area	pipe insulation, 12-in steam 125 line	39	25% Amosite, 25% Chrysotile
101	443-093	Mechanical Area	pipefitting insulation, 12-in steam 125 valve	39	35% Amosite
101A, 101B	443-083	Office Area	12 in x 12 in beige floor tile (no mastic)	46	None Detected
101C	443-084	Locker Area	pipe elbow insulation, 3-4 in process cold water	41	5% Amosite
101C	443-085	Locker Area	pipe insulation, 3-4 in. process cold water	40	35% Amosite
101C	443-086	Locker Area	pipe insulation, 2-3 in steam 45 line	40	15% Amosite, 15% Chrysotile
101C	443-087	Locker Area	pipe elbow insulation, 2-3 in. steam 45 line	40	25% Amosite, 10% Chrysotile
101D	443-076	Generator Room	12 in x 12 in ceiling tile	36	None Detected
101D	443-077	Generator Room	ceiling tile mastic (Sample 443-076)	36	None Detected

BULK SAMPLE RESULTS AND PHOTOGRAPHIC LOG

Building No. 443 (Cont)
 Location: Rocky Flats

Page No 2
 Date. April 22, 1996

Zone	Area	Sample No.	Location	Count	Results
ZONE 1 (Cont.)					
201	Mechanical Area	443-088	pipe insulation, 4-6 in condensate steam line	43	30% Chrysotile
201	Mechanical Area	443-089	pipe insulation, 1-2 in process cold water	43	10% Chrysotile
201	Mechanical Area	443-091	pipefitting insulation, 6-in steam 45 valve	39	60% Chrysotile
ZONE 2					
102	Mechanical Area	443-063	pipe elbow insulation, 10-12 in. steam 300 lb	27	None Detected
102	Mechanical Area	443-064	pipe insulation, 2-3 in fuel oil supply	30	25% Amosite 5% Chrysotile
102	Mechanical Area	443-065	breaching insulation, Boiler #4	30	None Detected
102	Mechanical Area	443-066	pipe elbow insulation, 3-4 in. fuel oil supply	34	None Detected
102	Mechanical Area	443-067	pipe insulation, 3-4 in. fuel oil supply	32, 33	25% Amosite 5% Chrysotile

BULK SAMPLE RESULTS AND PHOTOGRAPHIC LOG

Building No: 443 (Cont.)
 Location: Rocky Flats

Page No 4
 Date: April 22, 1996

Sample No.	Zone	Area	Sample No.	Description	Sample No.	Results
ZONE 3 (Cont.)						
103 (Cont.)	Mechanical Area	443-127	26	pipe wrap, 2-4 in line labeled "asbestos free"		None Detected
103	Mechanical Area	443-128	26	pipe elbow insulation, 2-4 in line labeled "asbestos free"		None Detected
ZONE 4						
104	Mechanical Area	443-021	11	lower breeching insulation, Boiler #6		1.5% Chrysotile
104	Mechanical Area	443-022	12	upper breeching insulation, Boiler #6		25% Chrysotile
104	Mechanical Area	443-023	8	elbow insulation, steam 300		30% Amosite, 10% Chrysotile
104	Mechanical Area	443-024	8	pipe insulation, steam 300		30% Amosite
104	Mechanical Area	443-025	9	pipe insulation, pipe labeled "Cross Tied To A"		25% Amosite
104	Mechanical Area	443-026	9	pipe insulation, "loop" pipe of Sample 443-025		5% Amosite, 60% Chrysotile
104	Mechanical Area	443-027	13	pipe insulation, condensate steam 300		30% Amosite

BULK SAMPLE RESULTS AND PHOTOGRAPHIC LOG

Building No: 443 (Cont.)
 Location: Rocky Flats

Page No 5
 Date April 22, 1996

Zone	Sample	Location	Count	Results
ZONE 4 (Cont.)				
104 (Cont.)	X	Mechanical Area	443-028	expansion tank insulation, condensate steam 300
104	X	Mechanical Area	443-029	pipefitting, 2-4 in process cold water
104	X	Mechanical Area	443-030	elbow insulation, 1-2 in 5 lb. steam
104		Mechanical Area	443-031	pipe wrap, pipe labeled nonasbestos
104		Mechanical Area	443-049	elbow insulation, 300 lb. steam
104	X	Mechanical Area	443-050	pipe insulation, 6 in. steam 125
104	X	Mechanical Area	443-051	pipe insulation, 3-4 in. condensate steam
202	X	Chemical Treatment	443-075	elbow insulation, 1/2 in process cold water
202	X	Chemical Treatment	443-052	tank insulation, condensate steam tank
			13	60% Amosite
			13	10% Amosite, 15% Chrysotile
			14	2.5% Amosite
			13	None Detected
			10	None Detected
			22	25% Chrysotile
			22	25% Chrysotile
			23	10% Amosite, 15% Chrysotile
			65	10% Amosite, 15% Chrysotile

BULK SAMPLE RESULTS AND PHOTOGRAPHIC LOG

Building No. 443 (Cont.)
 Location: Rocky Flats

Page No 6
 Date. April 22, 1996

Zone	Sample No.	Location	Sample No.	Results
ZONE 4 (Cont.)				
202 (Cont.)	X	Chemical Treatment	443-055	pipe insulation, 6-8 in steam blow down 300 64
202		Chemical Treatment	443-056	pipe insulation, unlabeled pipe connecting to condensate steam 64
202	X	Chemical Treatment	443-057	pipe insulation, 6-8 in condensate steam 67
202	X	Chemical Treatment	443-058	expansion tank, steam 5, above condensate tank 64
202	X	Chemical Treatment	443-059	pipe insulation, 4-6 in demineralized water 66
ZONE 5				
106A	X	Mechanical Area	443-032	tank insulation, west tank 15
106A	X	Mechanical Area	443-034	tank insulation, east tank 15
106A	X	Mechanical Area	443-035	breeching insulation, west tank 15
106A		Mechanical Area	443-036	tank insulation, east tank 15
				5% Amosite 25% Chrysotile
				None Detected
				5% Amosite 25% Chrysotile
				10% Amosite 15% Chrysotile
				5% Amosite 25% Chrysotile
				5% Amosite, 10% Chrysotile
				5% Amosite, 10% Chrysotile
				3% Amosite, 5% Chrysotile
				None Detected

BULK SAMPLE RESULTS AND PHOTOGRAPHIC LOG

Building No: 443 (Cont)
Location Rocky Flats

Page No 7
Date April 22, 1996

Sample No	Area	Sample ID	Location	Depth (in)	Results
ZONE 5 (Cont.)					
106A (Cont.)	Mechanical Area	443-038	pipe insulation, 1-2 in. steam 300		25% Amosite, 20% Chrysotile
106A	Mechanical Area	443-039	pipe insulation, 8-10 in steam 5	19	30% Amosite
106A	Mechanical Area	443-040	pipe insulation, 1-2 in steam blow down	19	25% Amosite, 5% Chrysotile
106A	Mechanical Area	443-041	elbow insulation, 1-2 in. steam blow down	19	None Detected
106A	Mechanical Area	443-042	expansion tank insulation, 6-8 in. steam 300	19	60% Amosite
106A	Mechanical Area	443-043	expansion tank, 10-12 in boiler feed water	16, 18	60% Chrysotile
106A	Mechanical Area	443-044	pipe insulation, 6-8 in. boiler feed water	16, 18	30% Chrysotile
106A	Mechanical Area	443-045	pipe insulation, 3-4 in boiler feed water	16, 18	15% Amosite, 20% Chrysotile
106	Control Room	443-046	outer wall/joint compound	20	None Detected
106	Control Room	443-047	12" x 12" white floor tile	21	None Detected

BULK SAMPLE RESULTS AND PHOTOGRAPHIC LOG

Building No. 443 (Cont)
Location. Rocky Flats

Page No 8
Date April 22, 1996

ZONE	Sample No.	Area	Location	Count	Results
ZONE 5 (Cont.)					
106 (Cont.)		Control Room	straw wall	21	None Detected
301	X	Mechanical Area	pipe elbow insulation, 3-4 in. steam 5 line	73	Trace Amosite, 35% Chrysotile
301	X	Mechanical Area	pipe insulation, 2-3 in steam 140 line	73	30% Chrysotile
301	X	Mechanical Area	pipe elbow insulation 2-3 in steam 150 line	73	10% Amosite, 15% Chrysotile
301	X	Mechanical Area	tank insulation	71	60% Chrysotile
301	X	Mechanical Area	pipefitting insulation, 10-12 in. steam 125 valve	73	15% Amosite, 25% Chrysotile
301	X	Mechanical Area	pipe insulation, 3-4 in. steam 5 line	73	60% Chrysotile
301	X	Mechanical Area	pipefitting insulation, 3-4 in steam 5 valve	73	60% Chrysotile
ZONE 6					
104A		Generator Room	1' x 1' ceiling tiles	1	None Detected
104A		Generator Room	1' x 1' ceiling tile adhesive	1	None Detected

BULK SAMPLE RESULTS AND PHOTOGRAPHIC LOG

Building No. 443 (Cont.)
Location Rocky Flats

Page No. 9
Date: April 22, 1996

ZONE 6 (Cont.)	Room	Sample No.	Sample Description	Photo No.	Result
104A (Cont.)	Generator Room	443-003	flue insulation	1	25% Amosite
104B	Generator Room	443-116	breeching insulation, east turbine	58	None Detected
104B	Generator Room	443-118	pipe insulation, 12-16 in west turbine	63	None Detected
104B	Generator Room	443-119	pipefitting insulation, 12-16 in west turbine valve	63	None Detected
104B	Generator Room	443-119A	breeching insulation, west turbine	61	None Detected
104B	Generator Room	443-120	pipe insulation, 1-2 in. condensate line	59	None Detected
104B	Generator Room	443-121	pipe insulation, 10-12 in steam vertical 140 line	62	None Detected
104B	Generator Room	443-122	pipe insulation, 10-12 in steam horizontal line	60	None Detected
104B	Generator Room	443-124	pipefitting insulation, 14-16 in. east turbine valve	57	None Detected
104B	Generator Room	443-125	pipefitting insulation, steam manifold valve	59	None Detected

