



# Rocky Flats Environmental Technology Site

## TYPE 2 RECONNAISSANCE LEVEL CHARACTERIZATION REPORT (RLCR) AND PREDEMOLITION SURVEY REPORT (PDSR)

Building 441

REVISION 1

February 11, 2003



CLASSIFICATION REVIEW NOT REQUIRED PER  
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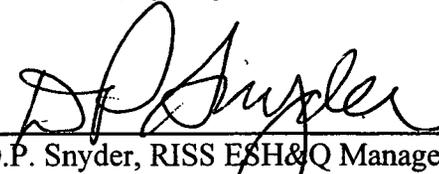
**TYPE 2  
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REPORT (RLCR)  
AND  
PREDEMOLITION SURVEY REPORT (PDSR)**

**Building 441**

**REVISION 1**

**February 11, 2003**

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### ATTACHMENTS

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

## ABBREVIATIONS/ACRONYMS

ACM	Asbestos containing material
Be	Beryllium
CDPHE	Colorado Department of Public Health and the Environment
DCGL <sub>EMC</sub>	Derived Concentration Guideline Level – elevated measurement comparison
DCGL <sub>W</sub>	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
FDFPM	Facility Disposition Program Manual
HVAC	Heating, ventilation, air conditioning
HSAR	Historical Site Assessment Report
IHSS	Individual Hazardous Substance Site
IWCP	Integrated Work Control Package
K-H	Kaiser-Hill
LBP	Lead-based paint
LLW	Low-level waste
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
NORM	Naturally occurring radioactive material
NRA	Non-Rad-Added Verification
OSHA	Occupational Safety and Health Administration
PARCC	Precision, accuracy, representativeness, comparability and completeness
PCBs	Polychlorinated Biphenyls
PDS	Pre-demolition survey
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSP	Radiological Safety Practices
SVOCs	Semi-volatile organic compounds
TCLP	Toxicity Characteristic Leaching Procedure
TSA	Total surface activity
VOCs	Volatile organic compounds

## EXECUTIVE SUMMARY

A Reconnaissance Level Characterization (RLC) was performed to enable facility "Typing" per the RFETS Decommissioning Program Plan (DPP; K-H, 1999) and compliant disposition and waste management of Building 441. Because this facility was anticipated to be a Type 2 facility, the characterization was performed in accordance with the Reconnaissance Level Characterization Plan (MAN-077-DDCP). Additionally, since all of the in-process strip-out was completed prior to the start of the RLC, this characterization was also performed per the Pre-Demolition Survey Plan (MAN-127-PDSP) requirements; all PDSP Data Quality Objectives were satisfied and therefore this report also serves as the Pre-Demolition Survey Report (PDSR) for Building 441. All facility surfaces were characterized in this RLC/PDS, including the interior and exterior surfaces [i.e., floors (slabs), walls, ceilings and roofs]. Environmental media beneath and surrounding the facilities were not within the scope of this RLCR/PDSR and will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA.

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

Beryllium contamination above the unrestricted release criteria was found on the Building 441 slab during the RLC/PDS. These small localized areas were decontaminated, and subsequent post-decontamination samples indicated the area had been adequately decontaminated. Furthermore, all follow-up samples were also below the unrestricted release criteria.

The only remaining asbestos containing materials in Building 441 are the exterior transite panels, the window caulking of the exterior windows, non-friable sheet vinyl in Room 126, sheet vinyl mastic in Room 143, and one TSI piping elbow in the overhead. The transite panels, window caulking, and TSI piping elbow will be removed and managed as ACM prior to demolition. Per *40 CFR, Subpart M, Part 61.145(c)(1)* and *Colorado Air Quality Control Commission's Regulation No. 8, Part B, "Emission Standards for Asbestos", Section III, C.6.a.*, Category I nonfriable ACM may be left in place during demolition. Therefore, the Category I non-friable floor sheet vinyl and mastic in Rooms 126 and 143, may remain in place during demolition. Leaving the residual Category I nonfriable floor sheet vinyl and mastic in Rooms 126 and 143 in place during demolition is an exception to the requirements stated in Section 4.1, Table 3 of the RFCA Standard Operating Protocol for Facility Disposition.

Radiological contamination exists in excess of the RLCP prescribed release limits on portions of the Building 441 floor. Additionally, the process waste floor drains and underground process waste storage tanks (T-2 and T-3), and under-slab utilities and piping will be managed as radioactive and beryllium waste during slab demolition.

All fluorescent light ballast and asbestos containing materials will be managed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations. Eight core samples and one duplicate were taken from the slab to identify possible contamination from RCRA/CERCLA constituents. The results of the RCRA/CERCLA samples did not indicate that historical laboratory operations had contaminated the slab.

The concrete wall and ceiling surfaces may be used for onsite concrete recycling per the RFCA RSOP for Recycling Concrete. Due to the potential for further undiscovered residual radiological and/or beryllium contamination, the floor slab in the old laboratory areas of Building 441 will not be used for onsite concrete recycling. Unless further asbestos abatement and characterization is performed prior to demolition, the floor slab in rooms 126 and 143, where residual Category I nonfriable sheet vinyl and mastic exists, will not be used for onsite concrete recycling. Remaining floor slabs in the southern addition of Building 441 may be used for onsite concrete recycling pending further characterization by the Environmental Restoration group, provided the concrete meets the criteria for recycling concrete per the RFCA RSOP for Recycling Concrete.

Based upon this RLCR/PDSR, Building 441 is considered to be a Type 2 facility, and is acceptable for demolition per the constraints identified within this report. The Type 2 classification is based on the relative complexity associated with decommissioning the facility, and the identified levels of radiological and beryllium contamination. To ensure the facility remains free of further contamination and that the RLC/PDS data remains valid, isolation controls have been established, and the area posted accordingly.

## 1 INTRODUCTION

A Reconnaissance Level Characterization (RLC) was performed to enable facility "Typing" per the RFETS Decommissioning Program Plan (DPP; K-H, 1999) and compliant disposition and waste management of Building 441. Because this was facility was anticipated to be Type 2 facility, the characterization was performed in accordance with the Reconnaissance Level Characterization Plan (MAN-077-DDCP). Additionally, since all of the in-process strip-out was completed prior to the start of the RLC, this characterization was also performed per the Pre-Demolition Survey Plan (MAN-127-PDSP) requirements; all PDSP Data Quality Objectives were satisfied and therefore this report also serves as the Pre-Demolition Survey Report (PDSR) for Building 441. All facility surfaces were characterized in this RLC/PDS, including the interior and exterior surfaces of the facilities [i.e., floors (slabs), walls, ceilings and roofs]. Environmental media beneath and surrounding the facilities were not within the scope of this RLC/PDS 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 are Building 441. The location of Building 441 is shown in Attachment A, Facility Location Map. The facility no longer supports the RFETS mission and will be removed to reduce Site infrastructure, risks and/or operating costs.

Before Building 441 can be decommissioned, a Reconnaissance Level Characterization (RLC) and a Pre-Demolition Survey (PDS) must be conducted; this document presents the RLC and PDS results. The RLC/PDS was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP), the Reconnaissance Level Characterization Plan (RLCP) (MAN-077-DDCP), and the Pre-Demolition Survey Plan (MAN-127-PDSP). The RLC/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 and PDS effort. The RLC and PDS are performed before building decommissioning to define the radiological and chemical conditions of a facility. RLC and PDS conditions are compared with the release limits for radiological and non-radiological contaminants. RLC and PDS results will enable project personnel to make decommissioning decisions, develop related worker health and safety controls, and estimate waste volumes by waste types.

### 1.2 Scope

This report presents the radiological and chemical conditions of Building 441. Environmental media beneath and surrounding the facility is not within the scope of this RLCR/PDSR and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA. Both the facility and environmental media will be dispositioned pursuant to RFCA.

### 1.3 Data Quality Objectives

The Data Quality Objectives (DQOs) used in designing this RLC/PDS were the same DQOs identified in the Reconnaissance Level Characterization Plan (RLCP - MAN-077-DDCP) and the Pre-Demolition Survey Plan (MAN-127-PDSP). Refer to Appendix D, Section 2.0 of MAN-077-DDCP and Section 2.0 of MAN-127-PDSP for these DQOs.

## 2 HISTORICAL SITE ASSESSMENT

A facility-specific Historical Site Assessment (HSA) was conducted to understand the Building 441 facility history and related hazards. The assessment consisted of facility walkdowns, interviews, and document review, including review of the Historical Release Report. 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 Historical Site Assessment Report (HSAR). Refer to Attachment B, Historical Site Assessment Report, for a copy of the Building 441 HSAR. In summary, the HSAR identified the potential for radiological and chemical hazards, including the potential for beryllium, asbestos containing materials, RCRA metals, and PCBs in paint and light ballast.

## 3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

Building 441 was characterized for radiological hazards per the RLCP and PDSP. Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on the facility surfaces. Measurements were performed to evaluate the contaminants of concern. Based upon a review of historical and process knowledge, building walk-downs, and MARSSIM guidance, a Radiological Characterization Plan was developed during the planning phase that describes the minimum survey requirements (refer to the RISS Characterization Project files for the Building 441 Radiological Characterization Plan). Radiological survey area packages were developed for each survey area. Survey area identification numbers are as follows: 441-A-001 (Building 441 Prior Lab Area), 441-A-002 (Building 441 South Addition) and 441-B-003 (Building 441 Exterior). The survey areas included the interior and exterior surfaces of the facility. Individual radiological survey unit packages are maintained in the RISS Characterization Project files.

Building 441 survey unit packages were developed in accordance with Radiological Safety Practices (RSP) 16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure*. Total surface activity (TSA), removable surface activity (RSA), and scan measurements were collected in accordance with RSP 16.02 *Radiological Surveys of Surfaces and Structures*. Radiological survey data were verified, validated and evaluated in accordance with RSP 16.04, *Radiological Survey/Sample Data Analysis*. Quality control measures were implemented relative to the survey process in accordance with RSP 16.05, *Radiological Survey/Sample Quality Control*.

A total of 179 TSA measurements, 165 RSA measurements, and scan surveys were performed. A minimum of a 100% scan was performed on the floors, 50% scan on the lower walls, 10% scan on the upper walls and ceiling in the old lab areas of Building 441. A minimum of a 10% scan was performed in the Building 441 south addition and a 5% scan was performed on the building exterior. Elevated contamination was identified above the transuranic and uranium DCGLs in the south-west corner of the old lab area floor during performance of scan surveys. An AP-2 alpha spectroscopy measurement was obtained at the highest elevated location (#71) and identified only uranium isotopes. No transuranic or uranium contamination above the applicable DCGLs was detected on any other Building 441 surfaces. The uranium-contaminated portions of the floor will be managed as radioactive waste during demolition (refer to the two red shaded areas in the Attachment C map for the general locations of elevated activity).

There are two underground process waste tanks (T-2 and T-3) under the slab at the south end of Building 441 that will be managed as radioactive and beryllium waste during demolition. The two tanks were foamed in-place during the 1990's and were therefore inaccessible during the RLC. Additionally, the process waste floor drains, and under-slab utilities and piping are assumed to be potentially contaminated that will also be managed as radioactive and beryllium waste during demolition.

Radiological survey data, statistical analysis results, survey locations, radiological scan maps, and locations of elevated uranium contamination on the floor are presented in Attachment C, Radiological Data Summary and Survey Maps. Isolation control postings are displayed on affected structures to ensure additional radioactive materials are not introduced into the facility.

#### **4 CHEMICAL CHARACTERIZATION AND HAZARDS**

Building 441 was characterized for chemical hazards per the RLCP and PDSP. Chemical characterization was performed to determine the nature and extent of chemical contamination that may be present on or in Building 441. Based upon a review of historical and process knowledge, visual inspections, and RLCP and PDSP DQOs, additional sampling needs were determined. A Chemical Characterization Plan (refer to RISS Characterization Project files for the Building 441 Chemical Characterization Plan) was developed during the planning phases that describes sampling requirements and the justification for the sample locations and estimated sample numbers. Contaminants of concern included asbestos, beryllium, RCRA/CERCLA constituents, and PCBs.

##### **4.1 Asbestos/Beryllium**

The characterization for asbestos and beryllium was conducted in accordance with the RLCP and PDSP. CDPHE-certified asbestos inspectors conducted the asbestos inspections 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 inspectors. There was adequate historical and process knowledge to conclude that beryllium was used or stored in this building, therefore, random and biased beryllium sampling was performed in accordance with the RLCP and the *Beryllium Characterization Procedure, PRO-536-BCPR, Revision 0, September 9, 1999*.

Random beryllium sample locations were computer generated, while biased sample locations corresponded with the most probable areas of dust accumulation (including beryllium dust), assuming airborne deposition.

Sitex Environmental, Inc. performed a comprehensive, invasive asbestos inspection in Building 441, the details of which are contained in its report dated October 10, 1996 (refer to RISS Characterization Project files). Sitex identified the following friable and non-friable asbestos containing building materials: 9" x 9" and 12" x 12" vinyl floor tiles; black mastic adhesive; 2' x 4' acoustical drop ceiling tiles; interior and exterior transite wall panels; and thermal systems insulation on pipe elbows and fittings. Sitex, however, did not sample the cinderblock paint and window caulking. Therefore, as part of the RLC/PDS, a CDPHE-certified RISS asbestos inspector sampled the paint and caulking to determine asbestos content. The window caulking was positive for asbestos (> 1% by volume), and will be removed prior to demolition. The cinderblock paint was negative for asbestos (< 1% by point count).

Because of the presence of so many interfering asbestos-containing materials (ACM), asbestos abatement was performed prior to conducting a comprehensive chemical characterization of Building 441. For example, the ACM floor tiles and black mastic adhesive had to be removed in order to expose the concrete slab underneath. Only after the ACM removal operation had been completed, could adequate beryllium hazard characterization be performed on the base-flooring surface (i.e., concrete slab). Likewise, the inaccessible space between the interior roof deck and the asbestos containing 2' x 4' acoustical drop ceiling tiles could not be adequately characterized for beryllium hazards until the ceiling tiles had been properly removed and disposed. As a result, an asbestos abatement contractor removed the following ACM prior to characterization efforts: floor tiles and black mastic adhesive; acoustical drop ceiling tiles; insulated fittings and elbows; and interior transite wall panels. In addition to asbestos abatement, the contractor also demolished interior non-asbestos containing drywall, metals studs, ceiling lights, carpet, doors, and windows. Final visual inspection and clearance air monitoring were conducted before turning the building over to characterization personnel.

Since the potential for beryllium contamination was anticipated in Building 441, beryllium characterization personnel supported the asbestos abatement operation by sampling before, during, and after the asbestos abatement process. This in-process characterization was designed to create a sampling path through the layers of building materials being removed by the asbestos abatement contractor.

On August 26, 27, and 28, 2002, pre-abatement beryllium sampling was conducted on the bottom side of the 2' x 4' acoustical drop ceiling tiles, on the carpet, under the carpet on the flooring below, and on the vertical wall surfaces (refer to Beryllium Data Summary table in Attachment D, RIN 02D1484, Maps 1 and 2). All of the pre-abatement beryllium sampling results were less than the unrestricted release criteria. With these results in hand, the asbestos abatement contractor began pre-cleaning the area in preparation for asbestos removal. Doors were removed, carpeting disposed of, and polyurethane barriers were installed.

Once the abatement contractor was ready to commence asbestos abatement, characterization personnel returned to Building 441 to perform further sampling in coordination with asbestos abatement activities. On October 10 and 21, 2002, beryllium samples were taken on top of the asbestos-containing 2' x 4' acoustical drop ceiling tiles, on top of the fluorescent light fixtures, on the cable tracks, on the piping, and on the concrete slab under the asbestos-containing floor tiles (refer to Beryllium Data Summary table in Attachment D, RINs 03Z0104 and 03Z0162, Maps 3 and 4 respectively). All of these in-process beryllium-sampling results were less than the threshold limits, except one beryllium smear ( $0.664 \mu\text{g}/100\text{cm}^2$ ) from the concrete floor in Room 118C.

Consequently, all Building 441 floor tile and floor tile mastic waste was also managed as beryllium contaminated waste. Asbestos and beryllium trained abatement workers proceeded to Room 118C and adjacent areas, removed the remaining floor tiles and decontaminated the area for beryllium. Follow-up beryllium smears in Room 118C were all less than  $0.1 \mu\text{g}/100\text{cm}^2$  (refer to Beryllium Data Summary table in Attachment D, RIN 03Z0205, Map 5), and asbestos abatement activities resumed.

Periodic beryllium smear sampling (refer to Beryllium Data Summary table in Attachment D, RIN 03D0151, Map 6) and continuous beryllium lapel air sampling was ongoing during the entire asbestos abatement process with no air or surface sampling results above the threshold limits.

Once all asbestos abatement activities had been completed, RISS characterization personnel returned to Building 441 and performed further in-process and RLC/PDS beryllium characterization. On December 12, 2002, fifty-six (56) random and twenty (20) biased beryllium smear samples were collected on the concrete slab. On December 23, 2002, laboratory results of these samples included (1) sample above the investigative limit of  $0.1 \mu\text{g}/100\text{cm}^2$  and (4) above the action level of  $0.2 \mu\text{g}/100\text{cm}^2$  (refer to Beryllium Data Summary table in Attachment D, RIN 03Z0596, Map 7, location points 1 through 76). All of these elevated beryllium results were concentrated, once again, in the location of Room 118C. This area was posted at once as a restricted Beryllium Controlled Area. In order to delineate more precisely the extent of beryllium contamination, additional beryllium smears were taken on December 23<sup>rd</sup> adjacent to and outside of the posted area. These laboratory results were all less than the investigative limit of  $0.1 \mu\text{g}/100\text{cm}^2$  (refer to Beryllium Data Summary table in Attachment D, RIN 03Z0640, Map 7, locations points 77 through 106).

On January 10, 2003, beryllium workers decontaminated the concrete slab of the posted area. Post-decontamination beryllium smears taken on January 10<sup>th</sup> and 13<sup>th</sup> were all less than the unrestricted release limit of  $0.2 \mu\text{g}/100\text{cm}^2$  (refer to Beryllium Data Summary table in Attachment D, RIN 03Z0749, Map 7, location points 107 through 146). Hence, the area was de-posted from beryllium controls. All other areas of Building 441 were characterized for beryllium with all laboratory results less than the unrestricted release limit of  $0.2 \mu\text{g}/100\text{cm}^2$ . Based on the above RLC, in-process, PDS, and investigational sampling, sufficient characterization has been performed to confirm beryllium is less than the unrestricted release levels.

At the time of preparing this RLCR/PDSR, the only remaining ACM in Building 441 are the exterior transite panels, the window caulking of the exterior windows, non-friable sheet vinyl in the women's restroom (Room 126), some residual black mastic floor adhesive in Room 143, and one TSI piping elbow in the overhead. The transite panels, window caulking, and TSI piping elbow will be removed and managed as ACM prior to demolition. Per *40 CFR, Subpart M, Part 61.145 (c)(1)* and *Colorado Air Quality Control Commission's Regulation No. 8, Part B, "Emission Standards for Asbestos", Section III, C.6.a.*, Category I non-friable ACM may be left in place during demolition. Therefore, the Category I non-friable floor sheet vinyl and mastic in Rooms 126 and 143, may remain in place during demolition. Leaving the residual Category I nonfriable floor sheet vinyl and mastic in Rooms 126 and 143 in place during demolition is an exception to the requirements stated in Section 4.1, Table 3 of the RFCA Standard Operating Protocol for Facility Disposition.

There are two underground process waste tanks (T-2 and T-3) under the slab at the south end of Building 441 that will be managed as radioactive and beryllium waste during slab demolition. The two tanks were foamed in-place during the 1990's and were therefore inaccessible during the RLC/PDS. Additionally, the process waste floor drains, and under-slab utilities and piping are assumed to be potentially radioactive and beryllium contaminated and will be managed as radioactive and beryllium waste during demolition.

Asbestos and beryllium laboratory analysis data and location maps are contained in Attachment D, "Chemical Data Summaries and Sample Maps." Isolation control postings are displayed on affected structures to ensure no additional hazardous materials are introduced.

#### **4.2 RCRA/CERCLA Constituents [including metals and volatile organic compounds (VOCs)]**

Building 441's original use as a laboratory created the potential for small chemical spills that could have led to RCRA/CERCLA contamination of the slab and drain systems. Additionally, photographic operations introduced compounds containing RCRA regulated substances, such as silver, to the building. The drain lines were sealed and the processes discontinued when the building was converted to administrative use in the late 1960's.

Although visual inspections of the facility did not provide evidence of contamination, a sampling plan was developed to ensure that contamination did not exist in the former laboratory and drain areas. As part of this RLC/PDS, three samples were taken adjacent to drain inlets, and five samples taken from random laboratory locations. A duplicate sample was also taken for quality control monitoring. All nine samples were analyzed for metals, VOCs and SVOCs. The results indicate that the historical operations of Building 441 did not contribute to any RCRA/CERCLA contamination. The results are summarized in Attachment D, Chemical Data Summaries and Sample Maps.

Sampling for lead in paint Building 441 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.

#### **4.3 Polychlorinated Biphenyls (PCBs)**

Building 441 did not have a history of PCB products (other than light ballast) or processes. Based on the history and lack of physical indications of contamination, PCB sampling was not conducted and the facility is considered to be free of PCB concerns. Because Building 441 went through the strip-out process prior to PCB light ballast being confirmed as PCB Bulk Product Waste suitable for disposal at the BFI facility in Commerce City, CO, light ballast identified as containing PCB potting material were removed and disposed of in accordance with RFETS PCB guidance. Based on the age of Building 441, (constructed before 1980), paints used on the building are assumed to contain PCBs, and painted surfaces will be disposed of as bulk product PCB waste.

### **5 PHYSICAL HAZARDS**

Physical hazards associated with Building 441 consist of those common to standard industrial environments and include hazards associated with energized systems, utilities, and trips and falls. There are two underground concrete process waste storage tanks (T-2 and T-3) under the concrete slab on the south end of Building 441 that will be managed as radioactive and beryllium waste. Most of the asbestos abatement has already been performed inside Building 441, and the remains of overhead equipment (conduit, ceiling tile framing, etc.) is currently hanging down at head level, thus presenting a physical hazard to personnel who enter the facility. Overhead power lines are in close proximity to Building 441, care should be taken to de-energize these lines during demolition. Building 441 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 Building 441, and consequent waste management, are of adequate quality to support the decisions documented in this report. The data presented in this report (Attachments C and D) were verified and validated relative to DOE quality requirements, applicable EPA guidance, and original DQOs of the project.

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

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

Details of the DQA are provided in Attachment E.

## 7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES

The disposition of Building 441 will generate a variety of wastes, including radiological, beryllium, PCB and asbestos waste. Estimated waste types and waste volumes are presented below. Asbestos containing material and PCB Bulk Product Waste, including PCB ballast, will be managed pursuant to site waste management procedures. Building 441 process waste floor drains, under-slab piping and underground process waste storage tanks T-2 and T-3 will be managed as low-level waste and beryllium waste during demolition.