BULK SAMPLE RESULTS AND PHOTOGRAPHIC LOG

Building No 443 (Cont.)
 Location: Rocky Flats

Page No 10
 Date April 22, 1996

Sample No.	Zone	Sample ID	Location	Count	Results
ZONE 6 (Cont.)					
104C	Mechanical Area	443-006	elbow insulation, 4-6 in. pipe	2	25% Chrysotile
104C	Mechanical Area	443-007	elbow insulation, 6-8 in pipe	2	25% Chrysotile
104C	Mechanical Area	443-008	valve insulation, 4-6 in boiler feed water supply	2	15% Amosite, 25% Chrysotile
104C	Mechanical Area	443-009	valve insulation, 6-8 in boiler feed water return	2	None Detected
104C	Mechanical Area	443-010	valve insulation, boiler feed water	3-7	35% Chrysotile
104C	Mechanical Area	443-011	elbow insulation, steam 300	3-7	60% Chrysotile
104C	Mechanical Area	443-012	pipe insulation, steam 300	3-7	30% Amosite, 5% Chrysotile
104C	Mechanical Area	443-013	elbow insulation, steam 125	3-7	30% Amosite, 5% Chryso
104C	Mechanical Area	443-014	pipe insulation, steam 125	3-7	30% Amosite, 5% Chrysotile
104C	Mechanical Area	443-015	pipe elbow, condensate steam	3-7	3% Amosite, 25% Chrysotile
104C	Mechanical Area	443-016	valve insulation, steam 300	3-7	25% Amosite, 5% Chrysotile
104C	Mechanical Area	443-017	pipe insulation, 2-4 in boiler feed water	3-7	30% Chrysotile

BULK SAMPLE RESULTS AND PHOTOGRAPHIC LOG

Building No: 443 (Cont)
 Location: Rocky Flats

Page No. 11
 Date: April 22, 1996

Sample No.	Location	Sample No.	Material	Zone	Result
ZONE 6 (Cont.)					
104C (Cont.)	Mechanical Area	443-019	elbow/fitting insulation, 2-4 in. boiler feed water	3-7	20% Chrysotile
104C	Mechanical Area	443-020	elbow/fitting insulation, 2-4 in. boiler feed water supply	3-7	10% Amosite, 15% Chrysotile
304	Fan Room	443-113	cementitious wall (transite)	78	25% Chrysotile
304A	Mechanical Area	443-110	tank insulation	81	40% Chrysotile
ZONE 7					
105	Mechanical Area	443-094	breeching insulation, Boiler #7	48	Trace Amosite, Trace Chrysotile
105	Mechanical Area	443-095	pipefitting insulation, 1-in steam blow down line	49	None Detected
105	Mechanical Area	443-096	block insulation, Boiler #7	51	None Detected
105	Mechanical Area	443-097	vibration isolator, Boiler #7	40	None Detected
105	Mechanical Area	443-116A	pipe elbow insulation, 10-12 in steam 300 lb line	50	None Detected
305	Fan Room	443-098	gasket material	70	80% Chrysotile

BULK SAMPLE RESULTS AND PHOTOGRAPHIC LOG

Building No. 443 (Cont.)
 Location Rocky Flats

Page No. 12
 Date April 22, 1996

Sample No.	Sample Location	Sample No.	Sample Location	Sample No.	Sample Location	Sample No.	Sample Location	Sample No.	Sample Location
NA	X	443-129	Outside Building, East Side	53	tank insulation, unlabeled tank	53	tank insulation, unlabeled tank	53	25% Chrysotile
NA		443-132	Outside Building, Northeast Corner	56	exterior wall	56	exterior wall	56	<1% Chrysotile
NA	X	443-133	Outside Building, East Side	56	cementitious panels	56	cementitious panels	56	35% Chrysotile
NA	X	443-136	Outside Building	54	tank insulation, NaOH tank	54	tank insulation, NaOH tank	54	5% Chrysotile

Asbestos inspection, assessment and sampling have been conducted by an EPA and state of Colorado accredited inspector in accordance with 40 CFR 763, who has completed an approved course under the Asbestos Hazard Emergency Response Act (AHERA)

Inspector's Certification No. _____

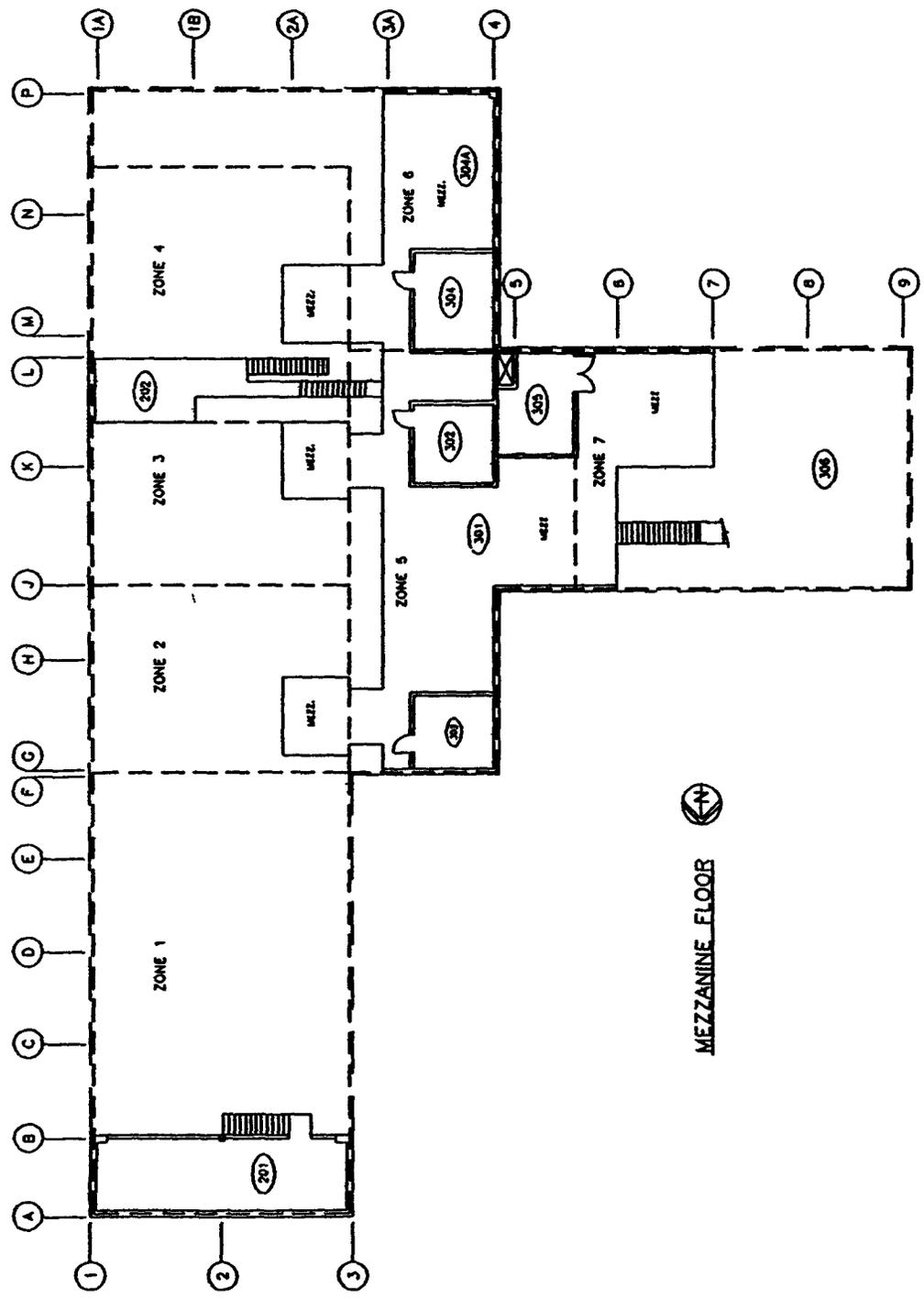
Sylvester B. Douglas
 Name

Sylvester B. Douglas
 Signature of Inspector

ASBESTOS NOTES

- SPACE**
 ZONE 1 301
 ZONE 2 302
 ZONE 3 303
 ZONE 4 304
 ZONE 5 305
 ZONE 6 306
 ZONE 7 307
- ACCESSIBLE MATERIAL**
 EXPANSION TANK, AIR LINE
 STEAM 300, CONDENSATE
 STEAM, UNTEMPERED WATER
 EXPANSION TANK
 CONDENSATE STEAM
 STEAM 125, BOILER FEED WATER TANK
 TRANSDUCER WALL
 CONDENSATE STEAM
 PIPE ELBOWS/FITTINGS, BOILER FEED
 TANK
- ASBESTOS-CONTAINING BUILDING MATERIALS WERE NOT FOUND IN SPACES:**
 302
 304
 305
- LEGEND**
 ○ SPACE NUMBER
 — WALL
 - - - ZONE BOUNDARY

BUILDING 443



MEZZANINE FLOOR

JOB NO. 1000 DATE 10/11/88 DRAWN BY [Signature]	ASBESTOS INSPECTION	U.S. DEPARTMENT OF ENERGY ROCKY FLATS FIELD OFFICE GOLDEN, COLORADO 80402		BUILDING 443
		SITEX Environmental, Inc. 1988 American Road in (303) 888-1178		
JOB NO. 1000		ASBESTOS INSPECTION		BUILDING 443
DATE 10/11/88		U.S. DEPARTMENT OF ENERGY ROCKY FLATS FIELD OFFICE GOLDEN, COLORADO 80402		
DRAWN BY [Signature]		SITEX Environmental, Inc.		ASB-2
1988 American Road in (303) 888-1178		U.S. DEPARTMENT OF ENERGY ROCKY FLATS FIELD OFFICE GOLDEN, COLORADO 80402		BUILDING 443

OBSERVATIONS

The majority of piping system insulation in the power plant was homogeneous for a particular pipe system with the exception of domestic cold water lines and fuel oil lines. Sample results for these pipe lines indicated asbestos was present in some areas and not present in other areas. These systems should be presumed asbestos-containing.