Waste Volume Estimates and Material Types, Building 441							
Facility	Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM (cu ft)	Other Waste (cu ft)
441	66,500	0	10	0	0	15	LLW – 1,000 Beryllium Waste – 800

## 8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards contained in this RLCR/PDSR, Building 441 is classified as a RFCA Type 2 facility pursuant to the RFETS Decommissioning Program Plan (DPP; K-H, 1999) and is acceptable for demolition within the constraints identified below. The Type 2 classification is based on a review of historical and process knowledge, and newly acquired RLC/PDS data.

Classification is also based on the relative complexity associated with decommissioning the facilities. The facilities will not require unique or non-standard techniques for decontamination, dismantling or demolition. The radiological, chemical and physical hazards are not significant or overly intermingled and can be controlled through standard means (e.g., potential radiological and beryllium contamination is internal to the process waste drain system and under slab piping and tanks; and fixed radiological contamination on portions of the floor).

The Building 441 RLC/PDS was performed in accordance with the DDCP, RLCP, and PDSP; all RLCP and PDSP DQOs were met, and all data satisfied the RLCP and PDSP DQA criteria. Radioactive and beryllium waste are present, or assumed to be present, on portions of the Building 441 floor, inside the process waste floor drains and underground process waste storage tanks (T-2 and T-3), and the under-slab utilities and piping, and will be managed appropriately during slab demolition.

PCB ballast and asbestos containing material (except as described in Section 4.1) will be removed and managed in compliance with EPA and CDPHE regulations prior to demolition.

The concrete wall and ceiling surfaces may be used for onsite concrete recycling per the RFCA RSOP for Recycling Concrete. Due to the potential for further undiscovered residual radiological and/or beryllium contamination, the floor slab in the old laboratory areas of Building 441 will not be used for onsite concrete recycling. Unless further asbestos abatement and characterization is performed prior to demolition, the floor slab in rooms 126 and 143, where residual Category I nonfriable sheet vinyl and mastic exists, will not be used for onsite concrete recycling. Remaining floor slabs in the southern addition of Building 441 may be used for onsite concrete recycling pending further characterization by the Environmental Restoration group, provided the concrete meets the criteria for recycling concrete per the RFCA RSOP for Recycling Concrete.

Environmental media beneath and surrounding the facilities will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA. To ensure the facility remains free from further contamination and that the RLC/PDS data remains valid, Level 2 isolation controls have been established, and the area posted accordingly.

## 9 REFERENCES

- DOE/RFFO, CDPHE, EPA, 1996. *Rocky Flats Cleanup Agreement (RFCA)*, July 19, 1996.
- DOE Order 5400.5, "*Radiation Protection of the Public and the Environment.*"
- DOE Order 414.1A, "*Quality Assurance.*"
- EPA, 1994. "*The Data Quality Objective Process,*" EPA QA/G-4.
- K-H, 1999. *Decommissioning Program Plan*, June 21, 1999.
- MAN-131-QAPM, *Kaiser-Hill Team Quality Assurance Program*, Rev. 0, November 15, 2000.
- MAN-076-FDPM, *Facility Disposition Program Manual*, Rev. 1, September 1999.
- 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*, December 1997 (NUREG-1575, EPA 402-R-97-016).
- PRO-475-RSP-16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation, and Closure*, Rev. 1, May 22, 2001.
- PRO-476-RSP-16.02, *Pre-Demolition (Final Status) Radiological Surveys of Surfaces and Structures*, Rev. 1, May 22, 2001.
- PRO-477-RSP-16.03, *Radiological Samples of Building Media*, Rev. 1, May 22, 2001.
- PRO-478-RSP-16.04, *Radiological Survey/Sample Data Analysis for Final Status Survey*, Rev. 1, May 22, 2001.
- PRO-479-RSP-16.05, *Radiological Survey/Sample Quality Control for Final Status Survey*, Rev. 1, May 22, 2001.
- PRO-563-ACPR, *Asbestos Characterization Procedure*, Revision 0, August 24, 1999.
- PRO-536-BCPR, *Beryllium Characterization Procedure*, Revision 0, August 24, 1999.
- RFETS, *Environmental Waste Compliance Guidance #25, Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition.*
- RFETS, *Environmental Waste Compliance Guidance #27, Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal.*
- RFCA Standard Operation Protocol for Recycling Concrete*, September 28, 1999.
- RFCA Standard Operating Protocol for Facility Disposition*, August 14, 2000.
- 40 CFR, Part 61, Subpart M - National Emission Standard for Asbestos*, 7-1-99 Edition.
- Colorado Air Quality Control Commission's Regulation No. 8, Part B, "Emission Standards for Asbestos"*, November 1996.
- Historical Site Assessment Report for Building 441 and T441A*, August 2002, Rev. 2.

# ATTACHMENT A

## Facility Location Map

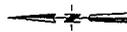
# Building 441

## 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 ES&G RSL Las Vegas. Digitized from the orthophotographs, 1/95



Scale - 1 : 12460  
 1 inch represents approximately 1038 feet  
  
 State Plane Coordinate Projection  
 Colorado Central Zone  
 Datum: NAD83

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

Prepared by:

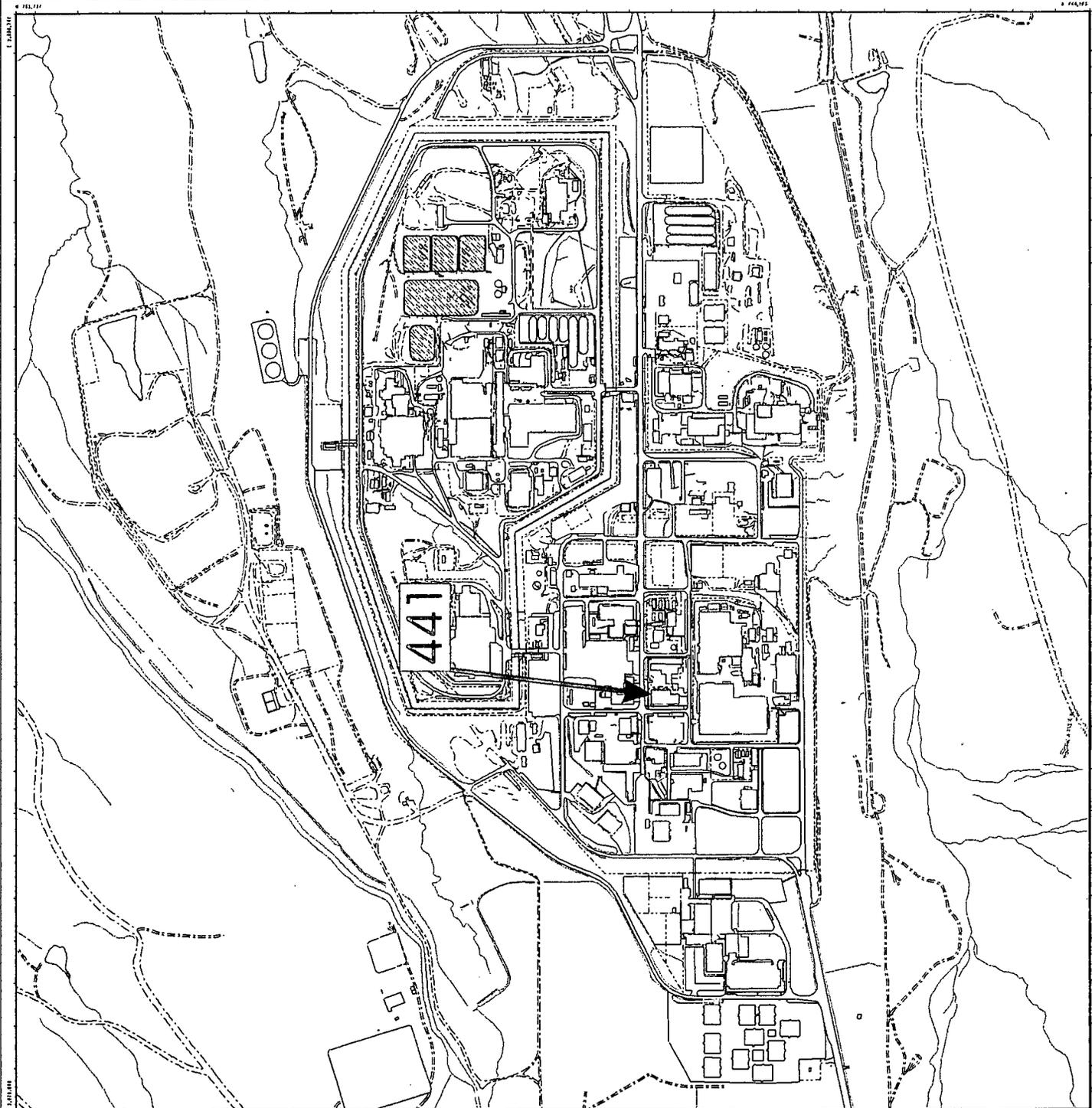


Prepared for:



MAP ID: FY 2002

January 14, 2003



# ATTACHMENT B

## Historical Site Assessment Report

**D&D RISS Facility Characterization  
Historical Site Assessment Report  
August, 2002 Rev. 2**

**Facility ID:** Building 441 and Trailer T441A,

**Anticipated Facility Type (1, 2, or 3):** Building 441 is an anticipated Type 2 facility. Trailer T441A is an anticipated Type 1 facility.

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

*D&D Characterization Protocol*, RFETS MAN-077-DDCP, latest version, and

*Facility Disposition Program Manual*, RFETS MAN-076-FDPM, latest version

**Physical Description**

**Building 441**

Building 441 is a 17,800-sq. ft. single story concrete structure built in 1953. Building 441 was originally constructed as a laboratory to support of the depleted uranium and beryllium operations, but was striped out and converted to an administration building in 1966. An addition was added to the southern section of the structure. This addition was built in 1966 at the same time the building was converted to administrative use and never operated as a laboratory. The building currently measures approximately 200-ft long by 96-ft. wide by 15-ft. high and has a dock area in the southeast corner of the building. The building is currently configured with a hard walled office and cubical layout. Building 441 had sprayed on insulation applied to the northern exterior of the building in about 1978.

Building 441 is serviced by the following utilities; water, sanitary, electric, process waste line (grouted), and steam heat. Fire protection is provided by an overhead sprinkler system and wall-mounted fire extinguishers. The 1966 addition, which is primarily used for record storage has a non-hazardous inert gas extinguisher system instead of an overhead sprinkler system.

**Trailer T441A**

Trailer T441A is a 2080 sq. ft. office trailer that was constructed in 1967. Trailer T441A measures 45-ft.long by 45-ft. wide by 15-ft. high and is constructed of corrugated metal siding and skirting. The trailer is configured with a hard walled office and cubical layout.

Trailer 441A is serviced by the following utilities; water, sanitary, electric, and an overhead sprinkler system and wall-mounted fire extinguishers provide fire protection.

**D&D RISS Facility Characterization  
Historical Site Assessment Report  
August, 2002 Rev. 2**

**Historical Operations**

**Building 441**

Building 441 was originally constructed as a general analytical laboratory to support the depleted uranium, beryllium operations and general site chemical analysis. In 1966 the building was renovated and converted to administrative offices. During this renovation an addition was added to the south side of the structure. This 1966 addition was constructed for administrative use and was never used in connection with the original Laboratory.

The north west section of the original construction was primarily office space with the central and southern portion of the original structure housing laboratory equipment, vapor hoods and laboratory tables. The original Building 441 laboratory also had a few metal working machines to handle special needs. After the 1966 renovation the entire building was converted to administrative office and cubical space.

During the 1966 renovation the building went through an extensive strip-out. The strip-out included removal of the laboratory equipment, laboratory benches, hoods, as well as, most of the floor tile, suspended ceiling, exhaust system and the process drains and trenches were either plugged or grouted. The walls and partitions were removed in some areas and installed in others.

The original laboratory provided general laboratory analytical support of depleted uranium and beryllium analysis for the 400 and 800 areas. Process sinks were located throughout the laboratory area and were diverted to two interconnected underground concrete storage tanks T2 and T3 (T-3 was connected to a temporary holding, Tank-076 that has been drained) located south of Building 441. These tanks are currently called Building 429 waste pit and received waste from the Building 441 laboratories and Buildings 122 and 123. These tanks were isolated from Building 441 and partially closed during the construction of the 1966 addition, which was built over the northern 6-feet of the tanks. Tanks T2 and T3 continued to receive waste from Building 122 and 123 until the early 1980s. These tanks were foamed-in-place in 1996 in accordance with the "Proposed Action Memorandum For Contaminant Stabilization of underground Storage Tanks" dated April 1996. Tanks T2 and T3 are not part of this HSA, but are mentioned because of their historical connection and close proximity to Building 441. Additional information on Tanks T2 and T3 can be found in IHSS 400-122 and in the "Proposed Action Memorandum For Contaminant Stabilization of underground Storage Tanks".

Currently Building 441 houses the site classification office, which stores a large number of classified site records and also operates microfilming equipment. Building 441 also houses several people from the site transportation and site security departments. In the past, Building 441 has housed the purchasing department and engineering support group.

**Trailer T441A**

Trailer T441A has historically been an office trailer and has housed such operations as training and engineering support. Engineering support currently has the only 2 people still located in the trailer. Engineering support tests prototype detectors and develops operating procedures for various reconfigured SAMs, CAMs, and other detectors. Much of the used equipment reconfigured was conditionally released from Building 566 for transportation on site. The testing of prototype and reconfigured detectors frequently use radiological sources, which are stored in a cabinet in Room 11.

**D&D RISS Facility Characterization  
Historical Site Assessment Report  
August, 2002 Rev. 2**

**Current Operational Status**

Building 441 is currently operational as an administrative building, which houses the classification office and also houses several people from the transportation department. Trailer T441A is currently houses 2 engineering support personnel.

**Contaminants of Concern**

**Asbestos**

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

Building 441 is posted as potentially containing asbestos. Trailer T441A has no asbestos posting. The IH group in Trailer T130B has an Asbestos Inspection Plan And Operations Maintenance Plan for Building 441 dated 1996, which summarized some general historical asbestos data. The Trailer Asbestos Management Program Baseline, dated 1994, summarized some general T441A historical asbestos data.

**Beryllium (Be)**

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

Building 441 has several rooms on the list of known Be areas from its history as a Laboratory prior to 1966. These rooms include 106, 106A, 106C, 106E, 106G, 112, 116, 117, 118, 119, and 135. Trailer T441A is not on the list of known Be areas and had no known Be operation. However in November 2001 some Be samples were taken on some used equipment in room 12. The results were positive on the equipment and the shelves the equipment was stored on. Additional Be sampling has been performed to evaluate the remainder of the Trailer. All additional samples came back negative. The Be posting will be move back to include only the shelves in room 12.

*Summarize any recent Be sampling results:*

No recent Be samples have been collected on Building 441. T441A has had recent Be samples with positive results on some equipment stored in room 12. Addition sample results are pending. Be sample results will be summarized in the RLCR.

**Lead**

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

Building 441 and Trailer T441A both have numerous painted surfaces that date back to the original construction. Lead shielding was likely used in the original Building 441 laboratories, but the lead shielding would have been removed during the 1966 strip-out. Trailer T441A currently has several lead bricks that are used during calibration of the prototype detector tested in Rooms 11 and 12.

Building 441 and Trailer T441A have a limited number of electrical panels that may contain lead. See the section below for RCRA/CERCLA constituents for lead in waste stream references related to Building 441 and Trailer T441A.

**D&D RISS Facility Characterization  
Historical Site Assessment Report  
August, 2002 Rev. 2**

**RCRA/CERCLA Constituents**

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

Building 441 was a depleted uranium and beryllium laboratory from 1953 to 1966 when it was stripped out and converted to an administrative building. The 1966 addition was never used in conjunction with the laboratory. Laboratory quantities of RCRA/CERCLA constituents were used in Building 441. These RCRA/CERCLA constituents were primarily acids, bases and various organic solvents. The laboratory area had several small volume mercury spills that were cleaned up using elemental sulfur. Early NDA analysis performed in Building 441 required film processing, therefore photo developing chemicals (silver) were likely discharged to the process waste system.

Laboratory waste was directed from process waste sinks in the vapor hoods and the laboratory benches to Tanks T2 and T3 located south of the building. The process waste drains and floor trenches were plugged or grouted during the 1966 strip-out. Tanks T2 and T3 also collected process waste from Buildings 122 and 123. Tanks T2 and T3 were isolated from Building 441 during its conversion to an administrative building. The tanks continued to receive waste from Buildings 122 and 123 until 1982. The Tanks were foamed-in-place in 1996. Several releases from Tanks T2 and T3 are documented in IHSS 400-0122. Building 441 is also a UBC.

Building 441 has a WSRIC that primarily addresses chemicals from the building microfilming processes. These chemicals are non-hazardous and are disposed of down the sanitary sewer drains.

Trailer T441A has no history of RCRA/CERCLA operations.

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

Small volume leaks likely occurred in the original laboratory, but these spill were likely clean up prior to or during the strip-out of the laboratory equipment, floors tiles, suspended ceiling and the ventilation system in 1966. Tanks T2 and T3 leaks are documented in IHSS 400-122.

*Describe methods in which spills were mitigated, if any:*

Spills were commonly cleaned by swiping solids and using an adsorbent for liquids.

**PCBs**

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

Building 441 and Trailer T441A housed no PCB containing processes. Due to the age of these two buildings PCBs in the paint, light ballasts, and equipment may be a concern.

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

No known PCB spills occurred in Building 441 or Trailer T441A.

*Describe methods in which spills were mitigated, if any:*

No known PCB spills occurred in Building 441 or Trailer T441A.

**D&D RISS Facility Characterization  
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**Radiological Contaminants**

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

Building 441 was a depleted uranium and beryllium laboratory from 1953 to 1966 when it was stripped out and converted to an administrative building. The 1966 addition was never used in conjunction with the laboratory. The entrances to Building 441 are not radiologically posted and the building has an annual radiological survey, which does not identify any radiological contamination. The building does have a single RMS located in a cabinet in Room 144. This RMA is made up of 5 boxes of classified documents, which were found to have trace amounts of radiological contamination.

The laboratory waste was directed from process waste sinks, in the vapor hoods and the laboratory benches, to Tanks T2 and T3 located south of the building. The process waste drains and trenches were plugged or grouted during the 1966 strip-out. Tanks T2 and T3 also collected process waste from Buildings 122 and 123, and were isolated from Building 441 during its 1966 renovation. The tanks continued to collect waste from buildings 122 and 123 until 1982. These Tanks were foamed in-place in 1996. Releases from Tanks T-2 and T-3 are documented in IHSS 400-0122 and Building 441 is a UBC.

Trailer T441A has a RMA established to store sealed sources used to test the prototype and reconfigured detectors. The RMA is located in a cabinet in Room 11. The sources stored in the RMA have no history of leaking. Most of the detectors stored in T441A were only conditionally release from Building 566.

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

Small volume leaks likely occurred in the laboratory prior to 1966, but these spills and residual contamination was likely clean prior to or during the strip-out of the laboratory equipment, floors tiles, suspended ceiling and the ventilation system during the 1966 renovation. Tanks T-2 and T-3 leaks are documented in IHSS 400-122. Sealed source may have been stored in the laboratory prior to 1966, but these sources would have been removed during building strip-out. Process waste drains and floor trenches were plugged or grouted during the 1966 renovation to an administrative building.

*Describe methods in which spills were mitigated, if any:*

Spills were commonly cleaned by swiping solids and using an adsorbent for liquids.

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

The Isotope of concern was primarily depleted uranium. There were no known mixed fission products used in any of the facilities addressed in the HSA. Trailer T441A has a single Sr-90 sealed source stored in Room 11 and the source has no history of leaking. The remaining facilities addressed in this HSA have not handled any known pure beta emitters. However, natural thorium samples were analyzed, on occasion, for special projects.

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

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

**D&D RISS Facility Characterization  
Historical Site Assessment Report  
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**Environmental Restoration Concerns**

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

Building 441 is a UBC and is associated with IHSS 400-122 "Underground Concrete Tanks" Building 441 is also generally mentioned in IHSS 400-157.1 "Radioactive Site north Area". Trailer T441A is not mentioned in any IHSS, PAC, or UBC.

**Additional Information**

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

Tanks T2 and T3 were foamed in-place in 1996 in accordance with the "Proposed Action Memorandum For Contaminant Stabilization of underground Storage Tanks" dated April 1996.

**References**

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

Sources reviewed to complete this HSA were the RFETS Facility List, the Historical Release Report, Site Master List of RCRA Units, and the Site IHSS, PAC, and UBC databases. Building 441 has a WSRICs. In addition, a facility walkdown and interviews were performed.

**Waste Volume Estimates and Material Types**

Facility	Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM (cu ft)	Other Waste
Building 441	66,500		2100	0	2900	TBD	Built-up roofing 5900 cu. ft.
Trailer T441A	0	500	500	600	500	TBD	None.

**Further Actions**

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

Begin the RLC/PDS process.

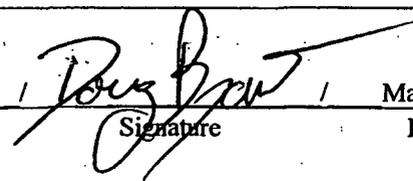
**Note:**

This HSA was performed prior to SME walkdowns, and chemical and radiological characterization package preparations. ~~SMEs should evaluate and/or verify all information during the RLC/PDS process. SMEs may need to~~ review additional documentation and perform additional interviews. Information contained in this HSA only represents a "snapshot" in time. Subsequent data may be obtained during SME walkdowns and chemical and radiological characterization package preparations, which may conflict with this report. However, this report will not be amended, and the newer data will take precedence over the data in the report. Newer Data will appear in the RLCR/PDSR.

Prepared By:

Doug Bryant

Name



Signature

March 2001

Date

25

# ATTACHMENT C

## Radiological Data Summaries and Survey Maps

**SURVEY UNIT 441-A-001**  
**RADIOLOGICAL DATA SUMMARY - PDS**

**Survey Unit Description: B441 (Lab Area)**

441-A-001  
PDS Data Summary

<u>Total Surface Activity Measurements</u>			<u>Removable Activity Measurements</u>		
	70	74		70	74
	Number Required	Number Obtained		Number Required	Number Obtained
MIN	-14.3	dpm/100 cm <sup>2</sup>	MIN	-0.9	dpm/100 cm <sup>2</sup>
MAX	524.1	dpm/100 cm <sup>2</sup>	MAX	8.5	dpm/100 cm <sup>2</sup>
MEAN	26.6	dpm/100 cm <sup>2</sup>	MEAN	0.6	dpm/100 cm <sup>2</sup>
STD DEV	92.4	dpm/100 cm <sup>2</sup>	STD DEV	1.9	dpm/100 cm <sup>2</sup>
TRANSURANIC DCGL <sub>w</sub>	100	dpm/100 cm <sup>2</sup>	TRANSURANIC DCGL <sub>w</sub>	20	dpm/100 cm <sup>2</sup>

**SURVEY UNIT 441-A-001  
TSA - DATA SUMMARY**

<b>Manufacturer:</b>	NE Tech	NE Tech				
<b>Model:</b>	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6
<b>Instrument ID#:</b>	6	7	8	13	14	19
<b>Serial #:</b>	2344	3104	3106	3125	2344	1425
<b>Cal Due Date:</b>	1/17/03	5/11/03	4/4/03	4/21/03	1/17/03	6/13/03
<b>Analysis Date:</b>	12/19/02	12/19/02	12/19/02	12/23/02	12/23/02	1/14/03
<b>Alpha Eff. (c/d):</b>	0.222	0.213	0.230	0.206	0.222	0.210
<b>Alpha Bkgd (cpm)</b>	1.3	2.0	2.0	2.0	1.3	2.0
<b>Sample Time (min)</b>	1.5	1.5	1.5	1.5	1.5	1.5
<b>LAB Time (min)</b>	1.5	1.5	1.5	1.5	1.5	1.5
<b>MDC (dpm/100cm<sup>2</sup>)</b>	48.0	48.0	48.0	48.0	48.0	48.0

<b>Manufacturer:</b>	NE Tech					
<b>Model:</b>	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6
<b>Instrument ID#:</b>	20	21	22	33	45	45(Beta)
<b>Serial #:</b>	1379	1366	3125	1366	3125	3125
<b>Cal Due Date:</b>	6/3/03	6/26/03	4/21/03	6/26/03	4/21/03	4/21/03
<b>Analysis Date:</b>	1/14/03	1/14/03	1/14/03	1/21/03	1/21/03	1/21/03
<b>Alpha Eff. (c/d):</b>	0.229	0.219	0.216	0.216	0.216	0.289 (Beta)
<b>Alpha Bkgd (cpm)</b>	6.0	3.3	3.3	1.0	1.0	371 (Beta)
<b>Sample Time (min)</b>	1.5	1.5	1.5	1.5	1.5	1.5
<b>LAB Time (min)</b>	1.5	1.5	1.5	1.5	1.5	1.5
<b>MDC (dpm/100cm<sup>2</sup>)</b>	48.0	48.0	48.0	48.0	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm <sup>2</sup> )	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm <sup>2</sup> )	Sample Net Activity (dpm/100cm <sup>2</sup> ) <sup>1,2</sup>
1	7	7.3	34.3	2.7	12.7	16.7
2	7	6.7	31.5	3.3	15.5	13.9
3	8	4.7	20.4	2.0	8.7	2.9
4	8	5.3	23.0	2.0	8.7	5.5
5	6	6.7	30.2	2.0	9.0	12.6
6	6	5.3	23.9	5.3	23.9	6.3
7	7	8.0	37.6	2.0	9.4	20.0
8	7	4.7	22.1	0.0	0.0	4.5
9	7	2.0	9.4	2.0	9.4	-8.2
10	6	4.0	18.0	1.3	5.9	0.4
11	6	1.3	5.9	0.0	0.0	-11.7
12	6	4.0	18.0	4.0	18.0	0.4
13	7	6.0	28.2	3.3	15.5	10.6
14	7	5.3	24.9	0.7	3.3	7.3
15	7	0.7	3.3	2.7	12.7	-14.3
16	7	2.7	12.7	4.0	18.8	-4.9
17	13	5.3	25.7	3.3	16.0	8.1
18	13	4.0	19.4	4.7	22.8	1.8
19	13	9.3	45.1	4.0	19.4	27.6
20	7	0.7	3.3	3.3	15.5	-14.3

**SURVEY UNIT 441-A-001  
TSA - DATA SUMMARY**

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm <sup>2</sup> )	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm <sup>2</sup> )	Sample Net Activity (dpm/100cm <sup>2</sup> ) <sup>1,2</sup>
21	7	0.7	3.3	2.7	12.7	-14.3
22	7	4.0	18.8	5.3	24.9	1.2
23	19	10.0	47.6	6.0	28.6	30.0
24	19	14.7	70.0	4.0	19.0	52.4
25	13	4.0	19.4	2.7	13.1	1.8
26	13	5.3	25.7	4.7	22.8	8.1
27	13	6.7	32.5	4.0	19.4	14.9
28	13	4.7	22.8	4.0	19.4	5.2
29	6	2.7	12.2	1.3	5.9	-5.4
30	19	12.7	60.5	8.0	38.1	42.9
31	14	5.3	23.9	2.0	9.0	6.3
32	14	3.3	14.9	2.0	9.0	-2.7
33	14	7.3	32.9	1.3	5.9	15.3
34	13	8.0	38.8	2.0	9.7	21.3
35	14	2.7	12.2	6.2	27.9	-5.4
36	13	7.3	35.4	2.0	9.7	17.9
37	14	4.7	21.2	3.3	14.9	3.6
38	13	6.0	29.1	2.7	13.1	11.5
39	14	2.7	12.2	2.0	9.0	-5.4
40	13	2.0	9.7	4.7	22.8	-7.9
41	19	6.7	31.9	4.7	22.4	14.3
42	19	4.7	22.4	8.0	38.1	4.8
43	20	5.3	23.1	8.0	34.9	5.6
44	20	16.0	69.9	8.0	34.9	52.3
45	19	7.3	34.8	5.3	25.2	17.2
46	19	5.3	25.2	8.0	38.1	7.7
47	19	4.7	22.4	6.7	31.9	4.8
48	20	8.7	38.0	4.7	20.5	20.4
49	19	4.0	19.0	7.3	34.8	1.5
50	21	4.0	18.3	5.3	24.2	0.7
51	19	4.7	22.4	5.3	25.2	4.8
52	19	4.0	19.0	0.7	3.3	1.5
53	21	7.3	33.3	7.3	33.3	15.8
54	19	7.3	34.8	2.0	9.5	17.2
55	21	3.3	15.1	7.3	33.3	-2.5
56	19	5.3	25.2	7.3	34.8	7.7
57	19	4.0	19.0	2.7	12.9	1.5
58	21	5.3	24.2	6.7	30.6	6.6
59	19	6.0	28.6	0.0	0.0	11.0
60	21	8.0	36.5	5.3	24.2	18.9

30

**SURVEY UNIT 441-A-001  
TSA - DATA SUMMARY**

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2) <sup>1,2</sup>
61	19	2.7	12.9	2.0	9.5	-4.7
62	22	2.0	9.3	2.7	12.5	-8.3
63	19	3.3	15.7	1.3	6.2	-1.9
64	21	4.7	21.5	7.3	33.3	3.9
65	19	3.3	15.7	2.7	12.9	-1.9
66	22	2.0	9.3	2.7	12.5	-8.3
67	19	8.7	41.4	2.7	12.9	23.8
68	21	8.7	39.7	5.3	24.2	22.1
69	22	6.7	31.0	6.3	29.2	13.4
70	22	4.0	18.5	3.3	15.3	0.9
71*	45	117.0	541.7	1.3	6.0	524.1
72*	45	90.0	416.7	2.7	12.5	399.1
73*	45	106.0	490.7	4.0	18.5	473.2
74*	45	12.7	58.8	0.7	3.2	41.2

1 - Average LAB used to subtract from Gross Sample Activity

17.6	Sample LAB Average
MIN	-14.3
MAX	524.1
MEAN	26.6
SD	92.4
Transuranic DCGL <sub>w</sub>	100
Uranium DCGL <sub>w</sub>	5,000

**QC Measurements**

14 QC	22	1.3	6.0	0.0	0.0	-7.9
2 QC	22	2.7	12.5	5.3	24.5	-1.4
59 QC	22	4.0	18.5	0.0	0.0	4.6
1 QC	33	8.7	40.3	6.7	31.0	26.4

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

13.9	QC LAB Average
MIN	-7.9
MAX	26.4
MEAN	5.4
Transuranic DCGL <sub>w</sub>	100

\* - Elevated activity was detected during alpha scan surveys of the southwest floor area of this survey unit.

The areas of elevated activity were marked as radioactive fixed contamination. Measurement locations 71-74 were collected from inside these areas as indicated on the survey map.

Beta scans and measurements were performed, the beta TSA results are indicated below, and the alpha TSA results are indicated above.

An AP-2 alpha spectroscopy measurement was performed at location 71. The spectrum indicated uranium isotopes.

No transuranic isotopes were identified, therefore all of the alpha and beta elevated activity is attributed to uranium.

**Beta Measurements at Elevated Scan Locations**

71	45 Beta	6,931	23,983	824	2,851	21,131
72	46 Beta	5,691	19,692	832	2,879	16,813
73	47 Beta	5,808	20,097	874	3,024	17,073
74	48 Beta	2,135	7,388	887	3,069	4,318

MIN	4,318
MAX	21,131
MEAN	14,834
Transuranic DCGL <sub>w</sub>	5,000

**SURVEY UNIT 441-A-001  
RSC - DATA SUMMARY**

<b>Manufacturer:</b>	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline
<b>Model:</b>	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4
<b>Instrument ID#:</b>	9	10	11	12	15	16
<b>Serial #:</b>	959	833	963	952	959	833
<b>Cal Due Date:</b>	1/18/03	2/28/03	1/3/03	1/31/03	1/18/03	2/28/03
<b>Analysis Date:</b>	12/19/02	12/19/02	12/19/02	12/19/02	12/23/02	12/23/02
<b>Alpha Eff. (c/d):</b>	0.33	0.33	0.33	0.33	0.33	0.33
<b>Alpha Bkgd (cpm)</b>	0.2	0.3	0.0	0.1	0.0	0.0
<b>Sample Time (min)</b>	2	2	2	2	2	2
<b>Bkgd Time (min)</b>	10	10	10	10	10	10
<b>MDC (dpm/100cm<sup>2</sup>)</b>	9.0	9.0	9.0	9.0	9.0	9.0

<b>Manufacturer:</b>	Eberline	Eberline	Eberline	Eberline
<b>Model:</b>	SAC-4	SAC-4	SAC-4	SAC-4
<b>Instrument ID#:</b>	17	18	23	24
<b>Serial #:</b>	963	952	767	1164
<b>Cal Due Date:</b>	1/3/03	1/31/03	5/13/03	6/17/03
<b>Analysis Date:</b>	12/23/02	12/23/02	1/14/03	1/14/03
<b>Alpha Eff. (c/d):</b>	0.33	0.33	0.33	0.33
<b>Alpha Bkgd (cpm)</b>	0.1	0.0	0.2	0.1
<b>Sample Time (min)</b>	2	2	2	2
<b>Bkgd Time (min)</b>	10	10	10	10
<b>MDC (dpm/100cm<sup>2</sup>)</b>	9.0	9.0	9.0	9.0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm <sup>2</sup> )
1	9	0	-0.6
2	10	0	-0.9
3	11	0	0.0
4	12	0	-0.3
5	9	2	2.4
6	10	0	-0.9
7	11	0	0.0
8	12	0	-0.3
9	9	0	-0.6
10	10	0	-0.9
11	11	0	0.0
12	12	0	-0.3
13	9	0	-0.6
14	10	0	-0.9
15	11	1	1.5
16	23	1	1.5
17	15	0	0.0
18	16	0	0.0
19	16	0	0.0
20	12	0	-0.3
21	9	0	-0.6
22	10	0	-0.9
23	23	0	-0.6
24	24	3	4.2
25	15	0	0.0
26	16	0	0.0
27	15	1	1.5

**SURVEY UNIT 441-A-001  
RSC - DATA SUMMARY**

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm <sup>2</sup> )
28	17	0	-0.3
29	11	0	0.0
30	23	0	-0.6
31	18	0	0.0
32	17	1	1.2
33	18	1	1.5
34	15	0	0.0
35	16	0	0.0
36	17	1	1.2
37	18	0	0.0
38	18	0	0.0
39	15	3	4.5
40	17	1	1.5
41	24	3	4.2
42	23	0	-0.6
43	24	0	-0.3
44	24	0	-0.3
45	23	0	-0.6
46	23	0	-0.6
47	24	0	-0.3
48	23	0	-0.6
49	24	0	-0.3
50	24	3	4.2
51	23	3	3.9
52	23	0	-0.6
53	24	3	4.2
54	23	0	-0.6
55	24	0	-0.3
56	23	3	3.9
57	24	0	-0.3
58	23	3	3.9
59	24	0	-0.3
60	23	0	-0.6
61	24	0	-0.3
62	23	0	-0.6
63	24	0	-0.3
64	23	6	8.5
65	24	0	-0.3
66	23	0	-0.6
67	24	0	-0.3
68	23	0	-0.6
69	24	0	-0.3
70	23	3	3.9
		<b>MIN</b>	-0.9
		<b>MAX</b>	8.5
		<b>MEAN</b>	0.6
		<b>SD</b>	1.9
		<b>Transuranic DCGL<sub>w</sub></b>	20



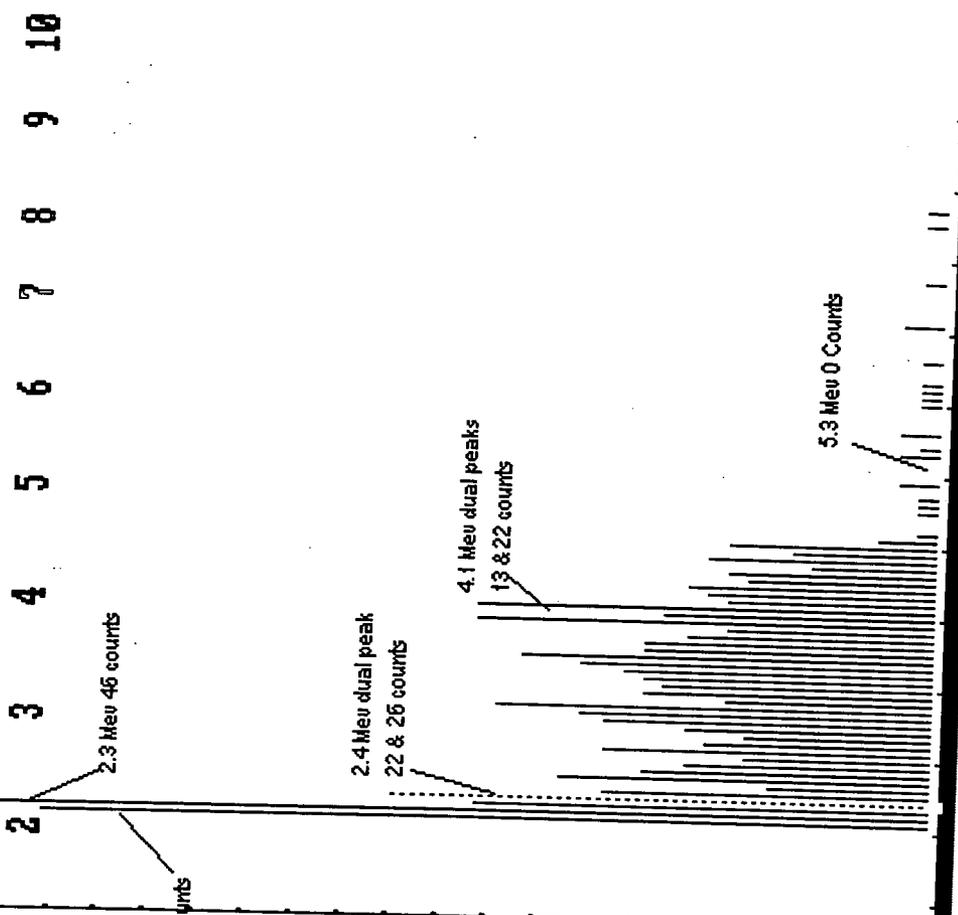
012003.SPE  
REC# 1 OF 1

MEV >

MIN: 0  
MAX: 46  
RANGE: 46  
SCALE: MIN to MAX

60 Minute survey performed on the floor of the 441 bldg. in the area of a former lab. Spot surveyed 528 dpm / 100 cm alpha with N. E. Electra. Area has been deconned multiple times prior to survey.

CURSOR MEV: 2.4  
COUNT: 26



U-238 Rcw 1/23/03

**SURVEY UNIT 441-A-002**  
**RADIOLOGICAL DATA SUMMARY - PDS**

**Survey Unit Description: B441 (South Addition-Interior)**

441-A-002  
PDS Data Summary

<u>Total Surface Activity Measurements</u>			<u>Removable Activity Measurements</u>		
	65	65		65	65
	<b>Number Required</b>	<b>Number Obtained</b>		<b>Number Required</b>	<b>Number Obtained</b>
MIN	-8.1	dpm/100 cm <sup>2</sup>	MIN	-0.9	dpm/100 cm <sup>2</sup>
MAX	46.1	dpm/100 cm <sup>2</sup>	MAX	8.5	dpm/100 cm <sup>2</sup>
MEAN	7.5	dpm/100 cm <sup>2</sup>	MEAN	0.2	dpm/100 cm <sup>2</sup>
STD DEV	11.5	dpm/100 cm <sup>2</sup>	STD DEV	1.6	dpm/100 cm <sup>2</sup>
TRANSURANIC DCGL <sub>w</sub>	100	dpm/100 cm <sup>2</sup>	TRANSURANIC DCGL <sub>w</sub>	20	dpm/100 cm <sup>2</sup>

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**SURVEY UNIT 441-A-002  
TSA - DATA SUMMARY**

Manufacturer:	NE Tech					
Model:	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6
Instrument ID#:	1	2	3	4	5	6
Serial #:	3104	3106	394	1241	3104	1241
Cal Due Date:	5/11/03	4/4/03	1/12/03	5/11/03	5/11/03	5/11/03
Analysis Date:	12/11/02	12/11/02	12/11/02	12/11/02	12/12/02	12/12/02
Alpha Eff. (c/d):	0.214	0.230	0.228	0.213	0.214	0.213
Alpha Bkgd (cpm)	2.0	1.3	4.0	1.3	1.3	1.3
Sample Time (min)	1.5	1.5	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5	1.5	1.5
MDC (dpm/100cm <sup>2</sup> )	48.0	48.0	48.0	48.0	48.0	48.0

Manufacturer:	NE Tech	NE Tech	NE Tech	NE Tech	NE Tech
Model:	DP-6	DP-6	DP-6	DP-6	DP-6
Instrument ID#:	16	17	20	21	24
Serial #:	3105	394	3125	1445	1366
Cal Due Date:	1/17/03	1/12/03	4/21/03	6/30/03	6/26/03
Analysis Date:	12/23/02	12/23/02	1/14/03	1/14/03	1/15/03
Alpha Eff. (c/d):	0.212	0.228	0.216	0.224	0.219
Alpha Bkgd (cpm)	1.3	3.3	0.0	1.3	6.0
Sample Time (min)	1.5	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5	1.5
MDC (dpm/100cm <sup>2</sup> )	48.0	48.0	48.0	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm <sup>2</sup> )	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm <sup>2</sup> )	Sample Net Activity (dpm/100cm <sup>2</sup> ) <sup>1,2</sup>
1	3	9.3	40.8	2.0	8.8	27.0
2	3	8.0	35.1	4.7	20.6	21.3
3	1	2.0	9.3	1.3	6.1	-4.4
4	5	8.0	37.4	4.7	22.1	23.6
5	2	2.7	11.7	1.3	5.7	-2.0
6	1	4.7	22.0	2.0	9.3	8.2
7	4	1.3	6.1	2.7	12.7	-7.7
8	5	2.7	12.6	0.7	3.3	-1.2
9	2	4.0	17.4	2.0	8.7	3.6
10	16	7.3	34.4	6.0	28.3	20.7
11	2	4.7	20.4	2.7	11.7	6.7
12	17	8.0	35.1	6.7	29.4	21.3
13	4	2.0	9.4	2.7	12.7	-4.4
14	6	4.7	22.1	4.0	18.7	8.3
15	17	12.7	55.7	6.7	29.4	41.9
16	16	12.7	59.9	3.3	15.6	46.1
17	16	5.3	25.0	1.3	6.1	11.2
18	5	4.0	18.7	6.0	28.2	4.9
19	6	6.0	28.2	2.0	9.3	14.4
20	6	2.7	12.7	0.0	0.0	-1.1
21	5	2.7	12.6	6.7	31.5	-1.2
22	5	2.0	9.3	2.0	9.4	-4.4
23	5	4.7	22.0	2.7	12.7	8.2
24	3	7.3	32.0	2.7	11.8	18.2
25	2	1.3	5.7	3.3	14.3	-8.1
26	2	5.3	23.0	0.7	3.0	9.3
27	2	1.3	5.7	2.7	11.7	-8.1

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**SURVEY UNIT 441-A-002  
TSA - DATA SUMMARY**

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2) <sup>1,2</sup>
28	6	4.0	18.8	2.0	9.3	5.0
29	3	9.3	40.8	4.0	17.5	27.0
30	4	1.3	6.1	0.7	3.3	-7.7
31	4	2.7	12.7	1.3	6.1	-1.1
32	4	2.7	12.7	4.7	22.1	-1.1
33	3	7.3	32.0	3.3	14.5	18.2
34	20	7.3	33.8	4.0	18.5	20.0
35	20	6.0	27.8	0.7	3.2	14.0
36	5	6.0	28.0	0.7	3.3	14.3
37	6	2.7	12.7	1.3	6.1	-1.1
38	6	3.3	15.5	2.0	9.3	1.7
39	6	3.3	15.5	4.0	18.7	1.7
40	6	2.7	12.7	2.7	12.6	-1.1
41	5	4.0	18.7	4.7	22.1	4.9
42	6	4.7	22.1	2.7	12.6	8.3
43	6	3.3	15.5	3.3	15.4	1.7
44	5	5.3	24.8	2.7	12.7	11.0
45	6	4.7	22.1	3.3	15.4	8.3
46	20	1.3	6.0	1.3	6.0	-7.8
47	17	3.3	14.5	5.3	23.2	0.7
48	17	3.3	14.5	5.3	23.2	0.7
49	17	5.3	23.2	4.7	20.6	9.5
50	20	5.3	24.5	2.0	9.3	10.8
51	20	2.7	12.5	4.0	18.5	-1.3
52	20	2.7	12.5	1.3	6.0	-1.3
53	20	3.3	15.3	2.0	9.3	1.5
54	20	4.0	18.5	3.3	15.3	4.7
55	21	6.0	26.8	5.0	22.3	13.0
56	20	4.0	18.5	2.7	12.5	4.7
57	20	3.3	15.3	1.3	6.0	1.5
58	20	4.0	18.5	2.7	12.5	4.7
59	20	5.3	24.5	2.7	12.5	10.8
60	21	9.3	41.5	4.7	21.0	27.7
61	21	5.0	22.3	3.7	16.5	8.5
62	21	2.2	9.8	2.1	9.4	-4.0
63	21	6.0	26.8	6.0	26.8	13.0
64	21	7.3	32.6	3.3	14.7	18.8
65	21	2.1	9.4	1.3	5.8	-4.4