In addition, a sample collected from the lower portion of duct insulation of the boiler in Zone 2 was found to contain asbestos. This material was labeled as nonasbestos. Also a pipe wrap material labeled nonasbestos was found to contain asbestos. Additional samples should be collected of the nonasbestos labeled portions of each boiler to verify the presence or absence of asbestos. The nonasbestos pipe wrap should also be properly verified. The upper portions of duct insulation from the boilers were found to contain asbestos.

No roofing material samples were collected due to weather conditions which would not have allowed proper repair of the roof without risk of weather damage.

ATTACHMENT F

Data Quality Assessment (DQA) Detail

DATA QUALITY ASSESSMENT (DQA)

VERIFICATION & VALIDATION OF RESULTS

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

DQA criteria and results are provided in a tabular format for each suite of surveys or chemical analyses performed, the radiological survey assessment is provided in Table F-1, asbestos in F-2, and beryllium in F-3. A data completeness summary for all results is given in Table F-4.

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

Beta/gamma survey designs were not implemented for Building 443 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 optimized by checking actual measurement results (acquired during pre-demolition surveys) against model output with original estimates. Use of actual sample/survey (result) variances in the MARSSIM DQO model confirms that an adequate number of surveys were acquired.

SUMMARY

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

- Three samples locations (#202, #203 and #205) of non-friable asbestos containing materials were identified in trace amounts in B443, Room 101 interior. The rubbery window caulking material at all three locations was ≤ 25 Chrysotile by point count. Seven samples of non-friable asbestos containing materials were identified on the B443, roof exterior. The silver paint was < 25 Chrysotile by point count and the

fibrous black tar was 4% Chrysotile (location #217) by volume. The black tar, silver paint and rubbery caulking were 8% to 10% Chrysotile by volume at sample locations 219 (roof stack), 222 (roof vent) and 223 (upper west wing gutter) respectively. The black tar, silver paint and rubbery caulking were detected in trace amounts (≤ 25 Chrysotile by point count) at roof vent locations 220, 221 and 224. The ACM will be managed in accordance with 29 CFR 1926.1101 and CDHPE Colorado Regulation Number 8 during building decommissioning and demolition activities.

- An elevated reading was identified at one scan survey location in Room 101 ($250 \text{ dpm}/100\text{cm}^2$) that was greater than the transuranic DCGL_{EMC} investigative level ($225 \text{ dpm}/100\text{cm}^2$). The square meter average of the nine scan survey locations ($109 \text{ dpm}/100\text{cm}^2$) was also greater than transuranic DCGL_w limits ($100 \text{ dpm}/100 \text{ cm}^2$). One coupon sample was taken and analyzed by gamma spectroscopy confirmed no presence of weapons grade plutonium, but uranium was present. However, the uranium levels detected were below the DCGL_w limits of $5,000 \text{ dpm}/100\text{cm}^2$, therefore, no further investigation is required. All samples meet the PDSP surface contamination guidelines.

Chain of Custody was intact, documentation was complete, hold times were acceptable (where applicable,) and packaging integrity/custody seals were maintained throughout the sampling/analysis process. On this basis, Building 443 meets the unrestricted release criteria with the confidences stated herein.

Table F-1 V&V of Radiological Surveys For Building 443

V&V CRITERIA, RADIOLOGICAL SURVEYS		K-H RSP 16 00 Series MARSSIM (NUREG-1575)		COMMENTS
QUALITY REQUIREMENTS				
ACCURACY	Parameters	Measure	frequency	
		initial calibrations	90% < x < 110%	
	daily source checks	80% < x < 120%	≥ 1/day	Performed daily/within range
	local area background Field	typically < 10 dpm	≥ 1/day	All local area backgrounds were within expected ranges (i e , no elevated anomalies)
	field duplicate measurements for TSA	≥ 5% of real survey points statistical and biased	≥ 10% of reals	N/A
	REPRESENTATIVENESS	MARSSIM gridding methodology Survey Units 443-A-001 and 443-B-002	NA	Random w/ statistical confidence
	Survey Maps	NA	NA	Random and biased measurement locations controlled/mapped to ± 1m
	Controlling Documents (Characterization Pkg, RSPs)	qualitative	NA	Refer to the Characterization Package (planning document) for field/sampling procedures (located in Project files), thorough documentation of the planning, sampling/analysis process, and data reduction into formats
	units of measure	dpm/100cm ²	NA	Use of standardized engineering units in the reporting of measurement results
	COMPARABILITY			
	Plan vs Actual surveys usable results vs unusable detection limits	>95% >95%	NA	See Table F-4 for details
	COMPLETENESS	TSA ≤ 50 dpm/100cm ² RA ≤ 10 dpm/100cm ²	all measures	PDS MDAs ≤ 50% of DCGL _w
	SENSITIVITY			