1 - Average LAB used to subtract from Gross Sample Activity

13.8	Sample LAB Average
MIN	-8.1
MAX	46.1
MEAN	7.5
SD	11.5
Transuranic DCGL <sub>w</sub>	100

**QC Measurements**

QC	21	6.0	26.8	2.7	12.1	15.4
QC	21	6.7	29.9	2.7	12.1	18.5
QC	20	1.3	6.0	2.7	12.5	-5.4
QC	24	6.0	27.4	2.0	8.9	16.0

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

11.4	QC LAB Average
MIN	-5.4
MAX	18.5
MEAN	11.1
Transuranic DCGL <sub>w</sub>	100

**SURVEY UNIT 441-A-002  
RSC - DATA SUMMARY**

<b>Manufacturer:</b>	Eberline	Eberline	Eberline	Eberline
<b>Model:</b>	SAC-4	SAC-4	SAC-4	SAC-4
<b>Instrument ID#:</b>	12	13	14	15
<b>Serial #:</b>	959	833	963	952
<b>Cal Due Date:</b>	1/18/03	2/28/03	1/3/03	1/31/03
<b>Analysis Date:</b>	12/19/02	12/19/02	12/19/02	12/19/02
<b>Alpha Eff. (c/d):</b>	0.33	0.33	0.33	0.33
<b>Alpha Bkgd (cpm)</b>	0.2	0.3	0.0	0.1
<b>Sample Time (min)</b>	2	2	2	2
<b>Bkgd Time (min)</b>	10	10	10	10
<b>MDC (dpm/100cm<sup>2</sup>)</b>	9.0	9.0	9.0	9.0

<b>Manufacturer:</b>	Eberline	Eberline	Eberline	Eberline
<b>Model:</b>	SAC-4	SAC-4	SAC-4	SAC-4
<b>Instrument ID#:</b>	18	19	22	23
<b>Serial #:</b>	959	833	767	1164
<b>Cal Due Date:</b>	1/18/03	2/28/03	5/13/03	6/17/03
<b>Analysis Date:</b>	12/23/02	12/23/02	1/14/03	1/14/03
<b>Alpha Eff. (c/d):</b>	0.33	0.33	0.33	0.33
<b>Alpha Bkgd (cpm)</b>	0.1	0.0	0.2	0.1
<b>Sample Time (min)</b>	2	2	2	2
<b>Bkgd Time (min)</b>	10	10	10	10
<b>MDC (dpm/100cm<sup>2</sup>)</b>	9.0	9.0	9.0	9.0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm <sup>2</sup> )
1	12	1	0.9
2	12	0	-0.6
3	13	2	2.1
4	14	1	1.5
5	15	0	-0.3
6	12	1	0.9
7	13	0	-0.9
8	14	1	1.5
9	15	0	-0.3
10	18	0	-0.3
11	12	0	-0.6
12	19	0	0.0
13	13	0	-0.9
14	14	0	0.0
15	19	0	0.0
16	18	1	1.2
17	18	0	-0.3
18	15	0	-0.3
19	12	1	0.9
20	13	0	-0.9
21	14	0	0.0
22	15	0	-0.3

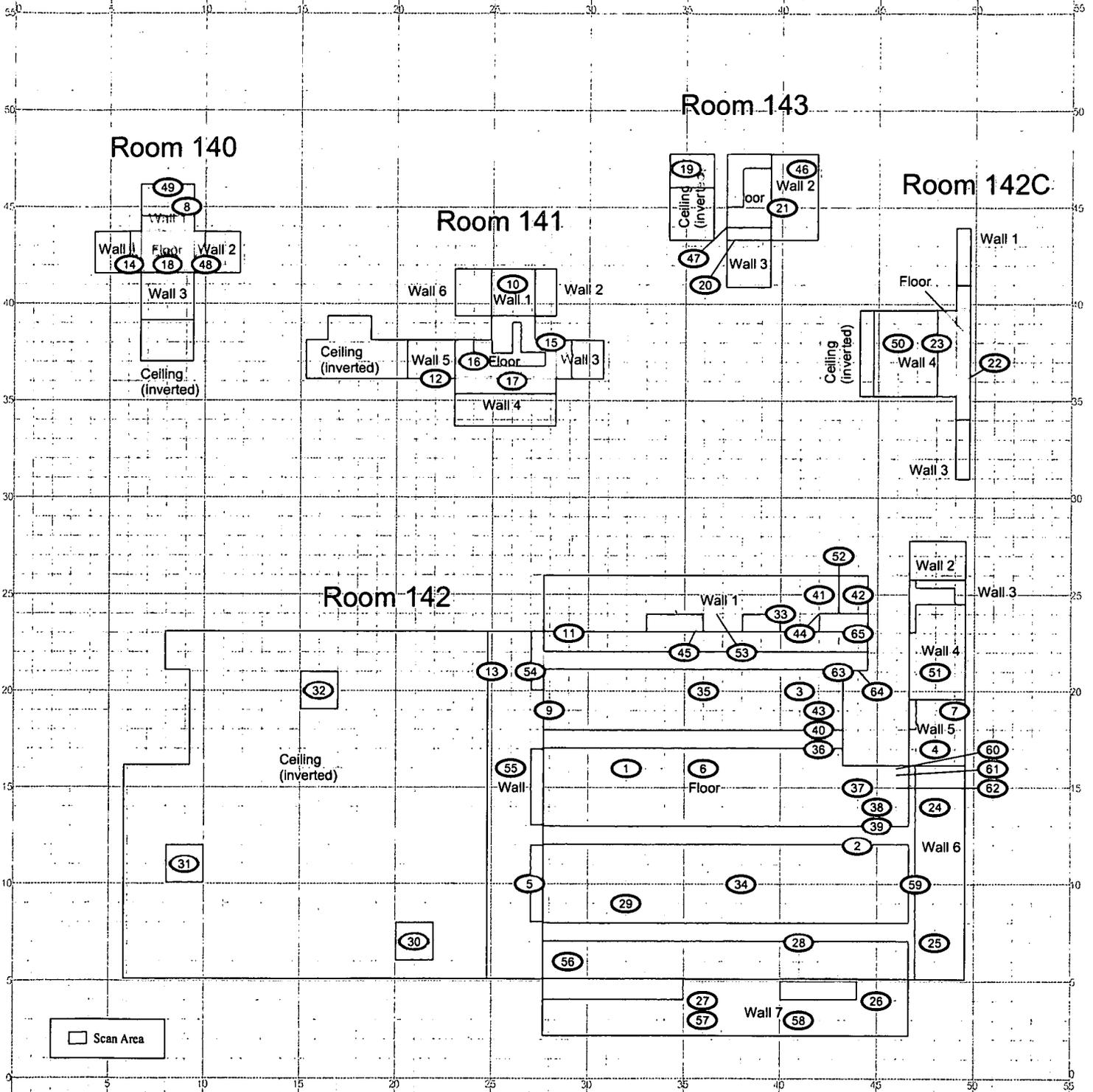
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**SURVEY UNIT 441-A-002  
RSC - DATA SUMMARY**

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm <sup>2</sup> )
26	15	0	-0.3
27	12	0	-0.6
28	13	0	-0.9
29	14	0	0.0
30	15	0	-0.3
31	12	0	-0.6
32	13	0	-0.9
33	14	0	0.0
34	22	0	-0.6
35	23	0	-0.3
36	12	0	-0.6
37	15	0	-0.3
38	13	0	-0.9
39	14	0	0.0
40	15	0	-0.3
41	12	0	-0.6
42	13	0	-0.9
43	14	0	0.0
44	15	0	-0.3
45	12	0	-0.6
46	22	0	-0.6
47	22	0	-0.6
48	22	0	-0.6
49	22	0	-0.6
50	23	0	-0.3
51	22	3	3.9
52	23	0	-0.3
53	22	0	-0.6
54	23	0	-0.3
55	22	0	-0.6
56	23	0	-0.3
57	22	0	-0.6
58	23	3	4.2
59	22	0	-0.6
60	23	0	-0.3
61	22	0	-0.6
62	23	3	4.2
63	22	6	8.5
64	23	0	-0.3
65	22	3	3.9
	<b>MIN</b>		-0.9
	<b>MAX</b>		8.5
	<b>MEAN</b>		0.2
	<b>SD</b>		1.6
	<b>Transuranic DCGL<sub>w</sub></b>		20

**PRE-DEMOLITION SURVEY FOR B441**

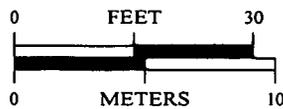
Survey Area: 3      Survey Unit: 441-A-002      Classification: 3  
 Building: 441  
 Survey Unit Description: Building 441 (South Addition - Interior)  
 Total Area: 1152 sq. m.      Total Floor Area: 351 sq. m.



**SURVEY MAP LEGEND**

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

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**Scan Survey Information**  
 Survey Instrument ID #(s): 7,8,9,10,11  
 RCT ID #(s): 7,8,9,10,11

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

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

Prepared by: GIS Dept. 303-966-7707

Prepared for:

**DynCorp**  
 THE ART OF TECHNOLOGY



MAP ID: 02-0320/441-A

January 21, 2003

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**SURVEY UNIT 441-B-003  
RADIOLOGICAL DATA SUMMARY - PDS**

**Survey Unit Description: B441 (Exterior)**

441-B-003  
PDS Data Summary

**Total Surface Activity Measurements**

30	30
Number Required	Number Obtained

MIN	-5.0	dpm/100 cm <sup>2</sup>
MAX	82.4	dpm/100 cm <sup>2</sup>
MEAN	25.5	dpm/100 cm <sup>2</sup>
STD DEV	22.6	dpm/100 cm <sup>2</sup>

TRANSURANIC DCGL <sub>w</sub>	100	dpm/100 cm <sup>2</sup>
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**Removable Activity Measurements**

30	30
Number Required	Number Obtained

MIN	-1.2	dpm/100 cm <sup>2</sup>
MAX	3.3	dpm/100 cm <sup>2</sup>
MEAN	0.1	dpm/100 cm <sup>2</sup>
STD DEV	1.2	dpm/100 cm <sup>2</sup>

TRANSURANIC DCGL <sub>w</sub>	20	dpm/100 cm <sup>2</sup>
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**SURVEY UNIT 441-B-003  
TSA - DATA SUMMARY**

Manufacturer:	NE Tech					
Model:	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6
Instrument ID#:	1	2	5	6	7	16
Serial #:	3109	2344	1261	3104	3109	1397
Cal Due Date:	3/18/03	1/17/03	4/5/03	2/1/03	3/18/03	3/19/03
Analysis Date:	10/16/02	10/16/02	10/17/02	10/17/02	10/17/02	10/28/02
Alpha Eff. (c/d):	0.221	0.223	0.206	0.216	0.221	0.201
Alpha Bkgd (cpm)	2.0	0.0	5.3	0.0	0.0	1.3
Sample Time (min)	1.5	1.5	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5	1.5	1.5
MDC (dpm/100cm <sup>2</sup> )	48.0	48.0	48.0	48.0	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm <sup>2</sup> )	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm <sup>2</sup> )	Sample Net Activity (dpm/100cm <sup>2</sup> )
1	1	4.7	21.3	6	27.1	-2.3
2	6	16	74.1	8	37.0	50.5
3*	16	21.3	106.0	8	39.8	82.4
4	6	16.7	77.3	2.7	12.5	53.8
5	1	8	36.2	5.3	24.0	12.7
6	1	11.3	51.1	7.3	33.0	27.6
7	1	8	36.2	7.3	33.0	12.7
8	1	10.7	48.4	4.7	21.3	24.9
9	6	6.7	31.0	4.3	19.9	7.5
10	1	8	36.2	4	18.1	12.7
11	6	11.3	52.3	4	18.5	28.8
12	1	5.3	24.0	4	18.1	0.4
13	1	10.7	48.4	5.3	24.0	24.9
14	2	11.3	50.7	2.7	12.1	27.1
15	5	8.7	42.2	6.7	32.5	18.7
16	1	7.3	33.0	4	18.1	9.5
17	2	6	26.9	2	9.0	3.4
18	6	4	18.5	2	9.3	-5.0
19	1	7.3	33.0	4	18.1	9.5
20	1	14	63.3	4	18.1	39.8
21	2	6.7	30.0	4.7	21.1	6.5
22	6	12.7	58.8	1.3	6.0	35.3
23	1	8	36.2	6	27.1	12.7
24	5	19.3	93.7	6.7	32.5	70.2
25	5	18.7	90.8	8	38.8	67.2
26	1	10.7	48.4	4.7	21.3	24.9
27	5	14.7	71.4	8	38.8	47.8
28	5	12.7	61.7	5.3	25.7	38.1
29	5	9.3	45.1	6.7	32.5	21.6
30**	6	6.7	31.0	4	18.5	0.0

1 - Average LAB used to subtract from Gross Sample Activity

23.5	Sample LAB Average
MIN	-5.0
MAX	82.4
MEAN	25.5
SD	22.6
Transuranic DCGL <sub>w</sub>	100

**QC Measurements**

30 QC	5	6.3	30.6	6.7	32.5	-0.8
27 QC	7	14	63.3	6.7	30.3	31.9

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

31.4	QC LAB Average
MIN	-0.8
MAX	31.9
MEAN	15.5
Transuranic DCGL <sub>w</sub>	100

\* - The initial Sample Net Activity for location 3 was 115.9 dpm/100cm<sup>2</sup>. This location was re-surveyed after a decay period. Re-survey result was less than the transuranic DCGL and is the value reported.

\*\* - The initial Sample Net Activity for location 30 was 133.1 dpm/100cm<sup>2</sup>.

A coupon sample was collected from location 30 and analyzed using the Canberra ISOCS system. No transuranic isotopes were detected. Exposed metal sample activity was determined to be from uranium and naturally occurring isotopes. The Sample Net Activity for this location is below the uranium DCGL<sub>w</sub> limits (5000 dpm/100cm<sup>2</sup>).

All survey results are less than the applicable DCGLs, therefore, no further investigation is required.

On this basis, the transuranic value for location 30 is reported as zero (0) net activity in the TSA Data Summary

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**SURVEY UNIT 441-B-003  
RSC - DATA SUMMARY**

<b>Manufacturer:</b>	Eberline	Eberline	Eberline
<b>Model:</b>	SAC-4	SAC-4	SAC-4
<b>Instrument ID#:</b>	10	11	12
<b>Serial #:</b>	959	966	963
<b>Cal Due Date:</b>	1/18/03	11/6/02	1/3/03
<b>Analysis Date:</b>	10/18/02	10/18/02	10/18/02
<b>Alpha Eff. (c/d):</b>	0.33	0.33	0.33
<b>Alpha Bkgd (cpm)</b>	0.0	0.2	0.4
<b>Sample Time (min)</b>	2	2	2
<b>Bkgd Time (min)</b>	10	10	10
<b>MDC (dpm/100cm<sup>2</sup>)</b>	9.0	9.0	9.0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm <sup>2</sup> )
1	10	0	0.0
2	11	1	0.9
3	12	1	0.3
4	13	0	-0.6
5	10	1	1.5
6	11	0	-0.6
7	12	1	0.3
8	13	0	-0.6
9	10	0	0.0
10	11	0	-0.6
11	12	0	-1.2
12	13	0	-0.6
13	10	0	0.0
14	11	0	-0.6
15	12	0	-1.2
16	13	0	-0.6
17	10	1	1.5
18	11	0	-0.6
19	12	3	3.3
20	13	0	-0.6
21	10	0	0.0
22	11	2	2.4
23	12	0	-1.2
24	13	0	-0.6
25	10	0	0.0
26	11	0	-0.6
27	12	0	-1.2
28	13	1	0.9
29	10	0	0.0
30	11	2	2.4
		<b>MIN</b>	-1.2
		<b>MAX</b>	3.3
		<b>MEAN</b>	0.1
		<b>SD</b>	1.2
		<b>Transuranic DCGL<sub>w</sub></b>	20

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

Report Generated On                    : 12/17/2002    8:27:33 AM

RIN Number                            : 03S0027  
Analytical Batch ID                   : 0212164453  
Line Item Code                        : RC10B019

*441 External*

Filename: S:\GENIE2K\CAMFILES\LI009(D)\MOD\D1900004.CNF

*B441-B-003*

Sample Number                        : 03S0027-006.001  
Lab Sample Number                    : CMLS-2033  
Sample Receipt Date                   : 12/16/2002  
Sample Volume Received               : 2.88E+001 GRAM

*LOCATION #30*

*metal coupon*

Result Identifier                     : N/A

Peak Locate Threshold                : 2.50  
Peak Locate Range (in channels)     : 100 - 8192  
Peak Area Range (in channels)       : 100 - 8192  
Identification Energy Tolerance      : 1.000 keV

Sample (Final Aliquot Size)         : 2.880E+001 GRAM  
Sample Quantity Error                : 0.000E+000  
Systematic Error Applied             : 0.000E+000

Sample Taken On                      : 12/13/2002    3:50:00 PM  
Acquisition Started                  : 12/16/2002    3:20:47 PM

Count Time                            : 57600.0 seconds  
Real Time                              : 57606.5 seconds  
Dead Time                              : 0.01 %

Energy Calibration Used Done On     : 10/4/02  
Energy = -0.113 + 0.250\*ch + -1.63E-007\*ch^2 + 2.03E-011\*ch^3

Corrections Applied:  
None

Efficiency Calibration Used Done On   : 12/16/02  
Efficiency Geometry ID                 : 03S0027-006.001

Analyzed By: Marilyn Umbaugh                    Date: 12/17/02

Reviewed By: Sean Stanfield                    Date: 12/17/02

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

Site Sample ID : 03S0027-006.001  
 Analytical Batch ID : 0212164453  
 Sample Type (Result Identifier): D19  
 Lab Sample Number : CMLS-2033  
 Geometry ID : 03S0027-006.001  
 Filename: S:\GENIE2K\CAMFILES\LI009(D)\MOD\D1900004.CNF  
 Detector Name: BEGE

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

Analyte	Activity (pCi/GRAM )	2-Sigma Uncertainty (pCi/GRAM )	MDA (pCi/GRAM )
K-40n	9.74E+000	8.81E-001	9.49E-001
CS-137n	0.00E+000	0.00E+000	8.79E-002
TL-208n	2.43E-001	4.88E-002	7.22E-002
PO-210in	7.87E+003	8.10E+003	1.36E+004
BI-212n	1.08E+000	6.34E-001	1.03E+000
PB-212n	7.91E-001	4.56E-002	5.12E-002
BI-214n	7.77E-001	1.06E-001	1.73E-001
PB-214n	8.95E-001	5.95E-002	1.07E-001
RA-226n	1.32E+000	5.35E-001	6.02E-001
AC-228n	1.04E+000	1.39E-001	2.78E-001
TH-230n	0.00E+000	0.00E+000	5.95E+000
Th-231n	3.01E-001	1.01E-001	2.38E-001
PA-234Mn	0.00E+000	0.00E+000	9.78E+000
PA-234n	0.00E+000	0.00E+000	7.34E-002
U-235	9.94E-002	2.98E-002	3.56E-002
U238/234	9.61E-001	3.00E-001	3.47E-001
AM-241	0.00E+000	0.00E+000	5.27E-002

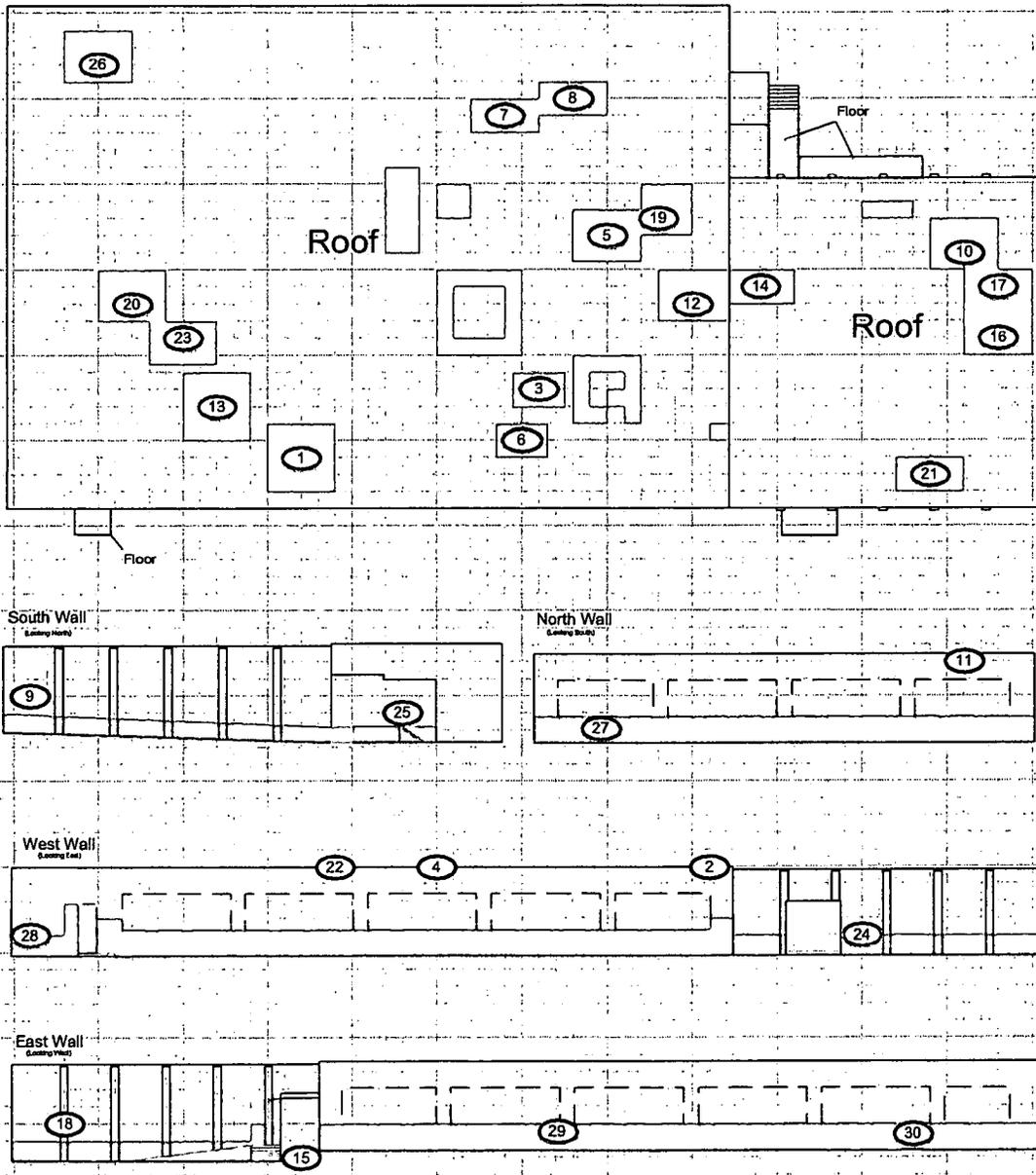
i - If Po-210 is detected in the spectrum. This peak may be the result of the interaction of Pb-206(n,n') which also produces a prompt gamma at 803 keV.

n - Non-contractual Nuclide

**PRE-DEMOLITION SURVEY FOR 441 CLUSTER**

Survey Area: 3      Survey Unit: 441-B-003      Classification: 3  
 Building: 441  
 Survey Unit Description: Exterior of Building  
 Total Area: 2591sq. m.      Total Roof Area: 1622 sq. m.