Table F-2 V&V Of Chemical Results-Asbestos For Building 443

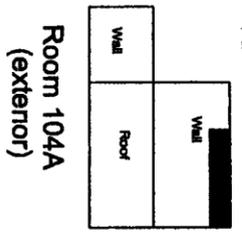
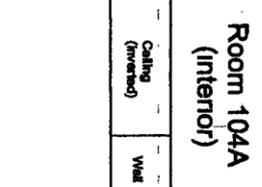
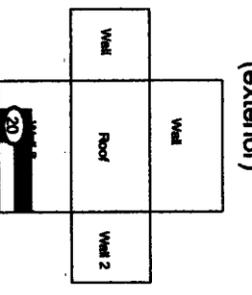
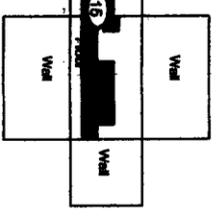
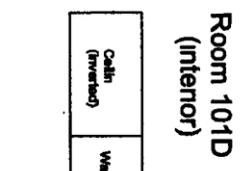
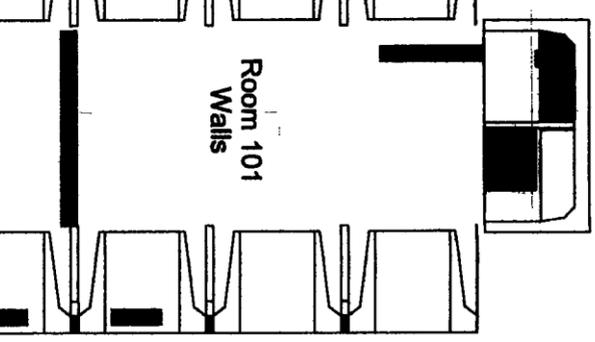
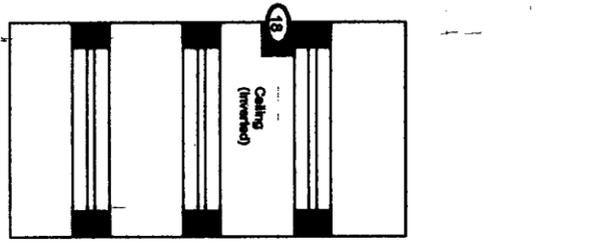
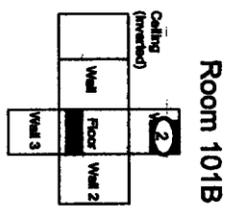
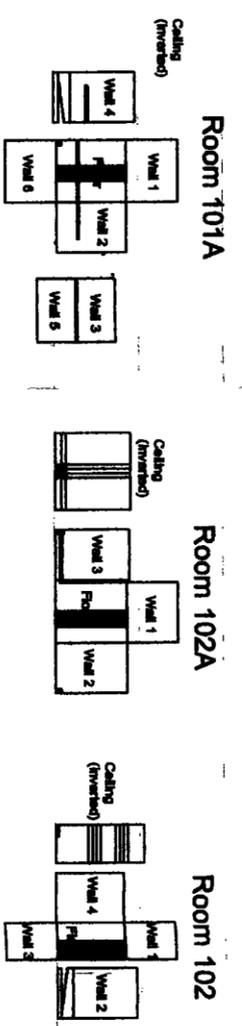
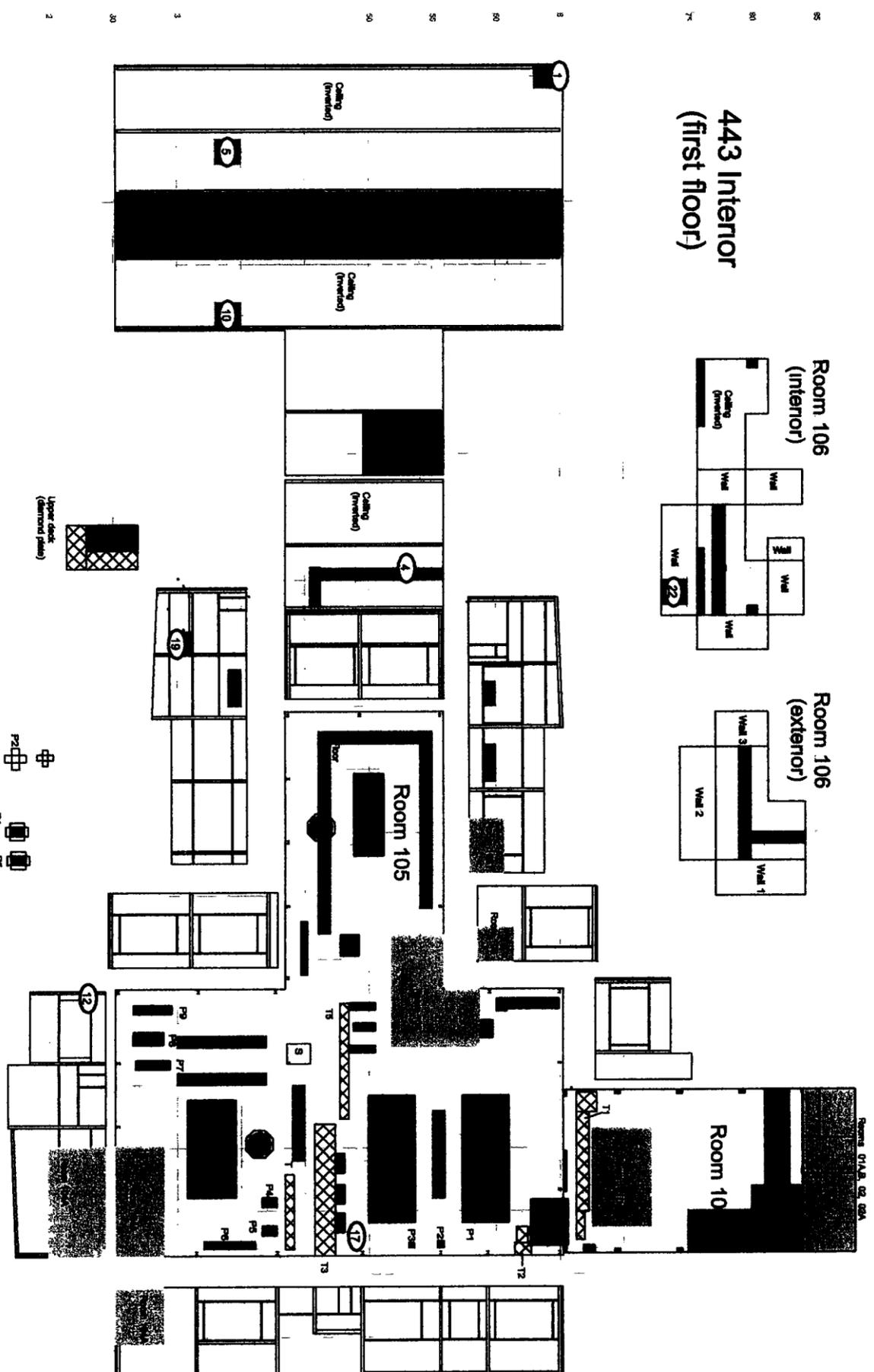
V&V CRITERIA, CHEMICAL ANALYSES ASBESTOS	METHOD EPA 600/R-93/116	DATA PACKAGE		COMMENTS
		LAB ---->	Reservoirs Environmental, Inc RIN02D1038	
QUALITY REQUIREMENT				
ACCURACY	Calibrations Initial/continuing	Measure below detectable amounts	Frequency ≥1	Semi-quantitative, per (microscopic) visual estimation
PRECISION	Actual Number Sampled LCSD Lab duplicates	all below detectable amounts	≥ 25 samples	Semi-quantitative, per (microscopic) visual estimation
REPRESENTATIVENESS	COC	Qualitative	NA	Chain-of-Custody intact completed paperwork, containers w/ custody seals
	Hold times/preservation	Qualitative	NA	N/A
	Controlling Documents (Plans, Procedures, maps, etc)	Qualitative	NA	See original Chemical Characterization Package (planning document), for field/sampling procedures (located in project file,) thorough documentation of the planning, sampling/analysis process, and data reduction into formats
COMPARABILITY	Measurement Units	% by bulk volume	NA	Use of standardized engineering units in the reporting of measurement results
COMPLETENESS	Plan vs Actual samples Usable results vs unusable	Qualitative	NA	See Table F-4, final number of samples at Certified Inspector's discretion
SENSITIVITY	Detection limits	<1% by volume	all measures	N/A

80/80

Table F-4 Data Completeness Summary For Building 443

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC) ^A	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc)
Asbestos	Bldg 443 (interior)	17 biased (interior)	17 biased (interior)	ACM present, > 1% by volume	40 CFR763 86, 5 CCR 1001-10, EPA 600/R-93/116 RIN02D1038
Asbestos	B443 (exterior)	8 biased (exterior)	8 biased (exterior)	(3 sample locations) ACM present, > 1% by volume	Sample locations 202, 203 and 205 in Room 101- window caulking - trace Chrysotile < 25 point count 40 CFR763 86, 5 CCR 1001-10, EPA 600/R-93/116 RIN02D1038
Beryllium	B443 (interior)	15 biased (interior)	15 real (interior)	(7 sample locations) No contamination found at any location	Sample location #217, roof - silver paint, trace Chrysotile < 25 point count and black fibrous tar - 4% Chrysotile by volume Sample locations 219, 222 and 223, roof - black tar, silver paint, caulking at vent and black tar/mesh fabric - 8% to 10% Chrysotile by volume Sample locations 220, 221 and 224, roof - caulking, silver paint/black tar < 25 point count Chrysotile OSHA ID-125G - RIN02D1039 No results above action level (0.2 ug/100cm ²) or investigative level (0.1 ug/100cm ²)

**443 Interior
(first floor)**



SURVEY MAP LEGEND

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

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Scan Survey Information
 Survey Instrument ID #: 7,839
 RCT ID #0) 1, 2

N

1 inch = 36 feet 1 grid sq = 1 sq m.

0 45
 FEET
 METERS

U.S. Department of Energy
 Rocky Flats Environmental Technology Site
 Prepared by GIS Dept. 303-495-7707

DynCorp

Prepared for:

MAP ID: 02-0180/B443-IN-P1 February 18, 2002

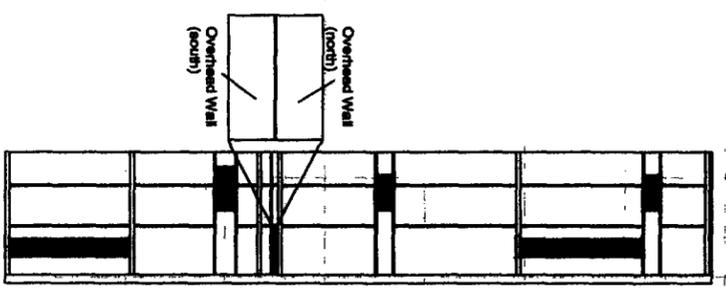
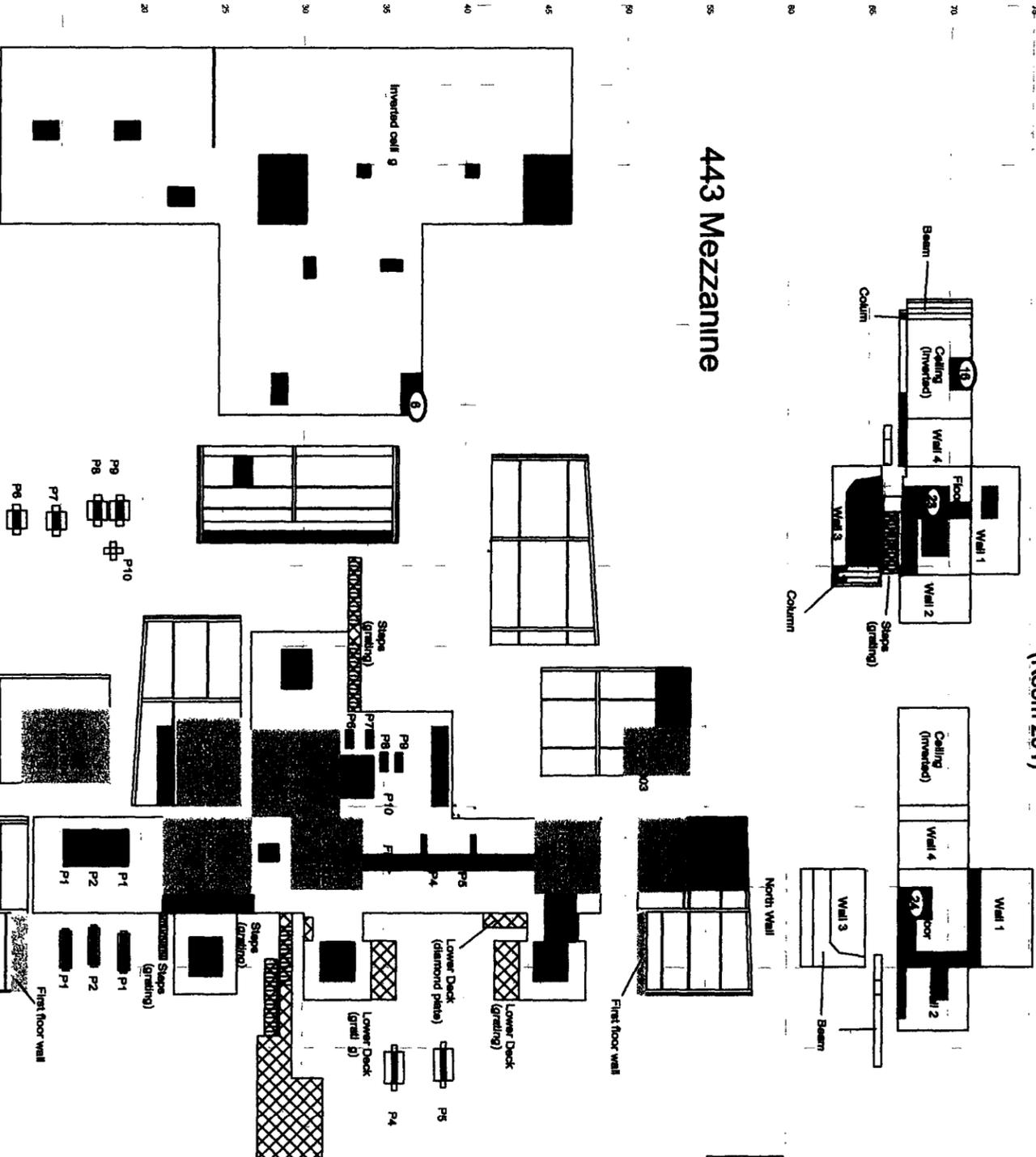
17