**Building 441  
 Exterior**



□ Scan Area

<p><b>SURVEY MAP LEGEND</b></p> <ul style="list-style-type: none"> <li>⊙ Smear &amp; TSA Location</li> <li>⊕ Smear, TSA &amp; Sample Location</li> <li>■ Open/Inaccessible Area</li> <li>□ Area in Another Survey Unit</li> </ul>	<p>Neither the United States Government nor Kaiser Hill Co., nor DynCorp I&amp;ET, nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.</p> <p><b>Scan Survey Information</b>                  Survey Instrument ID #(s): 14, 15                  RCT ID #(s): 14, 15</p>	<p style="text-align: center;"><b>N</b></p> <p style="text-align: center;">←</p> <p style="text-align: center;">0      FEET      45</p> <p style="text-align: center;">0      METERS      15</p> <p style="text-align: center;">1 inch = 36 feet    1 grid sq. = 1 sq. m.</p>	<p style="text-align: center;">U.S. Department of Energy                  Rocky Flats Environmental Technology Site</p> <p>Prepared by: GIS Dept. 303-966-7707      Prepared for:</p> <p style="text-align: center;"><b>DynCorp</b>                  THE ART OF TECHNOLOGY</p> <p style="text-align: center;">KAISER HILL                  CONSULTANTS</p> <p>MAP ID: 02-0320/B441-EX-Scn      January 21, 2003</p>
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# ATTACHMENT D

## Chemical Data Summaries and Sample Maps

Asbestos Data Summary

Sample Number	Room	Survey Map Location Point	Material Sampled & Location	Analytical Results
441-07172002-315-201	114	201	White paint on concrete mortar unit (CMU), east wall	None Detected
441-07172002-315-202	141	202	Beige paint on CMU, entry wall, east wall	None Detected
441-07172002-315-203	111	203	White paint on CMU, west wall	None Detected
441-07172002-315-204	127	204	White paint on CMU, north wall of middle room	None Detected
441-07172002-315-205	127	205	White paint on CMU, north wall of far east room	Trace Chrysotile; <0.25 % Point Count
441-07172002-315-206	126	206	Women's, white paint on CMU, south wall first room	3 % Chrysotile; 0.75% Point Count
441-07172002-315-207	Pipe Chase	207	Green paint on CMU inside pipe chase, north hallway	None Detected
441-07172002-315-208	116	208	Exterior white window caulking with tan paint, west wall	3 % Chrysotile; 1.25 % Point Count
441-07172002-315-209	118D	209	Exterior white window caulking with tan paint, west wall	3 % Chrysotile; 1.5 % Point Count
441-07172002-315-210	121C	210	Exterior white window caulking with tan paint, west wall	3 % Chrysotile; 2 % Point Count
441-01082003-315-201	126	211	Brown, white and tan sheet vinyl	10 % Chrysotile
441-01082003-315-202	126A	212	Brown, white and tan sheet vinyl	None Detected
441-01082003-315-203	123	213	Beige and brown sheet vinyl	None Detected
441-01082003-315-204	123	214	Beige and brown sheet vinyl	None Detected
441-01082003-315-205	143	215	Tan sheet vinyl	None Detected
441-01082003-315-206	143	216	Tan sheet vinyl	10 % Chrysotile [black mastic]

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### Beryllium Data Summary

Sample Number	Room	Survey Map Location Point	Sample Location	Result (ug/100 cm <sup>2</sup> )
<b>August 26, 2002 - Ceiling [RIN 02D1484] - Map 1</b>				
441-08262002-315-101	142	101	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-102	142	102	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-103	114	103	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-104	114	104	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-105	114A	105	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-106	116A	106	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-107	117	107	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-108	118C	108	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-109	106D	109	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-110	106D	110	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-111	130	111	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-112	128	112	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-113	106D	113	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-114	106D	114	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-115	110E	115	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-116	110	116	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-117	110	117	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-118	110D	118	Bottom side of plastic light cover	< 0.1
441-08262002-315-119	134	119	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-120	128	120	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-121	123	121	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-122	121B	122	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-123	101	123	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-124	100	124	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
441-08262002-315-125	127	125	Bottom side of 2' x 4' acoustical drop ceiling tile	< 0.1
<b>August, 27 2002 - Carpet (See map legend) [RIN02D1484] - Map 2</b>				
441-08272002-315-101	142	101	Top of carpet	< 0.1
441-08272002-315-102	142	102	Top of carpet	< 0.1
441-08272002-315-103	114	103	Top of carpet	< 0.1
441-08272002-315-104	114	104	Top of carpet	< 0.1
441-08272002-315-105	114A	105	Top of carpet	< 0.1
441-08272002-315-106	116A	106	Top of carpet	< 0.1
441-08272002-315-107	117	107	Top of carpet	< 0.1
441-08272002-315-108	118C	108	Top of carpet	< 0.1
441-08272002-315-109	106D	109	Top of carpet	< 0.1
441-08272002-315-110	106D	110	Top of carpet	< 0.1
441-08272002-315-111	130	111	Top of carpet	< 0.1
441-08272002-315-112	128	112	Top of carpet	< 0.1
441-08272002-315-113	106D	113	Top of carpet	< 0.1
441-08272002-315-114	106D	114	Top of carpet	< 0.1
441-08272002-315-115	110E	115	Top of carpet	< 0.1

Sample Number	Room	Survey Map Location Point	Sample Location	Result ( $\mu\text{g}/100 \text{ cm}^2$ )
441-08272002-315-116	110	116	Top of carpet	< 0.1
441-08272002-315-117	110	117	Top of carpet	< 0.1
441-08272002-315-118	110D	118	Top of carpet	< 0.1
441-08272002-315-119	134	119	On concrete	< 0.1
441-08272002-315-120	128	120	Top of carpet	< 0.1
441-08272002-315-121	123	121	On floor tile	< 0.1
441-08272002-315-122	121B	122	Top of carpet	< 0.1
441-08272002-315-123	101	123	Top of carpet	< 0.1
441-08272002-315-124	100	124	Top of carpet	< 0.1
441-08272002-315-125	127	125	On floor tile	< 0.1
<b>August 28, 2002 - Sub Floor (See map legend) [RIN02D1481] - Map 2</b>				
441-08282002-315-201	142	201	Under carpet on yellow adhesive	< 0.1
441-08282002-315-202	142	202	Under carpet on yellow adhesive	< 0.1
441-08282002-315-203	114	203	Under carpet on yellow adhesive	< 0.1
441-08282002-315-204	114	204	Under carpet on yellow adhesive	< 0.1
441-08282002-315-205	114A	205	Under carpet on yellow adhesive	< 0.1
441-08282002-315-206	116A	206	Under carpet on yellow adhesive	< 0.1
441-08282002-315-207	117	207	Under carpet on yellow adhesive	< 0.1
441-08282002-315-208	118C	208	Under carpet on yellow adhesive	< 0.1
441-08282002-315-209	106D	209	Under carpet on yellow adhesive	< 0.1
441-08282002-315-210	106D	210	Under carpet on yellow adhesive	< 0.1
441-08282002-315-211	130	211	Under carpet on yellow adhesive	< 0.1
441-08282002-315-212	128	212	Under carpet on yellow adhesive	< 0.1
441-08282002-315-213	106D	213	Under carpet on yellow adhesive	< 0.1
441-08282002-315-214	106D	214	Under carpet on yellow adhesive	< 0.1
441-08282002-315-215	110E	215	Under carpet on yellow adhesive	< 0.1
441-08282002-315-216	110	216	Under carpet on yellow adhesive	< 0.1
441-08282002-315-217	110	217	Under carpet on yellow adhesive	< 0.1
441-08282002-315-218	110D	218	Under carpet on yellow adhesive	< 0.1
441-08282002-315-219	134	219	On concrete	< 0.1
441-08282002-315-220	128	220	Under carpet on yellow adhesive	< 0.1
441-08282002-315-221	123	221	On floor tile	< 0.1
441-08282002-315-222	121B	222	Under carpet on yellow adhesive	< 0.1
441-08282002-315-223	101	223	Under carpet on yellow adhesive	< 0.1
441-08282002-315-224	100	224	Under carpet on yellow adhesive	< 0.1
441-08282002-315-225	127	225	On floor tile	< 0.1
<b>August 28, 2002 - Walls (See map legend) [RIN02D1484] - Map 2</b>				
441-08282002-315-101	110	101	On interior wall surface	< 0.1
441-08282002-315-102	110E	102	On interior wall surface	< 0.1
441-08282002-315-103	106	103	On interior wall surface	< 0.1
441-08282002-315-104	106	104	On interior wall surface	< 0.1
441-08282002-315-105	106	105	On interior wall surface	< 0.1
441-08282002-315-106	106A	106	On interior wall surface	< 0.1
441-08282002-315-107	104	107	On interior wall surface	< 0.1

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Sample Number	Room	Survey Map Location Point	Sample Location	Result (ug/100 cm <sup>2</sup> )
441-08282002-315-108	103	108	On interior wall surface	< 0.1
441-08282002-315-109	101	109	On interior wall surface	< 0.1
441-08282002-315-110	121A	110	On interior wall surface	< 0.1
441-08282002-315-111	121C	111	On interior wall surface	< 0.1
441-08282002-315-112	118A	112	On interior wall surface	< 0.1
441-08282002-315-113	118B	113	On interior wall surface	< 0.1
441-08282002-315-114	117A	114	On interior wall surface	< 0.1
441-08282002-315-115	117	115	On interior wall surface	< 0.1
441-08282002-315-116	116	116	On interior wall surface	< 0.1
441-08282002-315-117	114E	117	On interior wall surface	< 0.1
441-08282002-315-118	114	118	On interior wall surface	< 0.1
441-08282002-315-119	114	119	On interior wall surface	< 0.1
441-08282002-315-120	100	120	On interior wall surface	< 0.1
441-08282002-315-121	135	121	On interior wall surface	< 0.1
441-08282002-315-122	135	122	On interior wall surface	< 0.1
441-08282002-315-123	134	123	On interior wall surface	< 0.1
441-08282002-315-124	133	124	On interior wall surface	< 0.1
441-08282002-315-125	128	125	On interior wall surface	< 0.1
441-08282002-315-126	127	126	On interior wall surface	< 0.1
441-08282002-315-127	124	127	On interior wall surface	< 0.1
441-08282002-315-128	100	128	On interior wall surface	< 0.1
441-08282002-315-129	100	129	On interior wall surface	< 0.1
441-08282002-315-130	100	130	On interior wall surface	< 0.1
<b>October 10, 2002 -- Top of 2' x 4' Acoustical Drop Ceiling Tiles [RIN 03Z0104] -- Map 3</b>				
441-10102002-315-101	142	101	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-102	142	102	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-103	114	103	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-104	114	104	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-105	114A	105	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-106	116A	106	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-107	117	107	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-108	118C	108	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-109	106D	109	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-110	106D	110	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-111	130	111	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-112	128	112	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-113	103D	113	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-114	106	114	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-115	110E	115	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-116	110	116	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-117	110	117	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-118	110D	118	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-119	134	119	On concrete deck	< 0.1
441-10102002-315-120	128	120	Top of lathe and plaster ceiling	< 0.1

Sample Number	Room	Survey Map Location Point	Sample Location	Result (ug/100 cm <sup>2</sup> )
441-10102002-315-121	123	121	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-122	121B	122	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-123	101	123	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-124	100	124	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-125	127	125	Top of 2' x 4" acoustical drop ceiling tile	< 0.1
441-10102002-315-126	142	126	Top of cable track in space between drop ceiling and deck	< 0.1
441-10102002-315-127	142	127	Top of fluorescent light fixture	< 0.1
441-10102002-315-128	114	128	Top of electrical conduit	< 0.1
441-10102002-315-129	114	129	Top of cable track	< 0.1
441-10102002-315-130	114A	130	Top of fluorescent light fixture	< 0.1
441-10102002-315-131	116A	131	On horizontal edge of angle iron	< 0.1
441-10102002-315-132	117	132	Top of piping insulation	< 0.1
441-10102002-315-133	118C	133	Top of fluorescent light fixture	< 0.1
441-10102002-315-134	106D	134	Top of fire suppression pipe	< 0.1
441-10102002-315-135	106D	135	Top of fluorescent light fixture	< 0.1
<b>October 21, 2002 -- On Adhesive under Floor Tile [RIN 03Z0162] -- Map 4</b>				
441-10212002-315-101	142	101	On adhesive under floor tile	< 0.1
441-10212002-315-102	142	102	On adhesive under floor tile	< 0.1
441-10212002-315-103	114	103	On adhesive under floor tile	< 0.1
441-10212002-315-104	114	104	On adhesive under floor tile	< 0.1
441-10212002-315-105	114B	105	On adhesive under floor tile	< 0.1
441-10212002-315-106	116A	106	On adhesive under floor tile	< 0.1
441-10212002-315-107	117	107	On adhesive under floor tile	< 0.1
441-10212002-315-108	118C	108	On adhesive under floor tile	< 0.1
441-10212002-315-109	106D	109	On adhesive under floor tile	0.664
441-10212002-315-110	106D	110	On adhesive under floor tile	< 0.1
441-10212002-315-111	130	111	On adhesive under floor tile	< 0.1
441-10212002-315-112	128	112	On adhesive under floor tile	< 0.1
441-10212002-315-113	103D	113	On adhesive under floor tile	< 0.1
441-10212002-315-114	106	114	On adhesive under floor tile	< 0.1
441-10212002-315-115	110E	115	On adhesive under floor tile	< 0.1
441-10212002-315-116	110	116	On adhesive under floor tile	< 0.1
441-10212002-315-117	110	117	On adhesive under floor tile	< 0.1
441-10212002-315-118	110D	118	On adhesive under floor tile	< 0.1
441-10212002-315-119	134	119	On concrete floor	< 0.1
441-10212002-315-120	128	120	On adhesive under floor tile	< 0.1
441-10212002-315-121	123	121	On adhesive under floor tile	< 0.1
441-10212002-315-122	121B	122	On adhesive under floor tile	< 0.1
441-10212002-315-123	101	123	On adhesive under floor tile	< 0.1
441-10212002-315-124	100	124	On adhesive under floor tile	< 0.1
441-10212002-315-125	127	125	On adhesive under floor tile	< 0.1
<b>October 29, 2002 -- Post Decontamination Beryllium Smears [RIN 03Z0205] -- Map 5</b>				
441-10292002-23-001	118C	1	Original flooring underneath tile	< 0.1
441-10292002-23-002	118C	2	Original flooring underneath tile	< 0.1

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Sample Number	Room	Survey Map Location Point	Sample Location	Result (ug/100 cm <sup>2</sup> )
441-10292002-23-003	118C	3	Original flooring underneath tile	
441-10292002-23-004	100	4	Original flooring underneath tile	< 0.1
441-10292002-23-005	100	5	Original flooring underneath tile	< 0.1
441-10292002-23-006	100	6	Original flooring underneath tile	< 0.1
441-10292002-23-007	118C	7	Original flooring underneath tile	< 0.1
441-10292002-23-008	118C	8	Original flooring underneath tile	< 0.1
441-10292002-23-009	100	9	Original flooring underneath tile	< 0.1
441-10292002-23-010	106D	10	Original flooring underneath tile	< 0.1
<b>November 11, 2002 -- Concrete Vertical Wall Surfaces [RIN 03D0151] -- Map 6</b>				
441-11072002-315-101	100	101	On concrete wall, west hallway	
441-11072002-315-102	123	102	On bathroom wall, south wall	< 0.1
441-11072002-315-103	122	103	On concrete wall	< 0.1
441-11072002-315-104	100	104	On concrete wall, east hallway	< 0.1
441-11072002-315-105	126	105	On bathroom wall, north wall	< 0.1
441-11072002-315-106	133	106	On concrete wall, exterior of north wall	< 0.1
441-11072002-315-107	100	107	On concrete wall, east hallway	< 0.1
441-11072002-315-108	100	108	On concrete pillar, east hallway to deck	< 0.1
441-11072002-315-109	133	109	On concrete wall, exterior of south wall	< 0.1
441-11072002-315-110	100	110	On concrete wall, west hallway	< 0.1
<b>December 12, 2002 -- RLC Random and Biased Sampling on Concrete Floor [RIN 03Z0596] -- Map 7</b>				
441-12122002-315-101	North	1	On concrete floor	
441-12122002-315-102	North	2	On cinderblock wall	< 0.1
441-12122002-315-103	South	3	On concrete floor	< 0.1
441-12122002-315-104	North	4	On concrete floor	< 0.1
441-12122002-315-105	North	5	On concrete floor	< 0.1
441-12122002-315-106	North	6	On concrete floor	< 0.1
441-12122002-315-107	North	7	On concrete floor	< 0.1
441-12122002-315-108	North	8	On concrete floor	< 0.1
441-12122002-315-109	North	9	On concrete floor	< 0.1
441-12122002-315-110	North	10	On concrete floor	0.440
441-12122002-315-111	North	11	On concrete floor	0.445
441-12122002-315-112	North	12	On concrete floor	< 0.1
441-12122002-315-113	North	13	On concrete floor	< 0.1
441-12122002-315-114	North	14	On concrete floor	< 0.1
441-12122002-315-115	South	15	On concrete floor	< 0.1
441-12122002-315-116	South	16	On concrete floor	< 0.1
441-12122002-315-117	North	17	On concrete floor	< 0.1
441-12122002-315-118	North	18	On concrete floor	< 0.1
441-12122002-315-119	126A	19	On linoleum	< 0.1
441-12122002-315-120	South	20	On concrete floor	< 0.1
441-12122002-315-121	North	21	On concrete floor	< 0.1
441-12122002-315-122	North	22	On concrete floor	< 0.1
441-12122002-315-123	North	23	On concrete floor	< 0.1
441-12122002-315-124	South	24	On concrete floor	< 0.1

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Sample Number	Room	Survey Map Location Point	Sample Location	Result (ug/100 cm <sup>2</sup> )
441-12122002-315-125	North	25	On concrete floor	< 0.1
441-12122002-315-126	South	26	On concrete floor	< 0.1
441-12122002-315-127	South	27	On concrete floor	< 0.1
441-12122002-315-128	South	28	On concrete floor	< 0.1
441-12122002-315-129	North	29	On concrete floor	< 0.1
441-12122002-315-130	North	30	On concrete floor	< 0.1
441-12122002-315-131	South	31	On concrete floor	< 0.1
441-12122002-315-132	North	32	On concrete floor	< 0.1
441-12122002-315-133	North	33	On concrete floor	< 0.1
441-12122002-315-134	North	34	On concrete floor	< 0.1
441-12122002-315-135	North	35	On concrete floor	< 0.1
441-12122002-315-136	North	36	On concrete floor	< 0.1
441-12122002-315-137	North	37	On concrete floor	< 0.1
441-12122002-315-138	North	38	On concrete floor	< 0.1
441-12122002-315-139	North	39	On concrete floor	0.172
441-12122002-315-140	North	40	On concrete floor	< 0.1
441-12122002-315-141	North	41	On concrete floor	< 0.1
441-12122002-315-142	South	42	On concrete floor	< 0.1
441-12122002-315-143	South	43	On concrete floor	< 0.1
441-12122002-315-144	North	44	On concrete floor	< 0.1
441-12122002-315-145	North	45	On concrete floor	< 0.1
441-12122002-315-146	North	46	On concrete floor	< 0.1
441-12122002-315-147	North	47	On concrete floor	< 0.1
441-12122002-315-148	North	48	On concrete floor	< 0.1
441-12122002-315-149	South	49	On concrete floor	< 0.1
441-12122002-315-150	140	50	On concrete floor	< 0.1
441-12122002-315-151	South	51	On concrete floor	< 0.1
441-12122002-315-152	North	52	On concrete floor	< 0.1
441-12122002-315-153	North	53	On concrete floor	< 0.1
441-12122002-315-154	North	54	On concrete floor	< 0.1
441-12122002-315-155	North	55	On concrete floor	< 0.1
441-12122002-315-156	North	56	On concrete floor	< 0.1
441-12122002-315-157	North	57	At grouted floor drain	< 0.1
441-12122002-315-158	North	58	At grouted floor drain	< 0.1
441-12122002-315-159	North	59	At grouted floor drain	< 0.1
441-12122002-315-160	North	60	At grouted floor drain	< 0.1
441-12122002-315-161	North	61	At grouted floor drain	< 0.1
441-12122002-315-162	North	62	Top of electrical panel	< 0.1
441-12122002-315-163	North	63	At grouted floor drain	< 0.1
441-12122002-315-164	North	64	At grouted floor drain	< 0.1
441-12122002-315-165	North	65	At grouted floor drain	< 0.1
441-12122002-315-166	North	66	At grouted floor drain	< 0.1
441-12122002-315-167	North	67	At metal-capped floor drain	< 0.1
441-12122002-315-168	North	68	On concrete floor	< 0.1