PRE-DEMOLITION SURVEY FOR B443 CLUSTER
 Survey Area A Survey Unit 443-A-001 Classification 3
 Building 443 Survey Unit Description Interior
 Total Area 6912 sq m Total Floor Area 1444 sq m

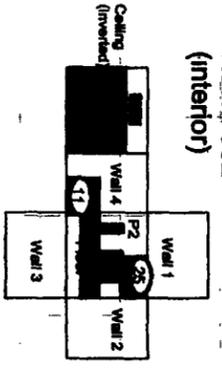
PAGE 2 OF 2

**North end Mezzanine
(Room 201)**

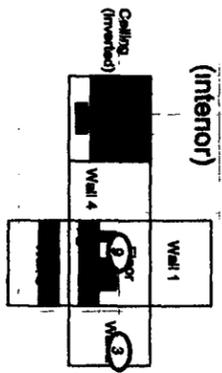
443 Mezzanine



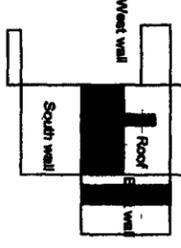
**Room 302
(interior)**



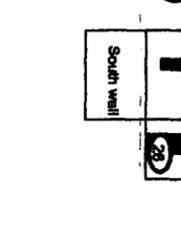
**Room 303
(interior)**



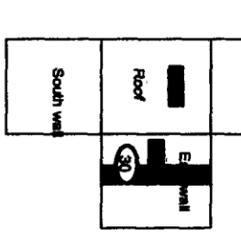
**Room 302
(exterior)**



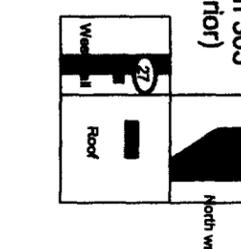
**Room 303
(exterior)**



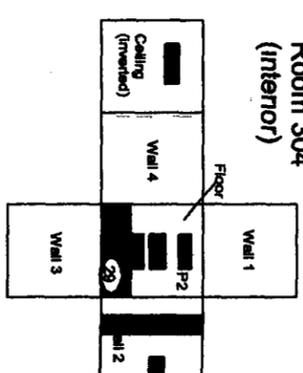
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(exterior)**



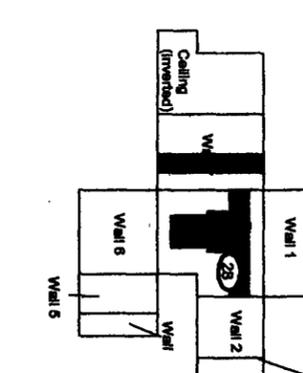
**Room 305
(exterior)**



**Room 304
(interior)**



**Room 305
(interior)**



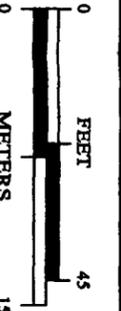
Scan Area

SURVEY MAP LEGEND

- Scan Area
- Stair & TSA Location
- Stair TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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

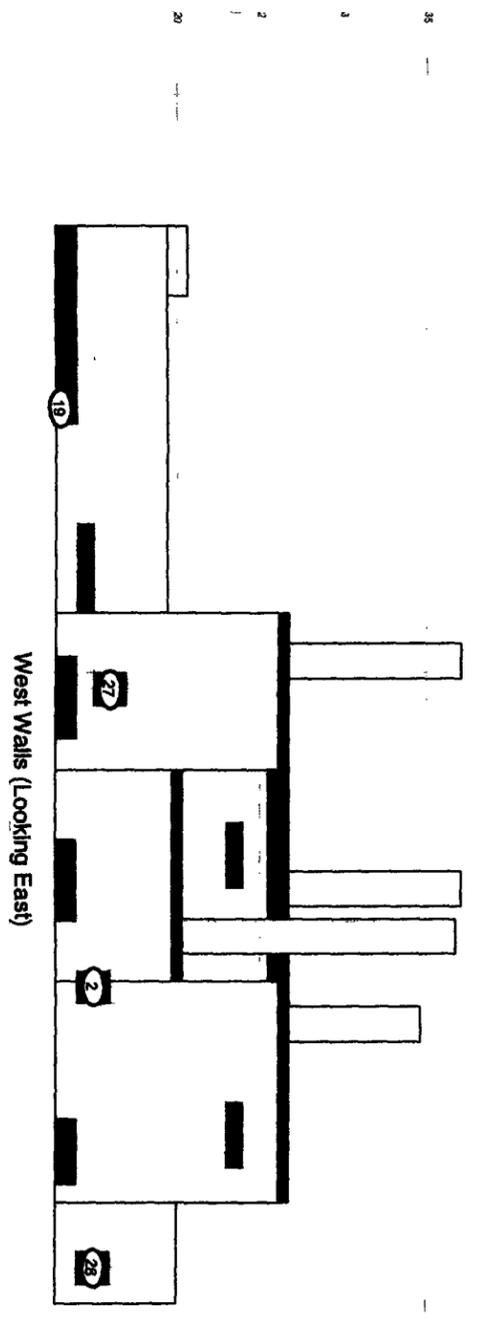
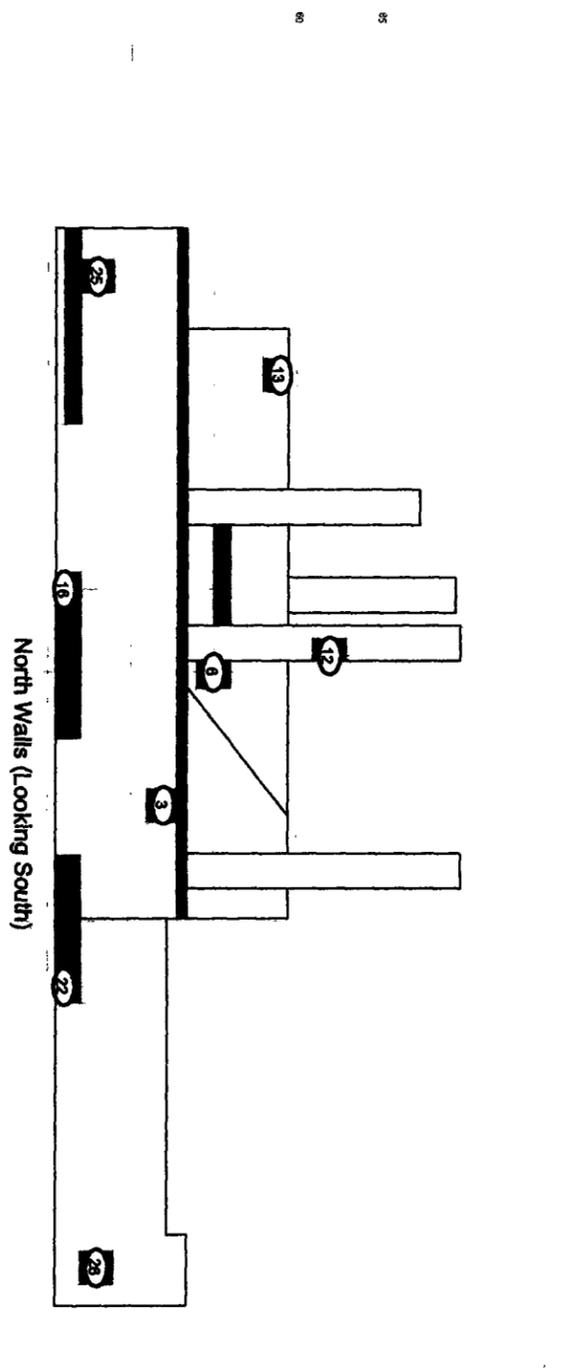
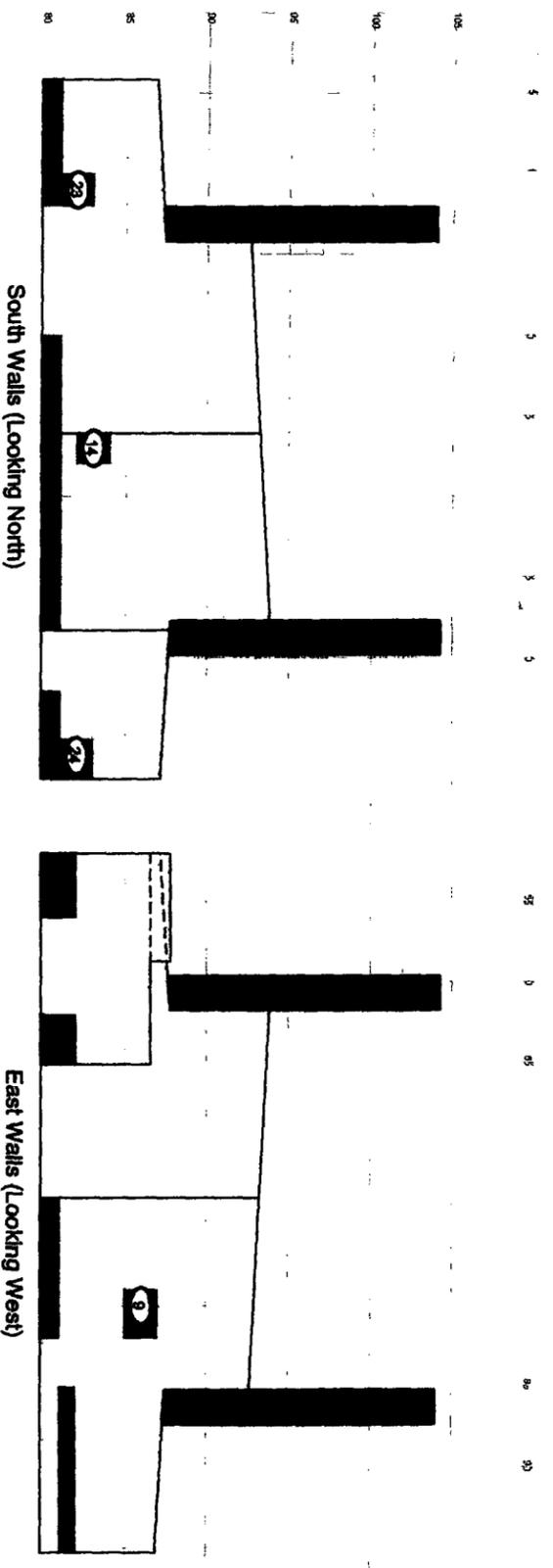


U.S. Department of Energy
 Rocky Flats Environmental Technology Site
 Prepared by GSE Dept. 300-986-7707
DynCorp
 Prepared for: [Redacted]
 MAP ID 02-0190/B443-N-P2 February 19, 2002

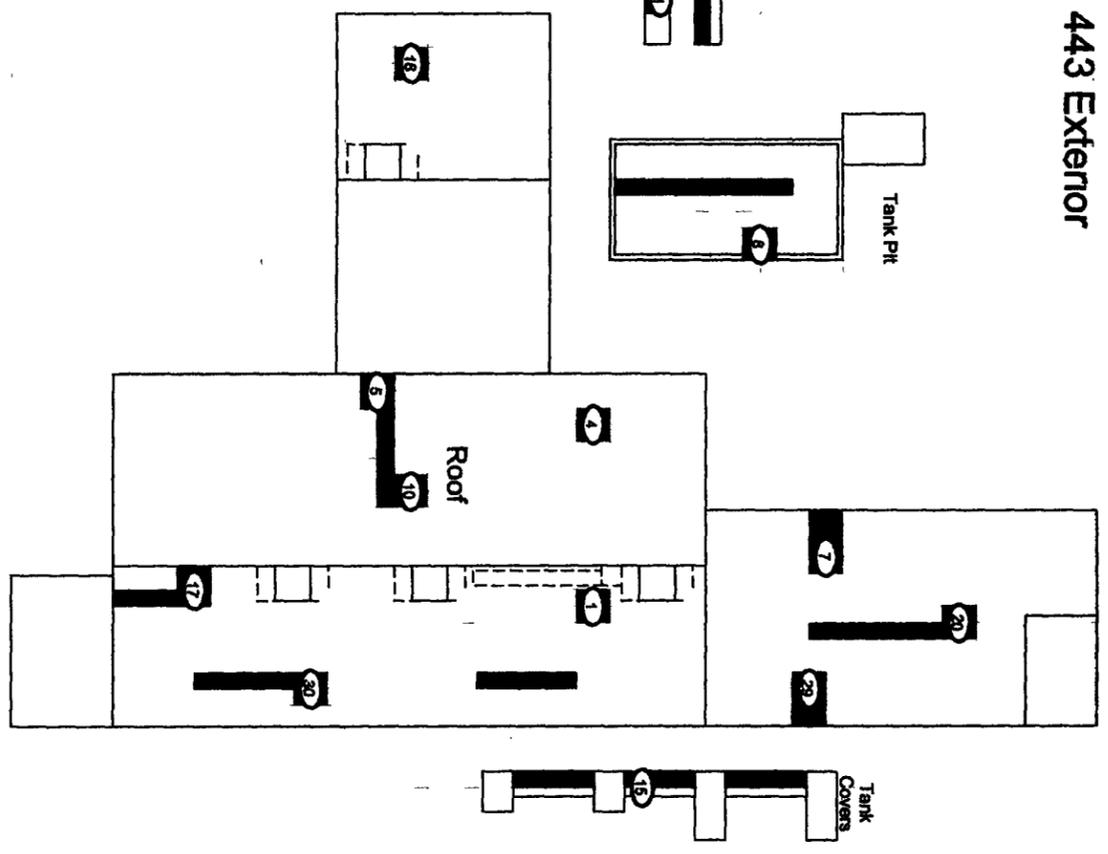
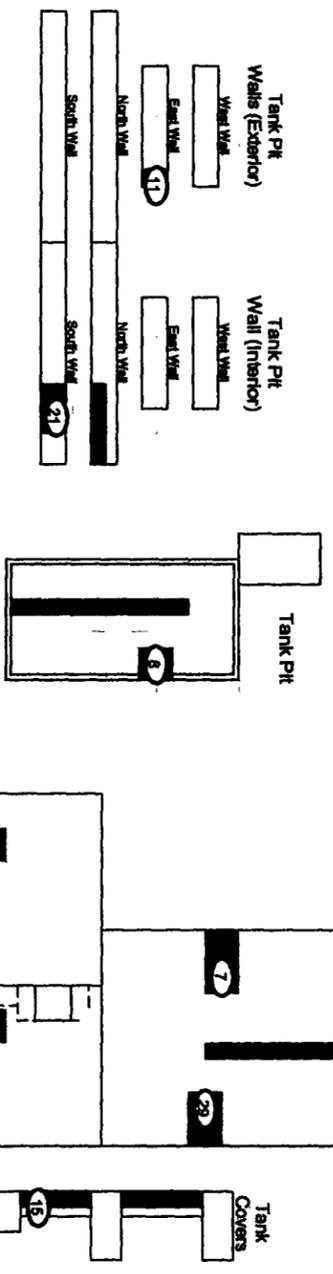
PRE-DEMOLITION SURVEY FOR B443 CLUSTER

Survey Area: A Survey Unit: 443-B-002 Classification: 3
 Building: 443 Survey Unit Description: Exterior
 Total Area: 4145 sq m Total Roof Area: 1405 sq m

PAGE 1 OF 1



443 Exterior



<p>SURVEY MAP LEGEND</p> <p>◊ Survey & TSA Location</p> <p>◊ Survey TSA & Sample Location</p> <p>◻ Open/Inaccessible Area</p> <p>◻ Area in Another Survey Unit</p>		<p>Notice: the United States Government uses certain trademarks, trade names, and service marks in its products and services. The use of such marks in this document does not constitute an endorsement, approval, or purchase decision of any information, apparatus, product, or process disclosed or suggested herein. All such marks are hereby expressly reserved.</p>	
<p>Scan Survey Information</p> <p>Survey Instrument ID # (9) 789318</p> <p>RCT ID # (9) 1254</p>		<p>U.S. Department of Energy Rocky Flats Environmental Technology Site Prepared by GNS Dept 303-968 7797 DynCorp Prepared for: [Redacted]</p>	
<p>0 45 FEET</p> <p>0 15 METERS</p> <p>1 inch 36 feet 1 sq sq 1 sq m</p>		<p>MAP ID 02-0190/B443-EX February 18, 2002</p>	