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Sample Number	Room	Survey Map Location Point	Sample Location	Result ( $\mu\text{g}/100 \text{ cm}^2$ )
441-12122002-315-169	North	69	At grouted floor drain	< 0.1
441-12122002-315-170	North	70	At grouted floor drain	< 0.1
<b>441-12122002-315-171</b>	<b>North</b>	<b>71</b>	<b>At grouted floor drain</b>	<b>1.43</b>
441-12122002-315-172	North	72	At grouted floor drain	< 0.1
441-12122002-315-173	North	73	At metal cap of "corrosive floor drain"	< 0.1
441-12122002-315-174	North	74	At grouted floor drain	< 0.1
<b>441-12122002-315-175</b>	<b>North</b>	<b>75</b>	<b>At grouted floor drain</b>	<b>0.231</b>
441-12122002-315-176	North	76	At grouted floor drain	< 0.1
<b>December 23, 2002 -- Follow-up Beryllium Smears [RIN 03Z0640] -- Map 7</b>				
441-12232002-315-101	Main	77	On concrete floor, NW entrance	< 0.1
441-12232002-315-102	Main	78	On concrete floor, NW entrance	< 0.1
441-12232002-315-103	Main	79	Outside landing, NW entrance	< 0.1
441-12232002-315-104	Main	80	Outside landing, NW entrance	< 0.1
441-12232002-315-105	Main	81	On concrete floor	< 0.1
441-12232002-315-106	Main	82	On concrete floor	< 0.1
441-12232002-315-107	Main	83	On concrete floor	< 0.1
441-12232002-315-108	Main	84	On concrete floor	< 0.1
441-12232002-315-109	Main	85	On concrete floor	< 0.1
441-12232002-315-110	Main	86	On concrete floor	< 0.1
441-12232002-315-111	Main	87	On concrete floor	< 0.1
441-12232002-315-112	Main	88	On concrete floor	< 0.1
441-12232002-315-113	Main	89	On concrete floor	< 0.1
441-12232002-315-114	Main	90	On concrete floor	< 0.1
441-12232002-315-115	Main	91	On concrete floor	< 0.1
441-12232002-315-116	Main	92	On concrete floor	< 0.1
441-12232002-315-117	Main	93	On concrete floor	< 0.1
441-12232002-315-118	Main	94	On concrete floor	< 0.1
441-12232002-315-119	Main	95	On concrete floor	< 0.1
441-12232002-315-120	Main	96	On concrete floor	< 0.1
441-12232002-315-121	Main	97	On concrete floor	< 0.1
441-12232002-315-122	Main	98	On concrete floor	< 0.1
441-12232002-315-123	Main	99	On concrete floor	< 0.1
441-12232002-315-124	Main	100	On concrete floor	< 0.1
441-12232002-315-125	Main	101	On concrete floor	< 0.1
441-12232002-315-126	Main	102	On concrete floor	< 0.1
441-12232002-315-127	Main	103	On concrete floor	< 0.1
441-12232002-315-128	Main	104	On concrete floor	< 0.1
441-12232002-315-129	Main	105	On concrete floor	< 0.1
441-12232002-315-130	Main	106	On concrete floor	< 0.1
<b>January 10 and 13, 2003 -- Post Decontamination Beryllium Smears [RIN 03Z0749] -- Map 7</b>				
441-01102003-315-101	Main	107	At metal cap of "corrosive" floor drain	< 0.1
441-01102003-315-102	Main	108	At grouted floor drain	< 0.1
441-01102003-315-103	Main	109	At grouted floor drain	< 0.1
441-01102003-315-104	Main	110	At grouted floor drain	< 0.1

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Sample Number	Room	Survey Map Location Point	Sample Location	Result (ug/100 cm <sup>2</sup> )
441-01102003-315-105	Main	111	At grouted floor drain	< 0.1
441-01102003-315-106	Main	112	On concrete floor	< 0.1
441-01102003-315-107	Main	113	On concrete floor	< 0.1
441-01102003-315-108	Main	114	On concrete floor	< 0.1
441-01102003-315-109	Main	115	On concrete floor	< 0.1
441-01102003-315-110	Main	116	On concrete floor	< 0.1
441-01102003-315-111	Main	117	On concrete floor	< 0.1
441-01102003-315-112	Main	118	On concrete floor	< 0.1
441-01102003-315-113	Main	119	On concrete floor	< 0.1
441-01102003-315-114	Main	120	On concrete floor	0.124
441-01102003-315-115	Main	121	On concrete floor	< 0.1
441-01102003-315-116	Main	122	On concrete floor	< 0.1
441-01102003-315-117	Main	123	On concrete floor	< 0.1
441-01102003-315-118	133	124	On concrete floor	< 0.1
441-01102003-315-119	133	125	On concrete floor	< 0.1
441-01102003-315-120	133	126	On concrete floor	< 0.1
441-01132003-315-121	Main	127	On concrete floor	< 0.1
441-01132003-315-122	Main	128	On concrete floor	< 0.1
441-01132003-315-123	Main	129	On concrete floor	< 0.1
441-01132003-315-124	Main	130	On concrete floor	< 0.1
441-01132003-315-125	Main	131	On concrete floor	< 0.1
441-01132003-315-126	Main	132	On concrete floor	0.114
441-01132003-315-127	Main	133	On concrete floor	< 0.1
441-01132003-315-128	Main	134	On concrete floor	< 0.1
441-01132003-315-129	Main	135	On concrete floor	< 0.1
441-01132003-315-130	Main	136	On concrete floor	< 0.1
441-01132003-315-131	Main	137	On concrete floor	< 0.1
441-01132003-315-132	Main	138	On concrete floor	< 0.1
441-01132003-315-133	Main	139	On concrete floor	< 0.1
441-01132003-315-134	Main	140	On concrete floor	< 0.1
441-01132003-315-135	Main	141	On concrete floor	< 0.1
441-01132003-315-136	Main	142	On concrete floor	< 0.1
441-01132003-315-137	Main	143	On concrete floor	< 0.1
441-01132003-315-138	Main	144	On concrete floor	< 0.1
441-01132003-315-139	Main	145	On concrete floor	< 0.1
441-01132003-315-140	Main	146	On concrete floor	< 0.1

### RCRA/CERCLA Constituents Data Summary

Sample Location / Media	Sample Number: Analysis	Result (ug/L)
Bldg 441 Slab, as indicated on map, Locations # 1-9	03S0073-001.001 thru 03S0073-009.001	RCRA Toxicity Characteristic substances less than regulatory limits, RCRA Listed substances not applicable.

### RCRA Toxicity Characteristic Limits

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

(a) Quantitation Limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level  
(b) If o-, m-, and p-Cresol concentrations cannot be differentiated, the total Cresol (D026) concentration (200mg/l) is used.

# ATTACHMENT E

## Data Quality Assessment (DQA) Detail

## DATA QUALITY ASSESSMENT (DQA)

### VERIFICATION & VALIDATION OF RESULTS

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

DQA criteria and results are provided in a tabular format for each suite of surveys or chemical analyses performed. The radiological survey assessment is provided in Table E-1, asbestos in Table E-2, beryllium in Table E-3, metals in Table E-4, VOCs in Table E-5 and SVOCs in Table E-6. A data completeness summary for all results is given in Table E-7.

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

Beta/gamma survey designs were not implemented for Building 441 based on the conservatism of the transuranic limits used as DCGLs in the unrestricted release decision process. Survey designs were implemented based on the transuranic limits used as DCGLs in the unrestricted release decision process. Coupon samples were taken and analyzed by ISOCS Canberra gamma spectroscopy. Transuranic isotope activity were evaluated against, and were less than the Transuranic DCGL<sub>w</sub> (100 dpm/100cm<sup>2</sup>) and the Uranium DCGL<sub>w</sub> (5,000 dpm/100cm<sup>2</sup>) unrestricted release limits. As part of the unrestricted release decision process for elevated scan surveys, an AP-2 alpha spectroscopy measurement was performed to eliminate transuranic isotope activity and identify existing Uranium isotope activity. Identified Uranium isotope activity was evaluated against, and was greater than the Uranium DCGL<sub>w</sub> (5,000 dpm/100cm<sup>2</sup>) and therefore, did not meet unrestricted release limits.

Consistent with EPA's G-4 DQO process, the radiological survey design for each survey unit performed per PDS requirements was optimized by checking actual measurement results acquired during pre-demolition surveys against the model output with original estimates. Use of actual sample/survey (result) variances in the MARSSIM DQO model confirms that an adequate number of surveys were acquired.

## DQA SUMMARY

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

- Identified five (5) locations with ACM > 1% by volume: range of 3% to 10% Chrysotile. The ACM will be managed in accordance with CDPHE Regulation 8 during D&D activities.
- Beryllium contamination identified at five (5) locations above the action level (0.2 ug/100cm<sup>2</sup>) and/or investigative level (0.1 ug/100cm<sup>2</sup>) during RLC. Follow up decontamination and investigation samples identified two (2) locations above the 0.1 ug/100cm<sup>2</sup> investigative level but below the 0.2 ug/100cm<sup>2</sup> action level, therefore, no further investigation was required, all results meet unrestricted release limits.
- Initial elevated radioactivity detected at four (4) floor locations (#71, #72, #73 and #74) during the alpha scan surveys greater than the transuranic DCGLs. Beta TSA measurements and scans were also collected. Beta activity was greater than the Uranium DCGLs. An AP-2 alpha spectroscopy measurement indicated Uranium isotopes only. The AP-2 spectrum did not reflect the presence of transuranic isotopes. Therefore, all elevated alpha and beta activity is determined to be Uranium. The uranium-contaminated portions of the floor will be managed as radioactive low level waste during demolition.

Based upon an independent review of the radiological data, it was determined that the original project DQOs satisfied MARSSIM guidance. All media surveyed and sampled yielded results that support a Type 2 facility classification. Minimum survey requirements were met, sampling/survey protocol was performed in accordance with applicable RSPs, survey units were properly designed and bounded, and instrument performance and calibration was verified as acceptable.

Chain of Custody was intact; documentation was complete, hold times were acceptable (where applicable,) and packaging integrity/custody seals were maintained throughout the sampling/analysis process. Level 2 Isolation Controls have been posted to prevent the inadvertent introduction of further contamination into the facility. On this basis, all Building 441 RLC/PDS data are useable based on the confidences stated herein and are considered satisfactory without qualification.

PL

**Table E-1 V&V of Radiological Results for Building 441**

V&V CRITERIA, RADIOLGICAL SURVEYS		K-H RSP 16.00 Series MARSSIM (NUREG-1575)		
QUALITY REQUIREMENTS				
	Parameters	Measure	Frequency	COMMENTS
ACCURACY	Initial calibrations	90%<x<110%	≥1	Multi-point calibration through the measurement range encountered in the field; programmatic records.
	Daily source checks	80%<x<120%	≥1/day	Performed daily/within range.
	Local area background: Field	typically < 10 dpm	≥1/day	All local area backgrounds were within expected ranges (i.e., no elevated anomalies.)
PRECISION	Field duplicate measurements for TSA	≥5% of real survey points	≥10% of reals	N/A
REPRESENTATIVENESS	MARSSIM methodology: Survey Units 441-A-001, 441-A-002 and 441-B-003.	statistical and biased	NA	Random w/ statistical confidence.
	Survey Maps	NA	NA	Random and biased measurement locations controlled/mapped to ±1m.
	Controlling Documents (Characterization Pkg; RSPs)	qualitative	NA	Refer to the Characterization Package (planning document) for field/sampling procedures (located in Project files); thorough documentation of the planning, sampling/analysis process, and data reduction into formats.
COMPARABILITY	Units of measure	dpm/100cm <sup>2</sup>	NA	Use of standardized engineering units in the reporting of measurement results.
COMPLETENESS	Plan vs. Actual surveys Usable results vs. unusable	>95% >95%	NA	See Table E-7 for details.
SENSITIVITY	Detection limits	TSA: ≤50 dpm/100cm <sup>2</sup> RA: ≤10 dpm/100cm <sup>2</sup>	all measures	PDS MDAs ≤ 50% DCGL <sub>w</sub>

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**Table E-2 V&V of Asbestos Results for Building 441**

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
ASBESTOS	METHOD: EPA 600/R-93/116	LAB ---->	Reservoirs Environmental, Inc	
QUALITY REQUIREMENT		RIN ---->	RIN03Z0706	
		Measure	Frequency	COMMENTS
ACCURACY	Calibrations: Initial/continuing	below detectable amounts	≥1	Semi-quantitative, per (microscopic) visual estimation.
PRECISION	Actual Number Sampled LCSD Lab duplicates	all below detectable amounts	≥ 16 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 E-7, final number of samples at Certified Inspector's discretion.
SENSITIVITY	Detection limits	<1% by volume	all measures	N/A

**Table E-3 V&V of Beryllium Results for Building 441**

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE			
<b>BERYLLIUM</b>	Prep: NMAM 7300 METHOD: OSHA ID-125G	LAB ---->	Johns Manville, Littleton, Co.		
		RIN ---->	Numerous RINs - See Table E-7		
QUALITY REQUIREMENTS			Measure	Frequency	COMMENTS
<b>ACCURACY</b>	Calibrations Initial	linear calibration	≥1	No qualifications significant enough to change project decisions, i.e. classification of a Type 2 facility confirmed; all results were below associated action levels.	
	Continuing LCS/MS	80%<%R<120%	≥1		
	Blanks - lab & field	<MDL	≥1		
	Interference check std (ICP)	NA	NA		
<b>PRECISION</b>	LCSD	80%<%R<120% (RPD<20%)	≥1		
	Field duplicate	all results < RL	≥1		
<b>REPRESENTATIVENESS</b>	COC	Qualitative	NA		
	Hold times/preservation	Qualitative	NA		
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA		
<b>COMPARABILITY</b>	Measurement units	ug/100cm <sup>2</sup>	NA		
<b>COMPLETENESS</b>	Plan vs. Actual samples Usable results vs. unusable	>95% >95%	NA		
<b>SENSITIVITY</b>	Detection limits	MDL of 0.012 ug/100cm <sup>2</sup>	all measures		

**Table E-4 V&V of Metal Results for Building 441**

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		COMMENTS
Metals (total)	METHOD: SW6010/6020	LAB ---->	Severn-Trent, Denver, Co.	
		RIN ---->	RIN03S0073	
QUALITY REQUIREMENTS		Measure	Frequency	No qualifications significant enough to change project decision, i.e., classification of a Type 2 facility confirmed; TCLP results well below regulatory limits.
ACCURACY	Calibrations: Initial	linear calibration	≥1/batch	
	Continuing	80%<%R<120%	≥1/batch	
	LCS	80%<%R<120%	≥1/batch	
	MS	75%<%R<125%	≥1/batch	
	Blanks - lab	mg/kg	≥1/batch	
	Serial dilutions	%D<10%	≥1/batch	
	Interference check std (ICP)	80%<%R<120%	bracket batch	
PRECISION	MSD	RPD<30%	≥1/batch	
	Field duplicate	all results < RL	≥1/batch	
REPRESENTATIVENESS	COC	Qualitative	NA	
	Hold times/preservation	≤180 days	NA	
	Controlling Documents (Plans, Procedures, Maps, etc.)	Qualitative	NA	
COMPARABILITY	Measurement units	mg/kg	NA	
COMPLETENESS	Plan vs. Actual samples	>95%	NA	
	Usable results vs. unusable	>95%		
SENSITIVITY	Detection limits	Various	all analytes	

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**Table E-5 V&V of Volatile Organic Compounds (VOCs) for Building 441**

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		COMMENTS
VOCs	METHOD: SW8260	LAB ---->	Severn-Trent, Denver, Co.	
		RIN ---->	RIN03S0073	
QUALITY REQUIREMENTS		Measure	Frequency	No qualifications significant enough to change project decision, i.e., classification of a Type 2 facility confirmed; all results were below regulatory limits.
ACCURACY	Calibrations: Initial	± 40%D in Response Factor	≥1/batch	
	Continuing	80%<%R<120%	≥1/batch	
	LCS	80%<%R<120%	≥1/batch	
	MS	75%<%R<125%	≥1 batch	
	Blanks - lab	ug/kg	≥1/batch	
	Internal standards	retention times and area factors	≥1/batch	
	Surrogate	%R (variable)	≥1/batch	
PRECISION	MSD	RPD<30%	≥1/batch	
	Field duplicate	all results < RL	≥1/batch	
REPRESENTATIVENESS	COC	Qualitative	NA	
	Hold times/preservation	≤ 14 days	NA	
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA	
COMPARABILITY	Measurement units	ug/kg	NA	
COMPLETENESS	Plan vs. Actual samples	>95%	NA	
	Usable results vs. unusable	>95%		
SENSITIVITY	Detection limits	Various	all analytes	

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**Table E-6 V&V of Semi-Volatile Organic Compounds (SVOCs) Results for Building 441**

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		COMMENTS
SVOCs	METHOD: SW8270	LAB ---->	Severn-Trent, Denver, Co.	
		RIN ---->	RIN03S0073	
QUALITY REQUIREMENTS		Measure	Frequency	No qualifications significant enough to change project decision, i.e., classification of a Type 2 facility confirmed, all results were below regulatory limits.
ACCURACY	Calibrations: Initial	± 40%D in Response Factor	≥1/batch	
	Continuing	80%<%R<120%	≥1/batch	
	LCS	80%<%R<120%	≥1/batch	
	MS	75%<%R<125%	≥1 batch	
	Blanks - Lab	ug/kg	≥1/batch	
	Internal standards	retention times and area factors	≥1/batch	
	Surrogate	%R (variable)	≥1/batch	
PRECISION	MSD	RPD<30%	≥1/batch	
	Field duplicate	all results < RL	≥1/batch	
REPRESENTATIVENESS	COC	Qualitative	NA	
	Hold times/preservation	≤ 14 days	NA	
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA	
COMPARABILITY	Measurement units	ug/kg	NA	
COMPLETENESS	Plan vs. Actual samples	>95%	NA	
	Usable results vs. unusable	>95%		
SENSITIVITY	Detection limits	Various	all analytes	

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**Table E-7 Data Completeness Summary for Building 441**

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC) <sup>A</sup>	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Asbestos	B441 (interior)	0 biased	16 biased (interior)	ACM present < 1% by volume (5 locations)	<p>40 CFR763.86; CCR 1001-10; EPA 600/R-93/116</p> <p>RIN02D1402 ( sample map locations 201 through 210) RIN03Z0706 (sample map locations 211 through 216)</p> <p>Identified 5 locations with ACM &gt; 1% by volume: range of 3% to 10% Chrysotile. The ACM will be managed in accordance with CDHPE Regulation 8 during demolition activities.</p>
Beryllium	B441 Map 1 (Aug. 8, 2002) Ceiling Plan	0 samples	25 biased (interior)	No contamination found at any location	<p>10CFR850; OSHA ID-125G</p> <p>RIN02D1484: (sample map locations 101 thru 125)</p> <p>No results above the action level (0.2 ug/100cm<sup>2</sup>) or investigative level (0.1 ug/100cm<sup>2</sup>.)</p>
Beryllium	B441 Map 2 (Aug. 27-28, 2002) Floor Plan	0 samples	80 biased (interior)	No contamination found at any location	<p>10CFR850; OSHA ID-125G</p> <p>Refer to map legend for respective sample locations: RIN02D1484: (carpet – sample map locations 101-125) RIN02D1484: (floor – sample map locations 201-225) RIN02D1484: (walls – sample map locations 101-130)</p> <p>No results above the action level (0.2 ug/100cm<sup>2</sup>) or investigative level (0.1 ug/100cm<sup>2</sup>.)</p>

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**Table E-7 Data Completeness Summary for Building 441**

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC) <sup>A</sup>	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Beryllium	B441 Map 3 (Oct. 10, 2002) Ceiling Plan	0 samples	35 biased (interior)	No contamination found at any location	10CFR850; OSHA ID-125G  RIN03Z0104: (sample map locations 101 thru 135)  No results above the action level (0.2 ug/100cm <sup>2</sup> ) or investigative level (0.1 ug/100cm <sup>2</sup> .)
Beryllium	B441 Map 4 (Oct. 21, 2002) Adhesive under floor	0 samples	25 biased (interior)	Beryllium contamination found above the action level (0.2 ug/100cm <sup>2</sup> ) at 1 location	10CFR850; OSHA ID-125G  RIN03Z0162: (sample map locations 101 thru 125)  Beryllium contamination identified at sample map location #108 (0.664 ug/100cm <sup>2</sup> ) greater than the action level (0.2 ug/100cm <sup>2</sup> ) during in-process characterization. The area was decontaminated and post decontamination sampling performed. All results were less than the action level (0.2 ug/100cm <sup>2</sup> ) and investigative level (0.1 ug/100cm <sup>2</sup> .) Refer to Map #5 for follow up results.
Beryllium	B441 Map 5 (Oct. 29, 2002) Follow-up Be smears after elevated result	0 samples	10 biased (interior)	No contamination found at any location	10CFR850; OSHA ID-125G  RIN03Z0205: (sample map locations 1 thru 10)  No results above the action level (0.2 ug/100cm <sup>2</sup> ) or investigative level (0.1 ug/100cm <sup>2</sup> .)
Beryllium	B441 Map 6 (Nov. 7, 2002) Vertical wall surfaces	0 samples	10 biased (interior)	No contamination found at any location	10CFR850; OSHA ID-125G  RIN03D0151: (sample map locations 101 thru 110)  No results above the action level (0.2 ug/100cm <sup>2</sup> ) or investigative level (0.1 ug/100cm <sup>2</sup> .)

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**Table E-7 Data Completeness Summary for Building 441**

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC) <sup>A</sup>	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Beryllium	B441 Map 7 Dec. 12, 2002 Dec. 23, 2002 Jan. 10, 2003 Jan. 13, 2003 First floor	76 samples (56 random and 20 biased)	146 samples (56 random and 90 biased)	Beryllium contamination found above the action level (0.2 ug/100cm <sup>2</sup> ) and/or the investigative level (0.1 ug/100cm <sup>2</sup> ) at 7 locations	10CFR850; OSHA ID-125G  RIN03Z0596: (sample map locations 1 thru 76) RIN03Z0640: (sample map locations 77 thru 106) RIN03Z0749: (sample map locations 107 thru 146)  Beryllium contamination identified at 5 locations above the action level (0.2 ug/100cm <sup>2</sup> ) and/or investigative level (0.1 ug/100cm <sup>2</sup> ) during RLC sampling. Follow up decontamination and investigation samples identified 2 locations above the investigative level. However, as all results were below the action level, no further investigation required, all results meet the unrestricted release limits.
Metals (totals and TLCP)	B441 (interior)	3 (solids) plus 1 duplicate	8 (solids) plus 1 duplicate	No Metals contamination found, all results below regulatory limits	SW846 1311; SW846 6010/6010B  RIN03S0073  All results were below regulatory limits.
VOCs	B441 (interior)	3 (solids) plus 1 duplicate	8 (solids) plus 1 duplicate	No VOC contamination found, all results below regulatory limits	6 CCR 1007-3; SW846 1311/Method 8260  RIN03S0073  All results were below regulatory limits.
SVOCs	B441 (interior)	3 (solids) plus 1 duplicate	8 (solids) plus 1 duplicate	No SVOC contamination found, all results below regulatory limits	6 CCR 1007-3; SW846 1311 Method 8270/8270C  RIN03S0073  All results were below regulatory limits.

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**Table E-7 Data Completeness Summary for Building 441**

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC) <sup>A</sup>	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Radiological	Survey Area 3 Survey Unit: 441-A-001 Bldg. 441 Prior Lab Area (interior)	40 $\alpha$ TSA (19 systematic/21 biased) 3 QC TSA and 40 $\alpha$ Smears (19 systematic/21 biased)  15 $\alpha$ TSA and 15 $\alpha$ Smears equipment  100% scan floor interior; 50% scan lower wall < 2m.; 10% scan upper walls > 2m. and ceiling	44 $\alpha$ TSA (19 systematic/25 biased) 4 QC TSA and 40 $\alpha$ Smears (19 systematic/21 biased)  30 $\alpha$ TSA and 30 $\alpha$ Smears equipment  100% scan floor interior; 50% scan lower wall < 2m.; 10% scan upper walls > 2m. and ceiling	Fixed Uranium contamination greater than the Uranium DCGL  (4 locations)	Uranium and/or Transuranic DCGLs as applicable.  Initial elevated activity detected at 4 locations (#71, #72, #73 and #74) on the south west corner of the floor in B441 during the alpha scan survey greater than transuranic DCGLs. Beta TSA measurements and scans were also collected. Beta activity was greater than the Uranium DCGLs.  An AP-2 alpha spectroscopy measurement indicated Uranium isotopes only. No transuranic isotopes were detected. Therefore, all alpha and beta elevated activity is determined to be from Uranium.  The alpha and beta TSA measurements for locations 71 through 74 are reported in the TSA Data Summary. The AP-2 alpha spectroscopy results and spectrum are also included in the TSA Data Summary.
Radiological	Survey Area 3 Survey Unit: 441-A-002 Bldg. 441 South Addition (interior)	35 $\alpha$ TSA (15 random/20 biased) 3 QC TSA  35 $\alpha$ Smears (15 random/20 biased)	35 $\alpha$ TSA (15 random/20 biased) 4 QC TSA  35 $\alpha$ Smears (15 random/20 biased)	No contamination at any location; all values below unrestricted release levels	Uranium and/or Transuranic DCGLs as applicable.

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**Table E-7 Data Completeness Summary for Building 441**

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC) <sup>A</sup>	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
		15 α TSA 15 α smears (equipment)  10% scan – interior surfaces	30 α TSA 30 α smears (equipment)  10% scan – interior surfaces		
Radiological	Survey Area 3 Survey Unit: 441-B-003 Bldg. 441 (exterior)	30 α TSA (25 random/5 biased) and 30 α Smears (25 random/5 biased)  2 QC TSA  5% scan - exterior	30 α TSA (25 random/5 biased) and 30 α Smears (25 random/5 biased)  2 QC TSA  5% scan - exterior	No contamination at any location; all values below unrestricted release levels	Uranium and/or Transuranic DCGLs as applicable.  Initial sample net activity at location #3 (115.9 dpm/100cm <sup>2</sup> ) greater than the Transuranic DCGL <sub>w</sub> (100 dpm/100cm <sup>2</sup> ). Area was allowed to decay and resurveyed. Re-survey result was less than the Transuranic DCGL <sub>w</sub> and is the value reported in the TSA Data Summary.  Initial sample net activity for location #30 (133.1 dpm/100cm <sup>2</sup> ) greater than the Transuranic DCGL <sub>w</sub> (100 dpm/100cm <sup>2</sup> ). A coupon sample was taken and analyzed by gamma spectroscopy. No transuranics were detected. Activity determined to be uranium and/or other naturally occurring isotopes. Net activity for this location was below the uranium DCGL <sub>w</sub> (5000 dpm/100cm <sup>2</sup> ), therefore, all results meet unrestricted release criteria. On this basis, the transuranic value for this location is reported as zero (0) in the TSA Data Summary.

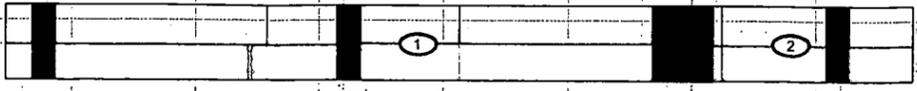
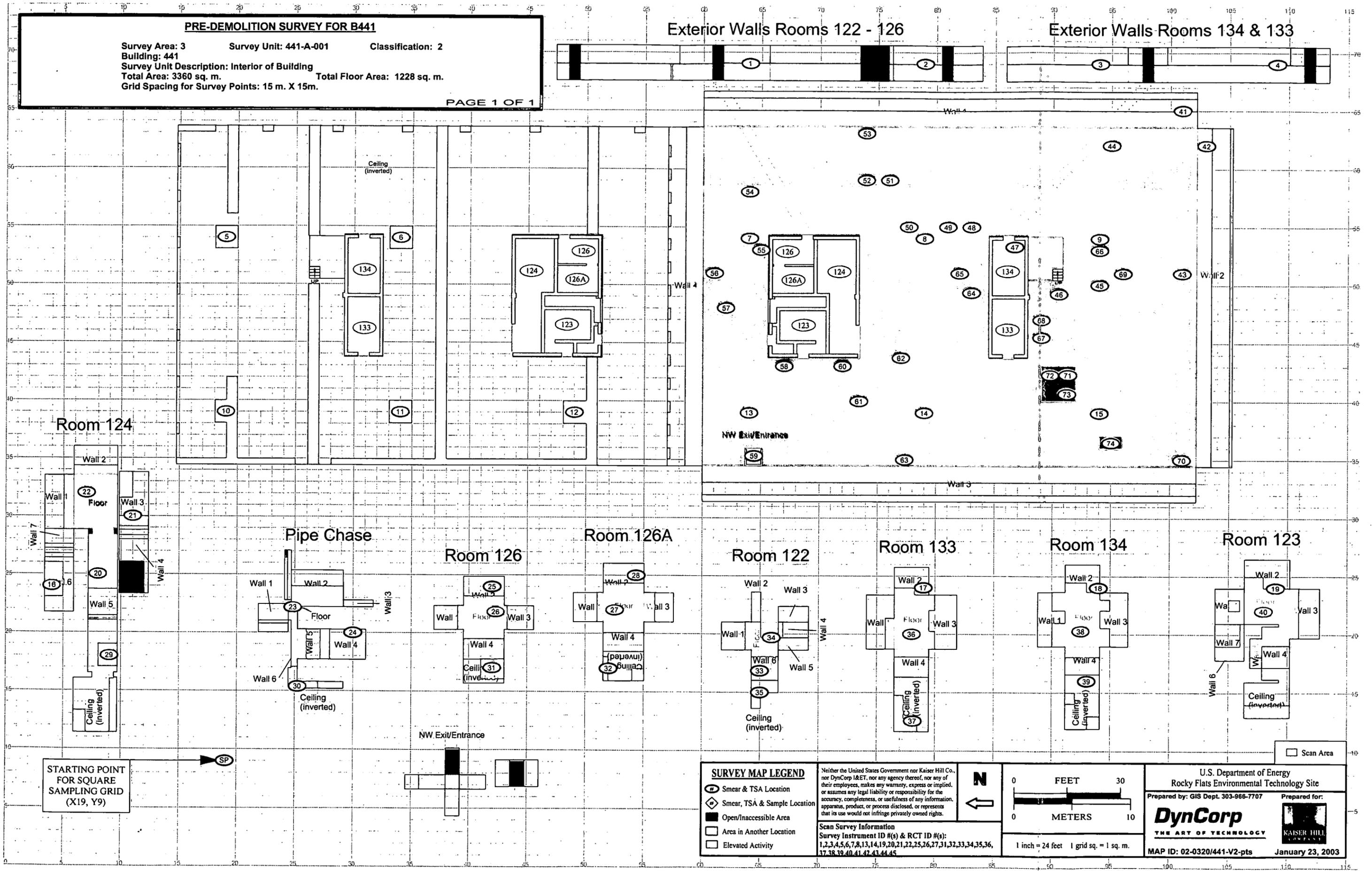
**PRE-DEMOLITION SURVEY FOR B441**

Survey Area: 3      Survey Unit: 441-A-001      Classification: 2  
 Building: 441  
 Survey Unit Description: Interior of Building  
 Total Area: 3360 sq. m.      Total Floor Area: 1228 sq. m.  
 Grid Spacing for Survey Points: 15 m. X 15m.

PAGE 1 OF 1

Exterior Walls Rooms 122 - 126

Exterior Walls Rooms 134 & 133



Room 124

Pipe Chase

Room 126

Room 126A

Room 122

Room 133

Room 134

Room 123

STARTING POINT FOR SQUARE SAMPLING GRID (X19, Y9)

**SURVEY MAP LEGEND**

- ⊙ Smear & TSA Location
- ⊕ Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Location
- Elevated Activity

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Scan Survey Information  
 Survey Instrument ID #(s) & RCT ID #(s):  
 1,2,3,4,5,6,7,8,13,14,19,20,21,22,25,26,27,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45



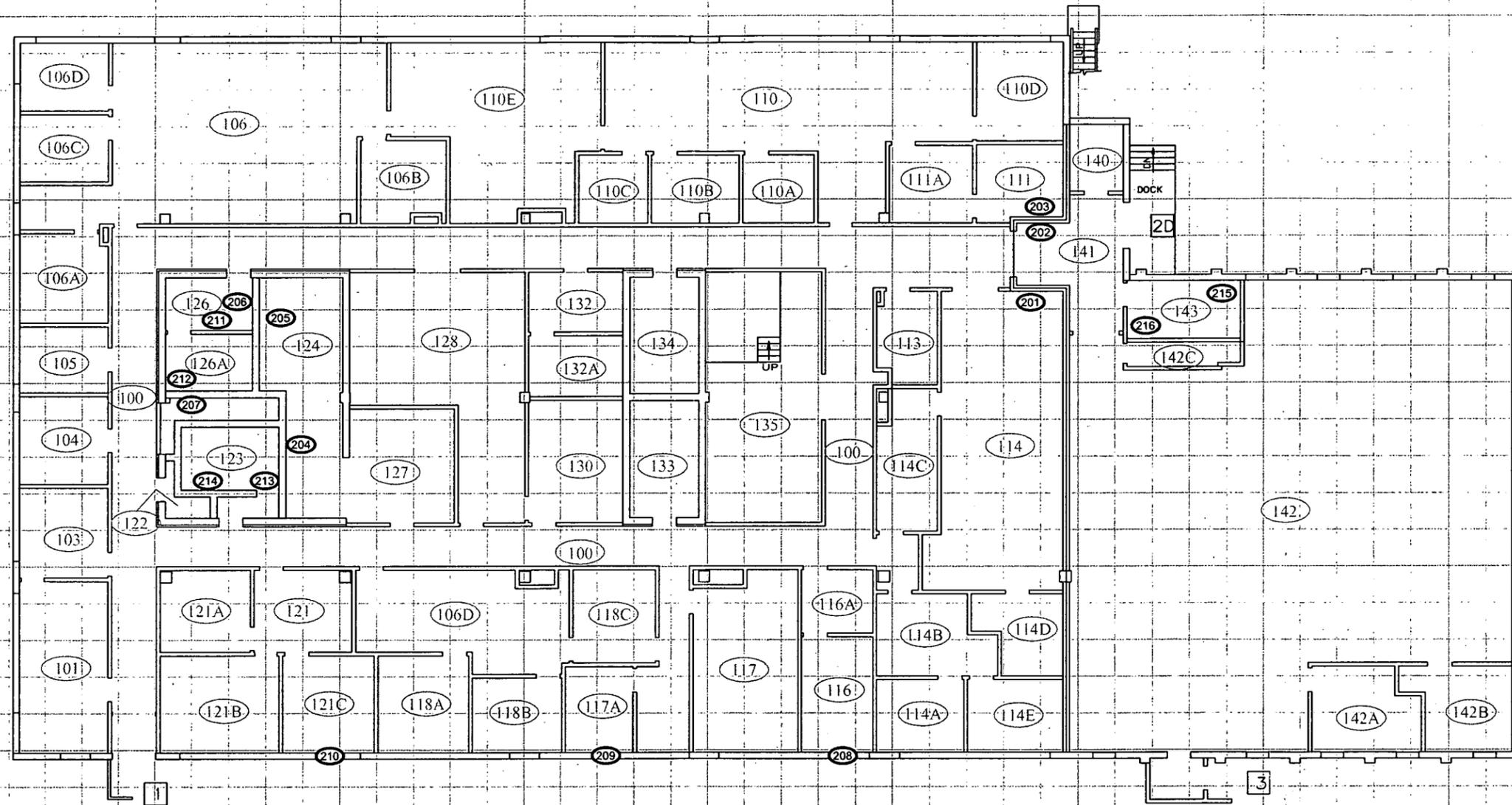
1 inch = 24 feet    1 grid sq. = 1 sq. m.

U.S. Department of Energy  
 Rocky Flats Environmental Technology Site  
 Prepared by: GIS Dept. 303-966-7707    Prepared for:  
**DynCorp**  
 THE ART OF TECHNOLOGY  
 KAISER HILL  
 MAP ID: 02-0320/441-V2-pts    January 23, 2003

# CHEMICAL SAMPLE MAP

Building: 441 Interior

PAGE 1 OF 1



BUILDING 441 - FIRST FLOOR PLAN

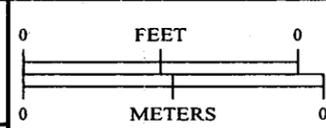
FINISH FLOOR ELEVATION 6031.00'

### SURVEY MAP LEGEND

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

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- Open/Inaccessible Area
- Area in Another Survey Unit



DRAWING NOT TO SCALE

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

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

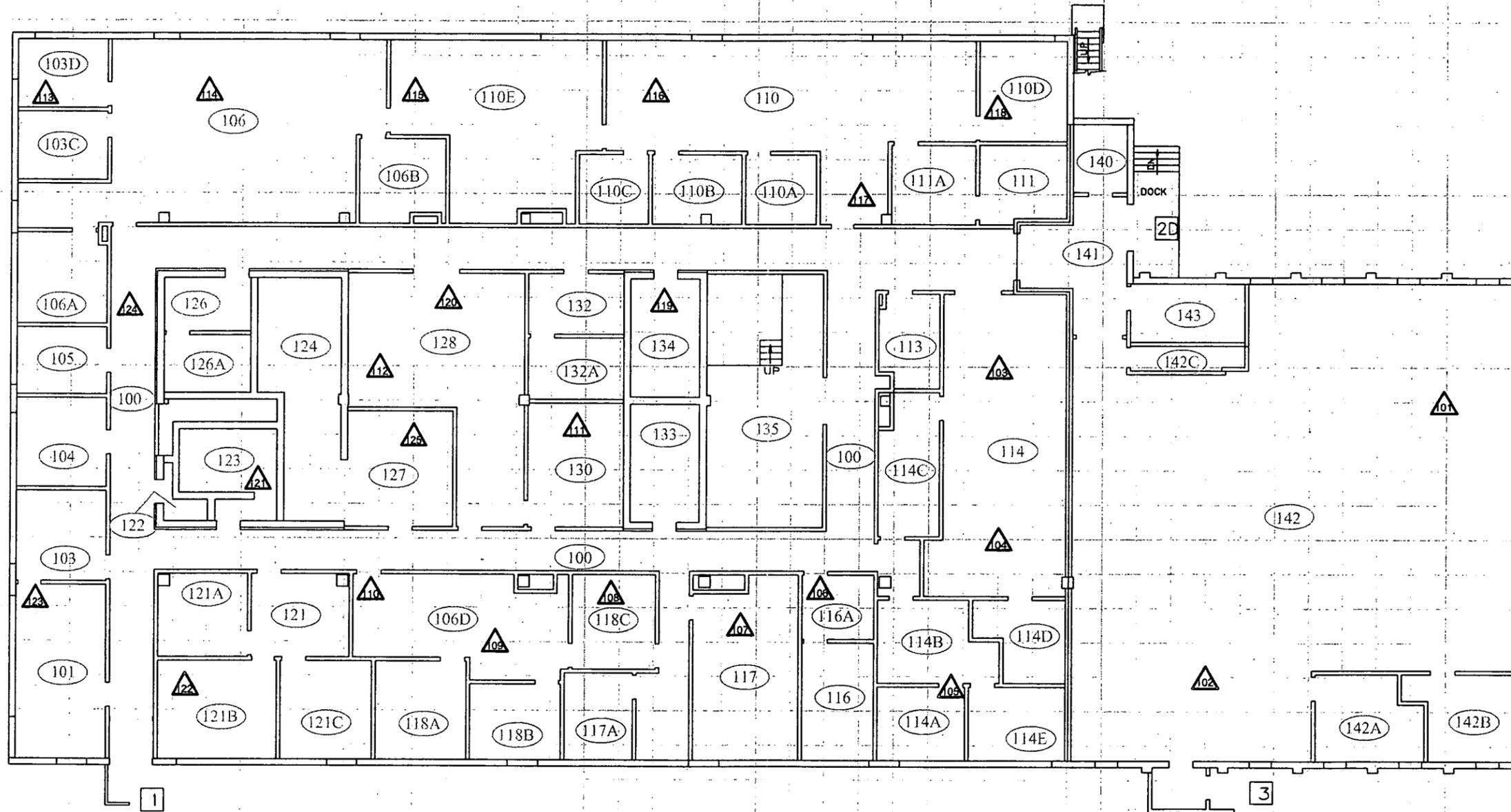
**DynCorp**      KAISER HILL COMPANY  
THE ART OF TECHNOLOGY

MAP ID: 02-0320/B441-ASB      January 14, 2003

**PHASE I IN-PROCESS CHARACTERIZATION FOR B441**

Beryllium - MAP 1

Building: 441  
Ceiling Plan  
August 26, 2002 RIN02D1484



BUILDING 441 - FIRST FLOOR PLAN

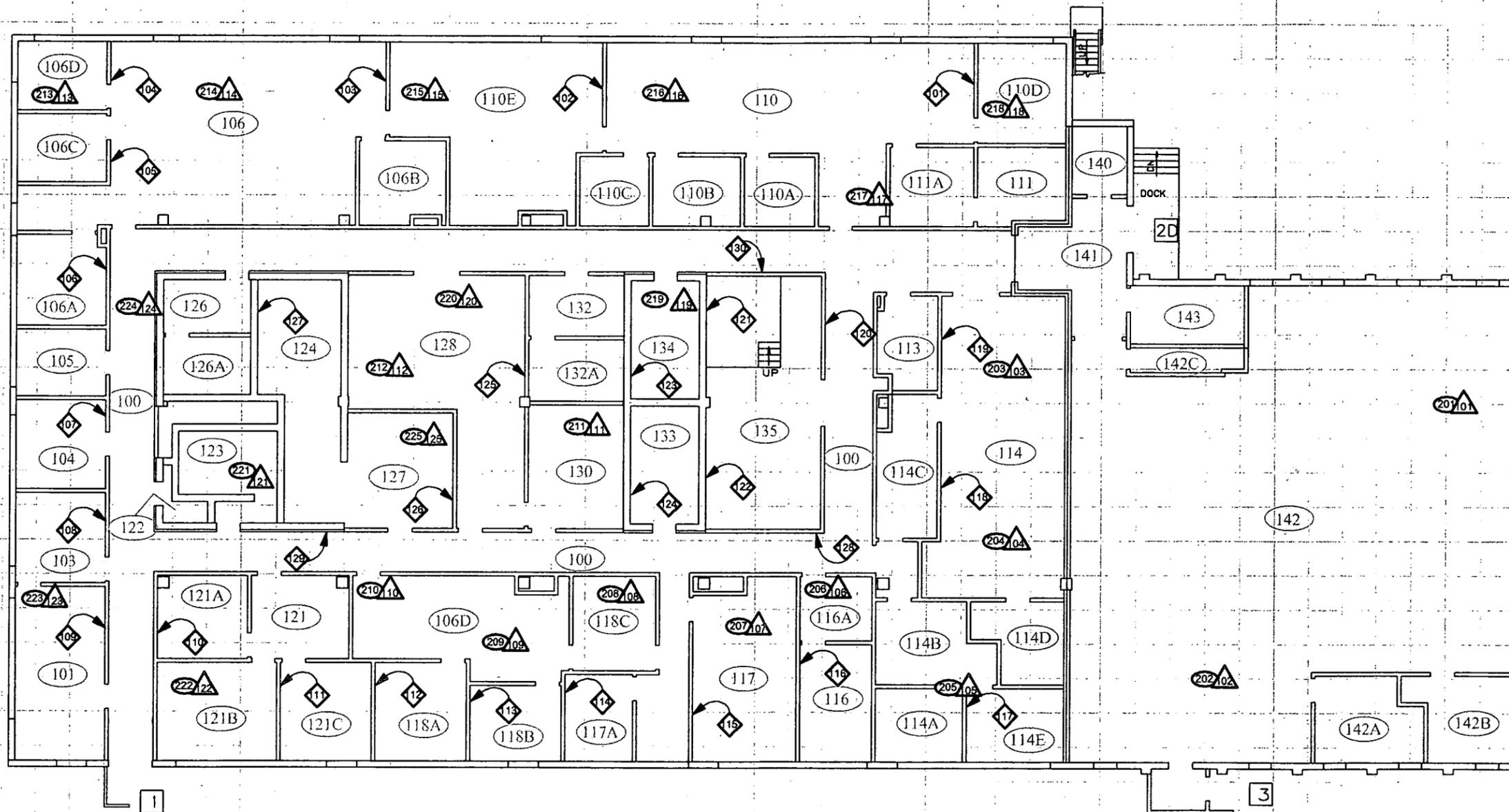
<p><b>SURVEY MAP LEGEND</b></p> <p>▲ Ceiling BE Smear Location</p>	<p>Neither the United States Government nor Kaiser Hill Co., nor DynCorp I&amp;ET, nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.</p>	<p><b>N</b></p> <p>↑</p>	<p>0 FEET 0</p> <p>0 METERS 0</p>	<p>U.S. Department of Energy Rocky Flats Environmental Technology Site</p> <p>Prepared by: GIS Dept. 303-966-7707 Prepared for:</p> <p><b>DynCorp</b> THE ART OF TECHNOLOGY</p> <p>KAISER HILL COMPANY</p>
			<p>DRAWING NOT TO SCALE</p>	<p>MAP ID: 02-0320/441-NPRO-BE2 Aug. 26, 2002</p>

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**PHASE I IN-PROCESS CHARACTERIZATION FOR B441**