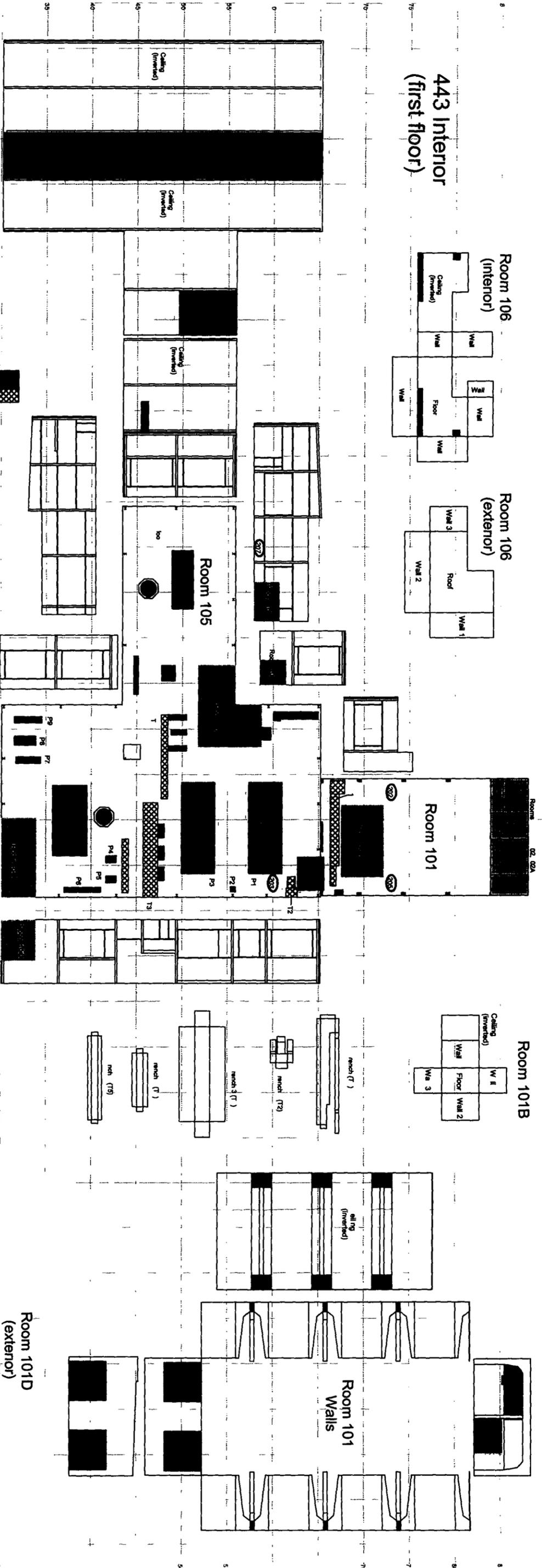
CHEMICAL SAMPLE MAP

Building 443 Interior

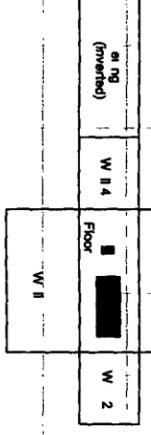
PAGE 1 OF 2



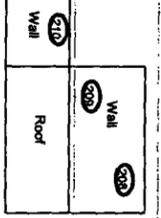
443 Interior
(first floor)



Room 104A
(interior)



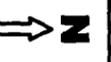
Room 104A
(exterior)



SURVEY MAP LEGEND

- Asbestos Sample Loc
- △ Beryllium Sample Loc
- Lead Sample Loc
- ◇ PCB Sample Loc
- RCRA/CERCLA Sample Loc

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U.S. Department of Energy
Rocky Flats Environmental Technology Site
Prepared by GIS Dept 303-366-7777
DynCorp
Prepared to
MAP ID: 02-0190/443-IN-CHM1
May 19, 2002

472

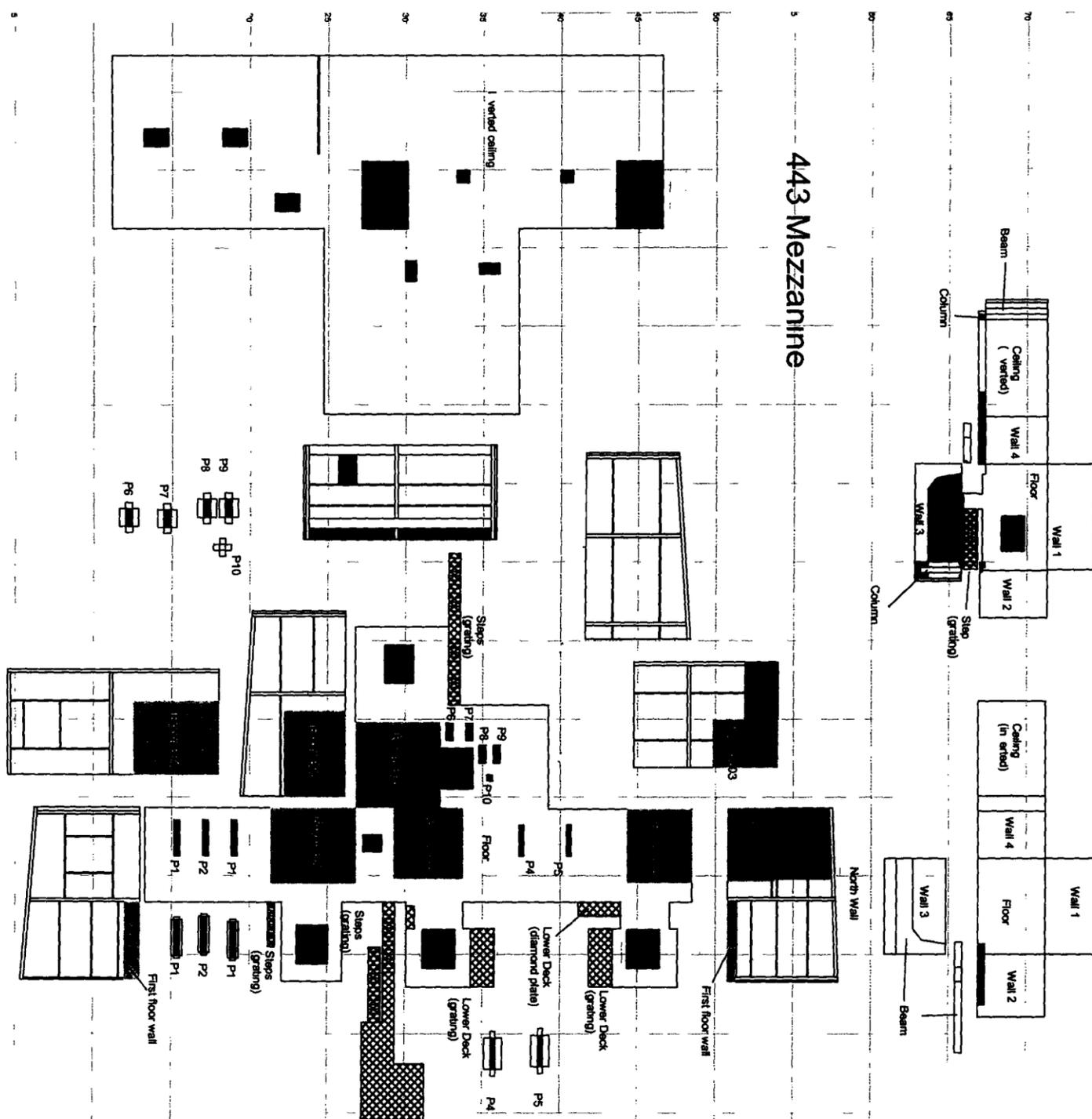
CHEMICAL SAMPLE MAP

Building 443 Interior

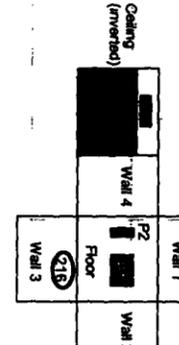
PAGE 2 OF 2

North end Mezzanine
(Room 201)

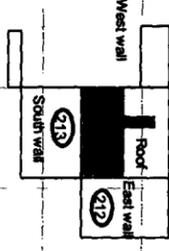
443 Mezzanine



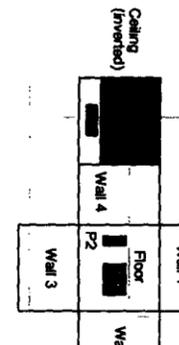
Room 302
(interior)



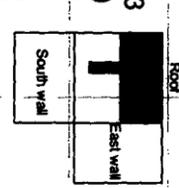
Room 302
(exterior)



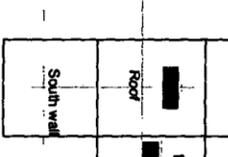
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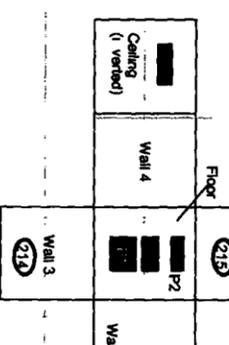
Room 303
(exterior))



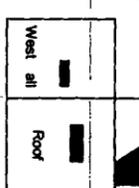
Room 304
(exterior)



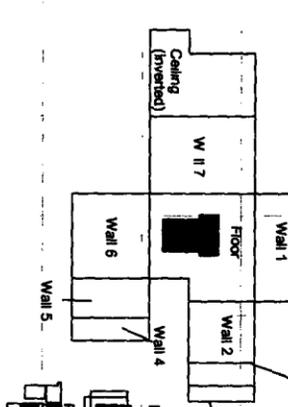
Room 304
(interior)



Room 305
(exterior)



Room 305
(interior)



SURVEY MAP LEGEND

- ▲ Asbestos Sample Location
- △ Beryllium Sample Location
- Lead Sample Location
- ◇ RORACERCLA Sample Location
- PCB Sample Location
- Open/Access to Area
- ▭ Area in Another Survey Unit