Beryllium - MAP 2

Building: 441  
 Floor Plan  
 August 27 & 28, 2002 RIN02D1484



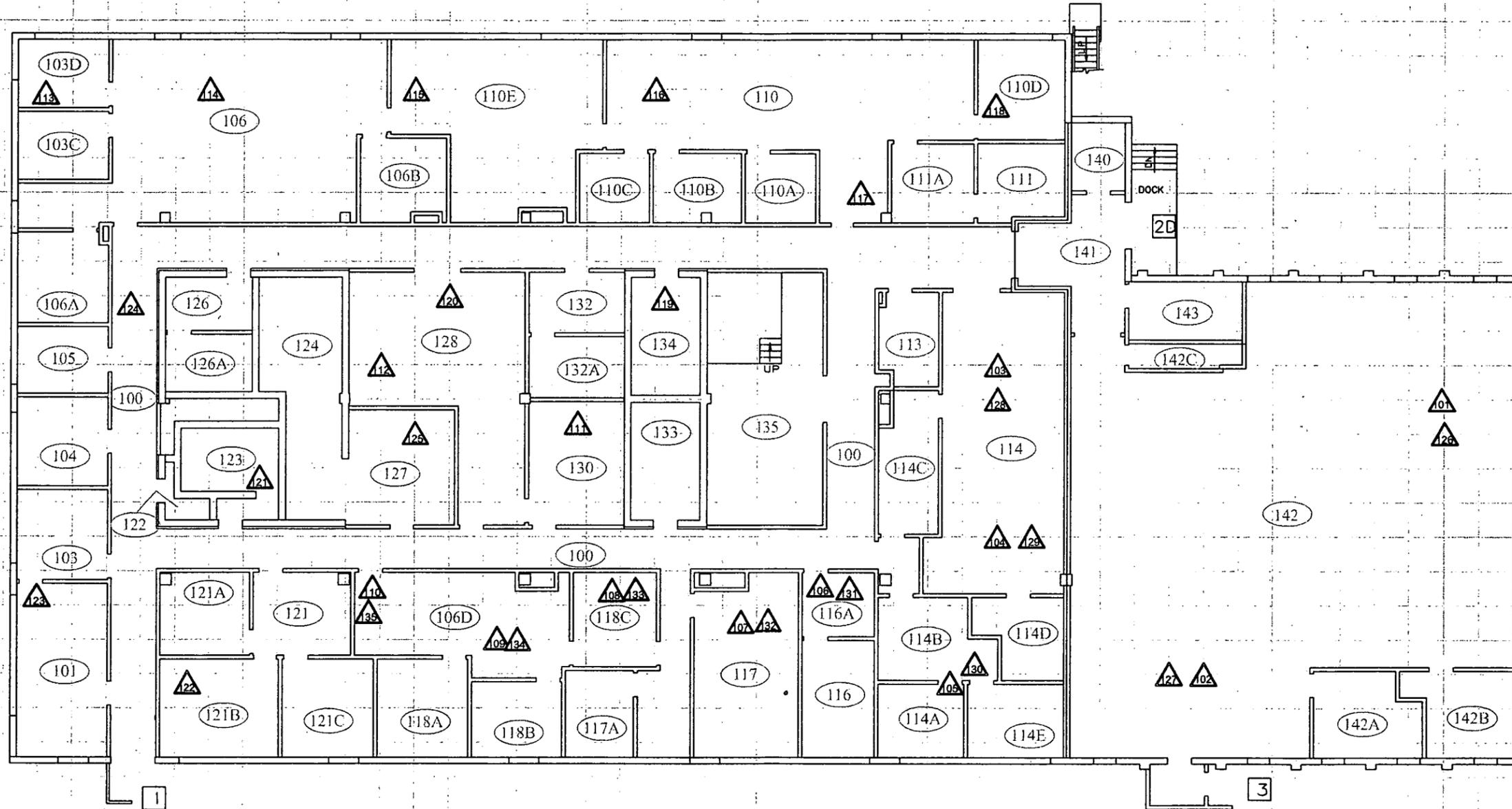
BUILDING 441 - FIRST FLOOR PLAN

<p><b>SURVEY MAP LEGEND</b></p> <ul style="list-style-type: none"> <li>▲ Carpet BE Smear Location</li> <li>◆ Wall BE Smear Location</li> <li>○ Sub-Floor BE Smear Location</li> </ul>	<p>Neither the United States Government nor Kaiser Hill Co., nor DynCorp I&amp;ET, nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assures any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.</p>	<p><b>N</b></p>	<p>0 FEET 0</p>	<p>U.S. Department of Energy                  Rocky Flats Environmental Technology Site</p> <p>Prepared by: GIS Dept. 303-866-7707 Prepared for:</p> <p><b>DynCorp</b>                  THE ART OF TECHNOLOGY</p> <p>KAISER HILL COMPANY</p>
			<p>0 METERS 0</p>	

**PHASE I IN-PROCESS CHARACTERIZATION FOR B441**

Beryllium - MAP 3

Building: 441  
Ceiling Plan  
October 10, 2002 RIN0320104



BUILDING 441 - FIRST FLOOR PLAN

<p><b>SURVEY MAP LEGEND</b></p> <p>▲ Ceiling BE Smear Location</p>	<p>Neither the United States Government nor Kaiser Hill Co., nor DynCorp I&amp;ET, nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.</p>	<p><b>N</b></p> <p>↑</p>	<p>0 FEET 0</p> <p>0 METERS 0</p>	<p>U.S. Department of Energy Rocky Flats Environmental Technology Site</p> <p>Prepared by: GIS Dept. 303-966-7707</p> <p>Prepared for:</p>
			<p><b>DynCorp</b></p> <p>THE ART OF TECHNOLOGY</p>	<p>KAISER HILL</p> <p>MAP ID: 02-0320/441-INPRO-BE2 Oct. 10, 2002</p>

DRAWING NOT TO SCALE

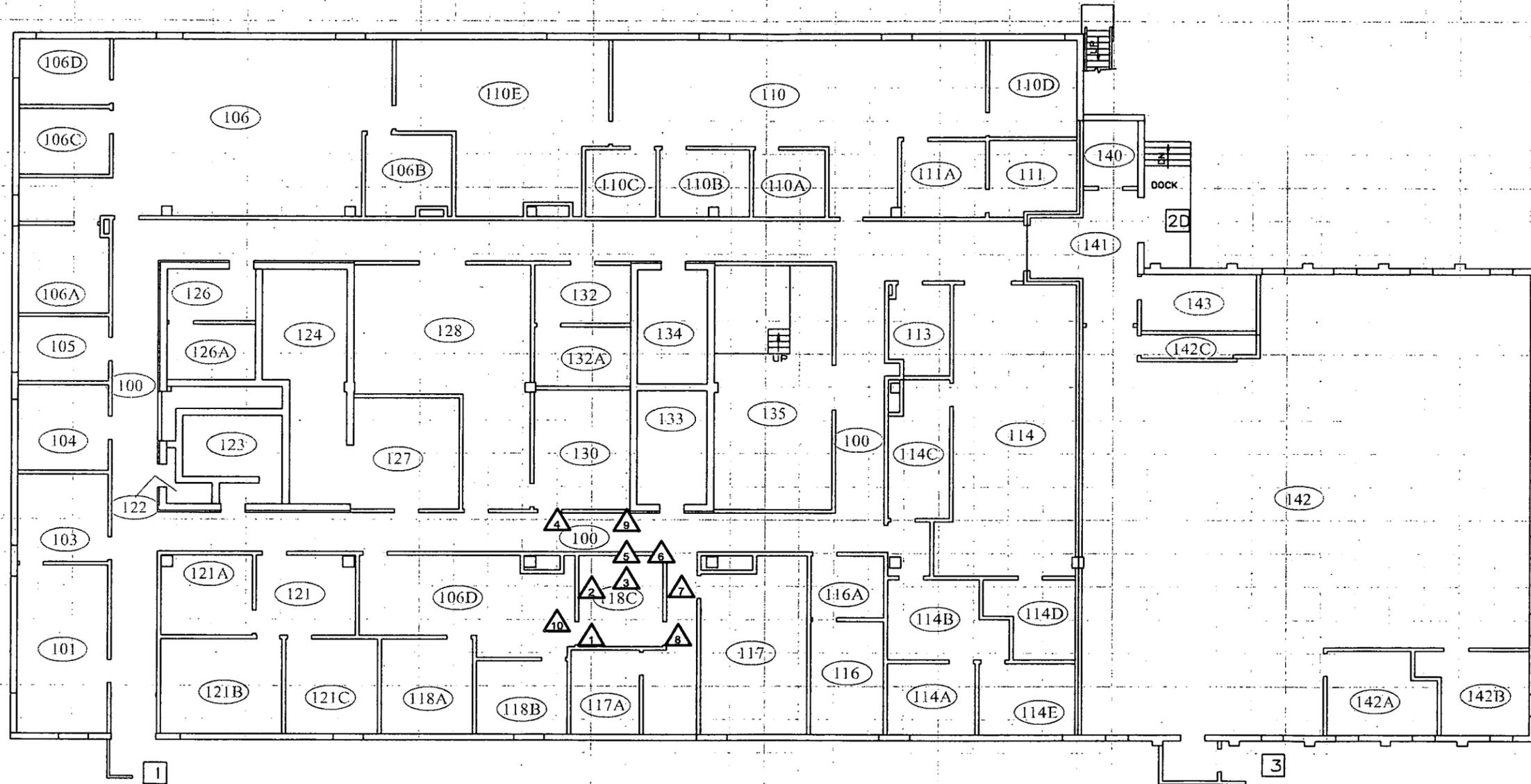
64



**PHASE I IN-PROCESS CHARACTERIZATION FOR B441**

Beryllium - MAP 5

Building: 441  
Follow Up BE Smears After Elevated Result  
October 29, 2002 RIN03Z0205



BUILDING 441 - FIRST FLOOR PLAN

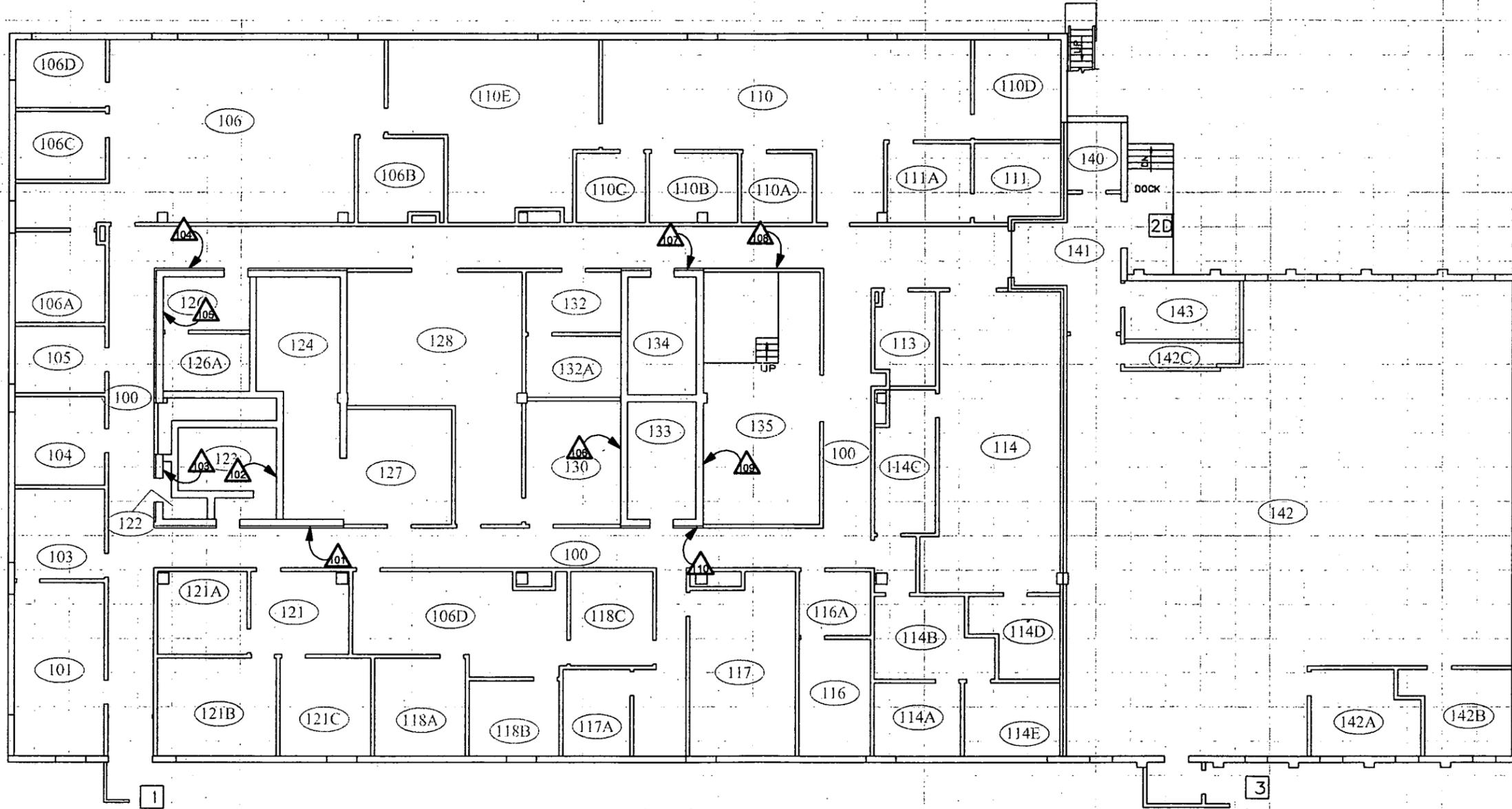
<p><b>SURVEY MAP LEGEND</b></p> <p>▲ Sub-Floor BE Smear Location</p>	<p>Neither the United States Government nor Kaiser Hill Co. nor DynCorp I&amp;ET, nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.</p>	<p><b>N</b></p> <p>↑</p>	<p>0 FEET 0</p>	<p>U.S. Department of Energy Rocky Flats Environmental Technology Site Prepared by: GIS Dept. 303-966-7707 Prepared for: <b>DynCorp</b> THE ART OF TECHNOLOGY KAISER HILL COMPANY</p>
			<p>0 METERS 0</p>	

66

**PHASE I IN-PROCESS CHARACTERIZATION FOR B441**

Beryllium - MAP 6

Building: 441  
Vertical Wall Surfaces  
November 7, 2002 RIN03D0151



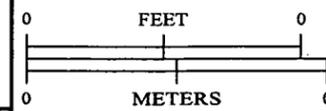
BUILDING 441 - FIRST FLOOR PLAN

**SURVEY MAP LEGEND**

▲ Wall BE Smear Location

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**N**



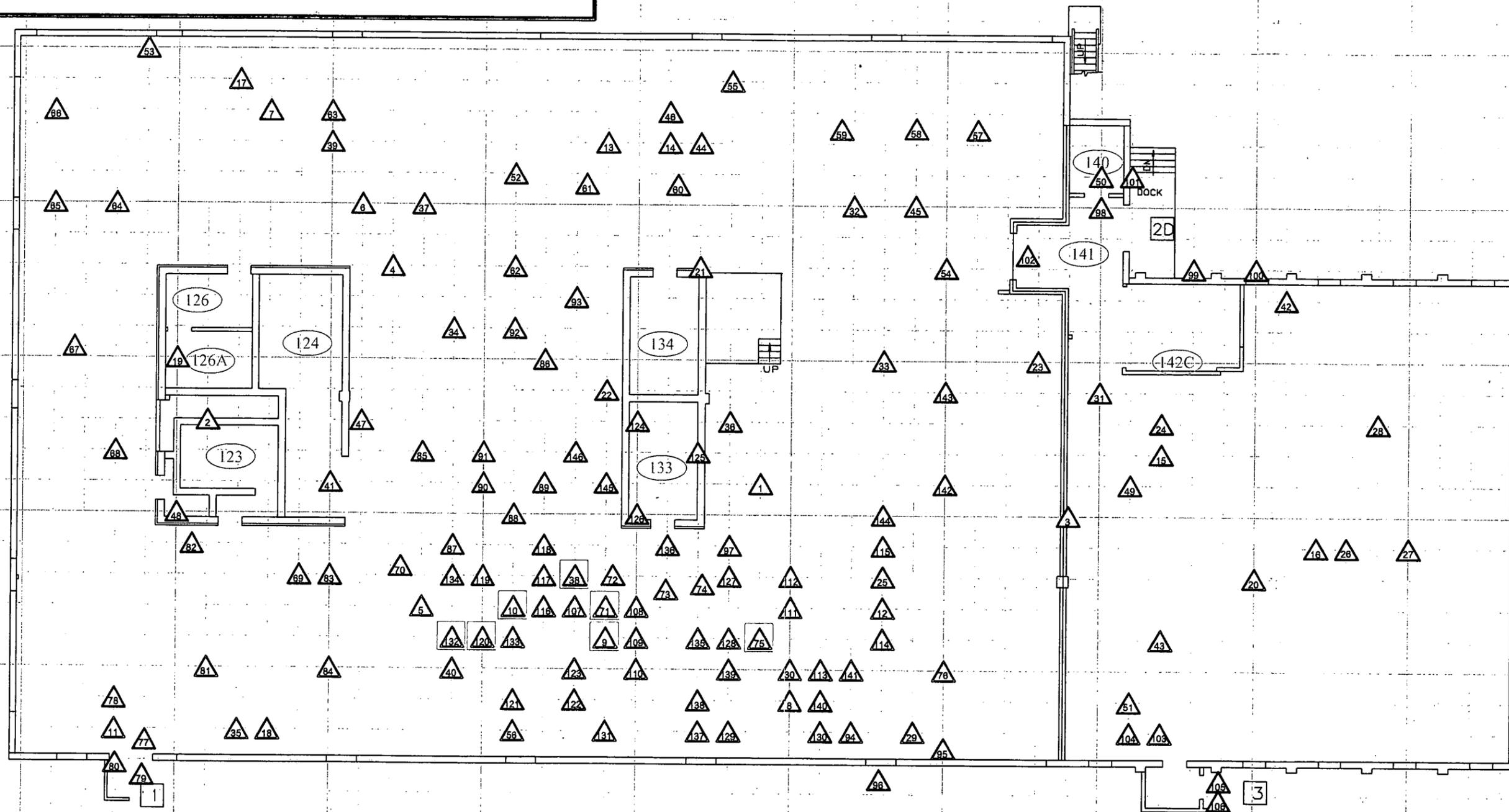
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THE ART OF TECHNOLOGY  
KAISER HILL  
MAP ID: 02-0320/441-INPRO-BE1B Nov. 7, 2002

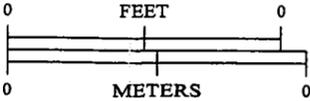
# RLC CHARACTERIZATION FOR B441

Beryllium - Map 7  
 Building 441  
 December 12, 2002 RIN03Z0596    December 23, 2002 RIN03Z0640  
 January 10, 2003 RIN03Z0749    January 13, 2003 RIN03Z0749

 > 0.1 ug/100 cm<sup>2</sup>



BUILDING 441 - FIRST FLOOR PLAN  
 FINISH FLOOR ELEVATION 6031.00'

<b>SURVEY MAP LEGEND</b>  Beryllium Sample Location	Neither the United States Government nor Kaiser Hill Co., nor DynCorp I&ET, nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.	 	U.S. Department of Energy Rocky Flats Environmental Technology Site Prepared by: GIS Dept. 303-968-7707    Prepared for:

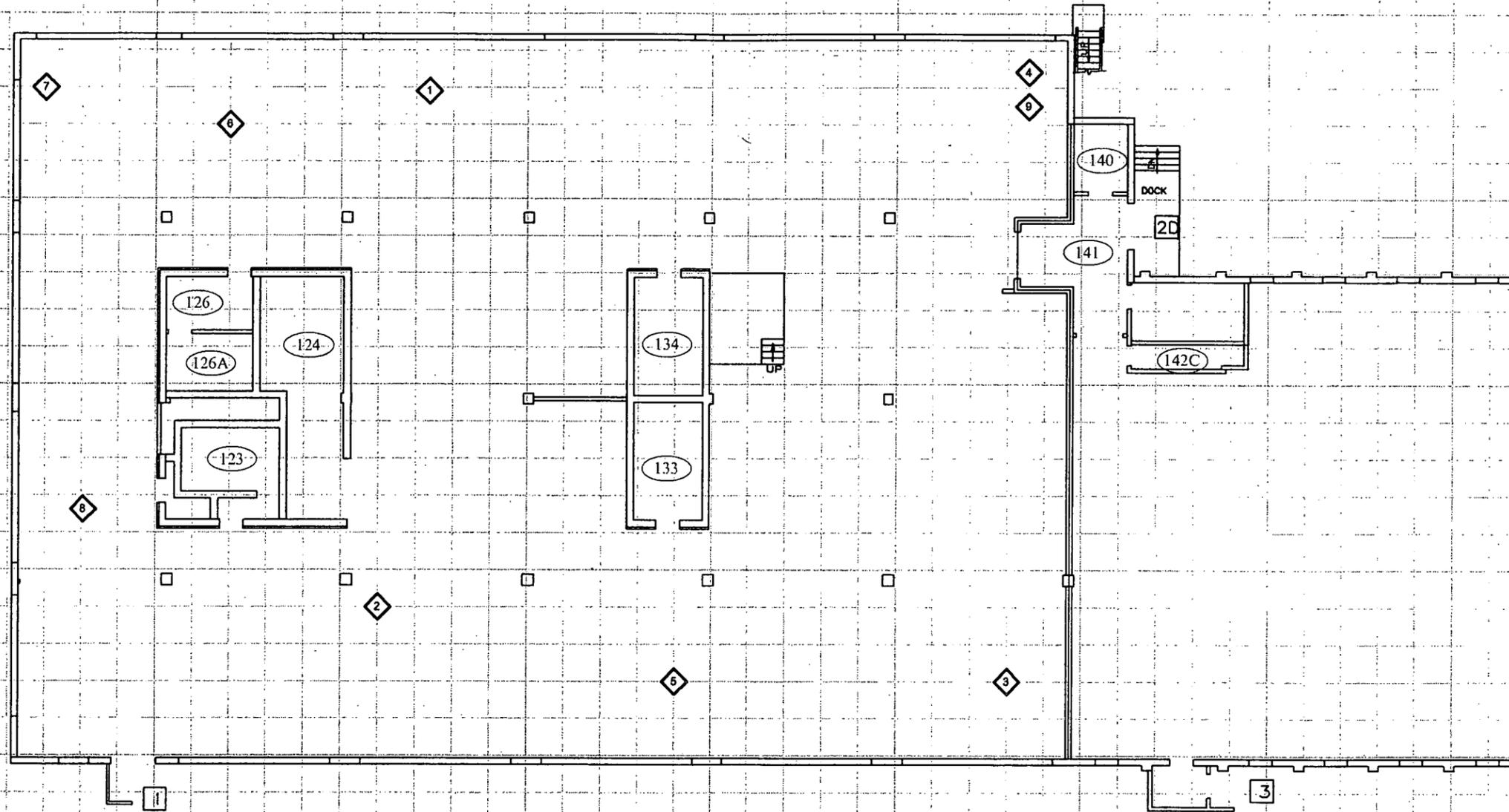
DRAWING NOT TO SCALE

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# CHEMICAL SAMPLE MAP

Building: 441 Interior

PAGE 1 OF 1



BUILDING 441 - FIRST FLOOR PLAN

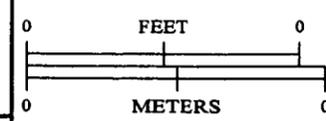
FINISH FLOOR ELEVATION 6031.00'

### SURVEY MAP LEGEND

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

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- Open/Inaccessible Area
- Area in Another Survey Unit



DRAWING NOT TO SCALE

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

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

**DynCorp**  
THE ART OF TECHNOLOGY

MAP ID: 02-0320/B441-RCRA January 14, 2003

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