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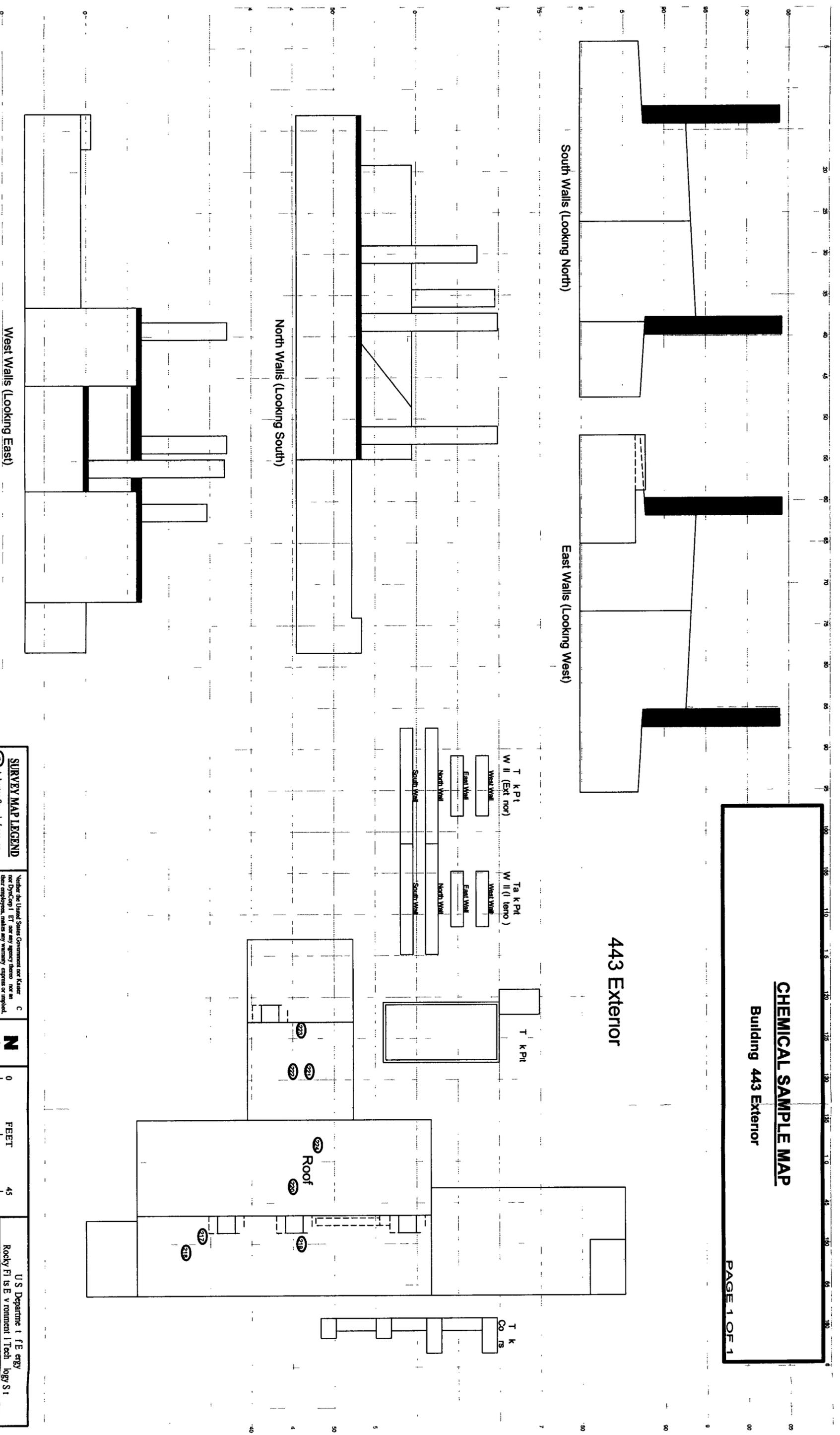
U.S. Department of E. env
Rocky Flats Environmental Tech logy Sit
Prepared by GIS Dept. 303-966-7707
DynCorp
Prepared to
MAP ID: 02-0190/443-IN-CHM2 M tch 19, 2002

43

CHEMICAL SAMPLE MAP

Building 443 Exterior

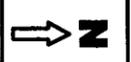
PAGE 1 OF 1



SURVEY MAP LEGEND

- A Beryllium Sample Location
- B Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location

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March 19, 2002

44

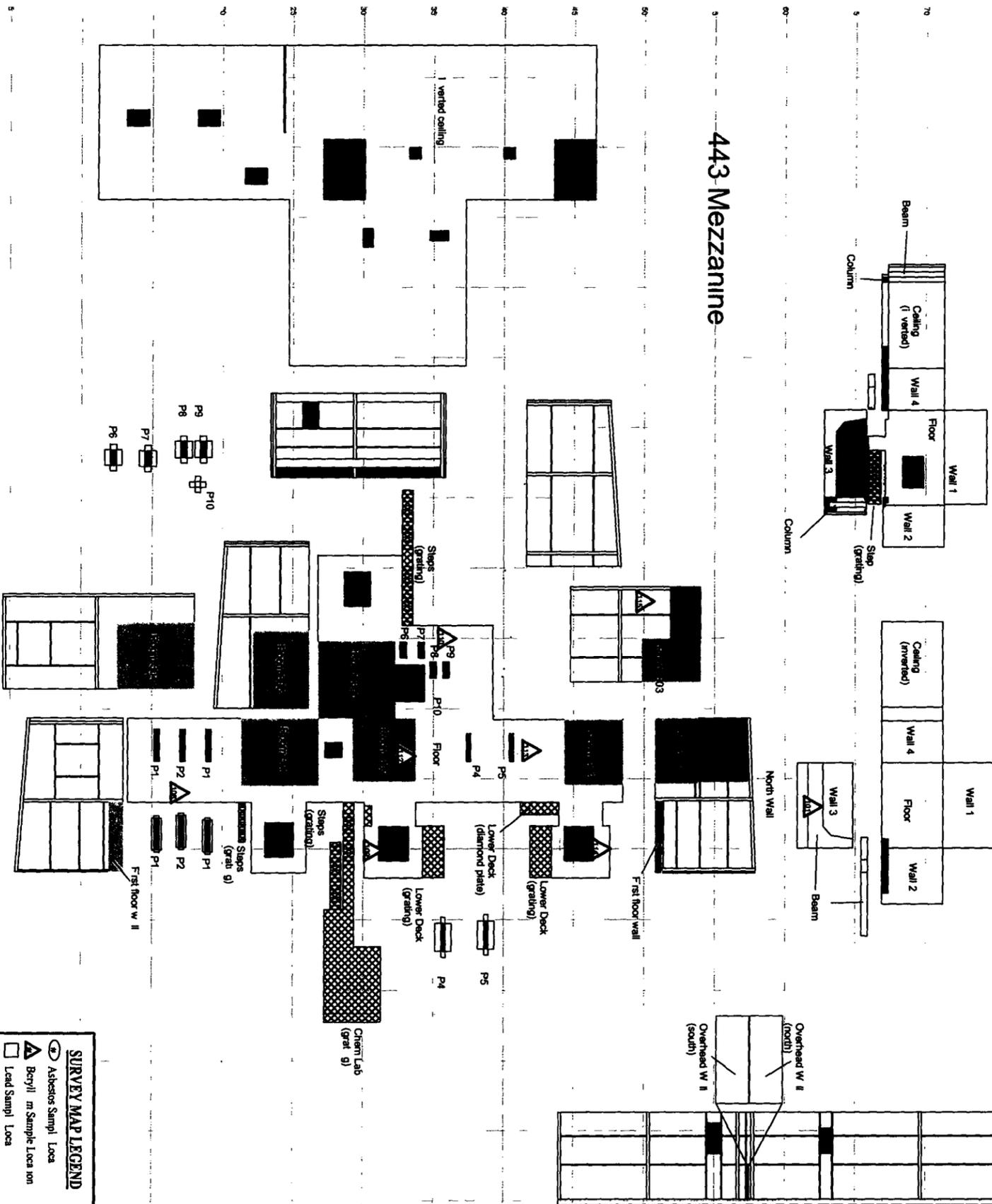
CHEMICAL SAMPLE MAP

Building 443 Interior

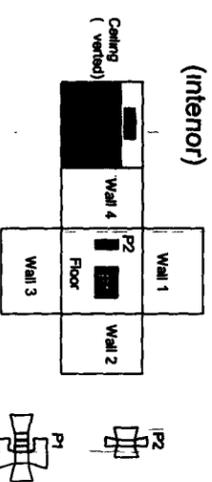
PAGE 2 OF 2

North end Mezzanine
(Room 201)

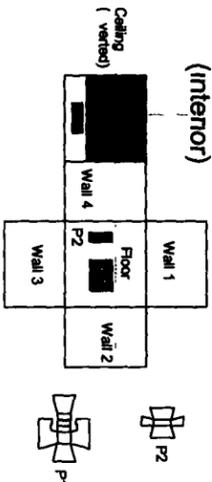
443 Mezzanine



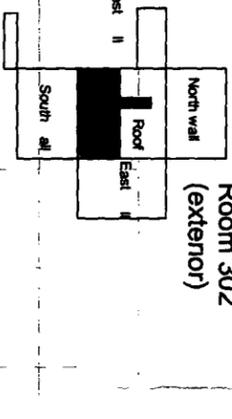
Room 302
(interior)



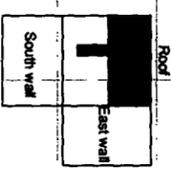
Room 303
(interior)



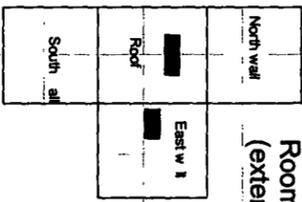
Room 302
(exterior)



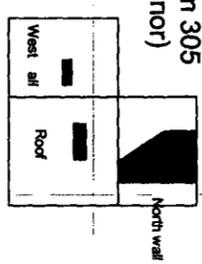
Room 303
(exterior))



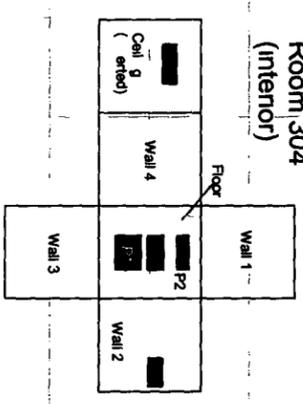
Room 304
(exterior)



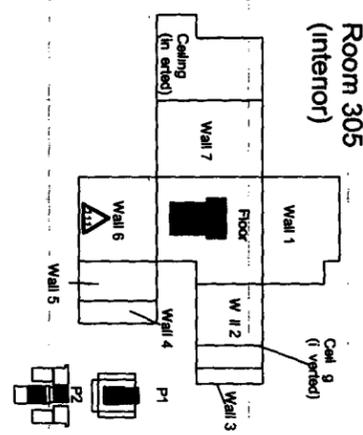
Room 305
(exterior)



Room 304
(interior)



Room 305
(interior)



SURVEY MAP LEGEND

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

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416

