Rocky Flats Environmental Technology Site

PRE-DEMOLITION SURVEY REPORT (PDSR)

BUILDING B771/774, Roof

REVISION 1

April 7, 2004

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

PRE-DEMOLITION SURVEY REPORT (PDSR)

BUILDING 771/774, Roof

REVISION 1

April 7, 2004

Prepared by: _____ Date: 4/7/04
Albert W. Wolff, Radiological Engineer

Reviewed by: _____ Date: 4-7-04
Tommy Fontaine, Radiological Engineer

Reviewed by: _____ Date: 4/7/04
Sarah Roberts, Radiological Safety Manager

Approved by: _____ Date: 4/7/04
Chris Gilbreath, B771 Project Manager

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ATTACHMENTS

ABBREVIATIONS/ACRONYMS

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

VOCs	Volatile organic compounds
WSRIC	Waste Stream and Residue Identification and Characterization

EXECUTIVE SUMMARY

A Pre-Demolition Survey was performed to enable compliant disposition and waste management of the Building 771/774 Roof. Because this Type 3 area will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). Building surfaces characterized as part of this PDS include the roofs of Buildings 771 and 774 including the Building 771 Annex (771C) roof and the B771 Indirect and Direct Evaporative Cooler Area (IDEC) roof.

The PDS encompassed both chemical and radiological characterization. The characterization was built upon physical, chemical and radiological hazards identified in the facility-specific *B771 and B774 Hazards Characterization Report for the 771 Closure Project.*

Based upon the results of this PDSR, the 771/774 Roof meets the unrestricted release limits specified in the site Pre-Demolition Survey Plan. The Building 771/774 Roof can be demolished and the waste managed as PCB Bulk Product waste or as sanitary waste, and the concrete can be used for backfill on-site per the RFCA RSOP for Recycling Concrete. To ensure that the facility remains free of contamination and PDS data remain valid, Level 2 isolation controls are established, however, the area will not be posted because personnel do not routinely access these areas.

1 INTRODUCTION

A Pre-Demolition Survey was performed to enable compliant disposition and waste management of the Building 771/774 Roof. Because this Type 3 building will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). The results of this survey shall demonstrate that the 771/774 Roof meets the unrestricted release limits specified in the site Pre-Demolition Survey Plan prior to demolition. Building surfaces characterized as part of this PDS include the roofs of Buildings 771 and 774 including the Building 771 Annex (771C) roof and the B771 Indirect and Direct Evaporative Cooler Area (IDEC) roof.

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed. Among these is the Building 771/774 Roof. This facility no longer supports the RFETS mission and will be removed to reduce Site infrastructure, risks and/or operating costs.

Before this Type 3 facility can be demolished, the Data Quality Objectives (DQOs) for a Pre-Demolition Survey (PDS) must be satisfied; this document presents the PDS results for the Building 771/774 Roof. The PDS was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). The PDS is built upon physical, chemical and radiological hazards identified in the facility-specific *B771 and B774 Hazards Characterization Report for the 771 Closure Project*, dated June 12, 2001, Revision 0.

1.1 Purpose

The purpose of this report is to communicate and document the results of the Building 771/774 Roof PDS effort. A PDS is performed prior to building demolition to define the pre-demolition radiological and chemical conditions of a facility. The pre-demolition conditions are compared with the release limits for radiological and non-radiological contaminants. PDS results will enable project personnel to make final disposition decisions, develop related worker health and safety controls, and estimate waste volumes by waste types.

1.2 Scope

This report presents the pre-demolition radiological and chemical conditions of the Building 771/774 Roof.

1.3 Data Quality Objectives

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

2 HISTORICAL SITE ASSESSMENT

A facility-specific Hazards Characterization Report was conducted to understand the facility history and related hazards. The Building 771 Hazards Characterization was

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performed in June 2001 (Refer *B771 and B774 Hazards Characterization Report for the 771 Closure Project*, dated June 12, 2001, Revision 0). Based on the characterization results, radiological contamination was identified in Buildings 771 and 774, and the Building 771/774 was identified as a Type 3 facility. Therefore, a PDS was required before demolition of the facility.

However, the survey unit that encompasses the 771/774 roofs is classified as Class 3 based on contamination potential, per Section 3.0 of the PDSP.

This report documents the results of that PDS. The hazards characterization results and historical review (refer to Attachment D) were used to identify PDS data gaps and needs, and to develop radiological and chemical PDS characterization packages. Characterization documentation is located in the Building 771 Characterization Project files.

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

The Building 771/774 Roof was characterized for radiological hazards per the PDSP. Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on the facility surfaces. Measurements were performed to evaluate the contaminants of concern (weapons-grade plutonium isotopes). Based upon a review of the characterization data, historical and process knowledge, in-process survey data, building walk-downs, and PDSP guidance, a Radiological Characterization Plan was developed during the planning phase that describes the minimum survey requirements (refer to survey package 771103). A Survey Unit Overview Map is presented in Attachment A. Based on hazard characterization data and historical and process knowledge, transuranic isotopes are the primary contaminants of concern in Buildings 771/774. Therefore, the PDS was performed to the transuranic PDS unrestricted release criteria. Individual radiological survey unit packages are maintained in the Building 771 Characterization Project files.

The Building 771/774 Roof survey unit package was developed in accordance with Radiological Safety Practices (RSP) 16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure*. Total surface activity (TSA), removable surface activity (RSA), and media samples were collected in accordance with RSP 16.02 *Radiological Surveys of Surfaces and Structures*. Radiological survey data were verified, validated and evaluated in accordance with RSP 16.04, *Radiological Survey/Sample Data Analysis*. Quality control measures were implemented relative to the survey process in accordance with RSP 16.05, *Radiological Survey/Sample Quality Control*. Radiological survey data, statistical analysis results, and survey locations are presented in Attachment A, *Radiological Data Summary and Survey Maps*.

Building 771/774 Roof– (Survey Unit 771103)

The Class 3 classification is based on the low contamination potential for the building exterior. The most likely sources of contamination of this area include the 1957 Building 771 fire, the 1969 Building 776 fire, and other miscellaneous airborne emission sources from the site. However, environmental sampling performed to date indicates that the

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fires did not spread detectable contamination into the surrounding soils. Therefore, contamination would not be expected on structural exteriors.

Twenty (20) biased media samples were collected on the B771 roof in December of 2000. Based on the conservative method of bringing all the activity in a media sample to the surface, three (3) of the original biased twenty (20) samples exceeded 100 dpm/100 cm^2 , but were less than 300 dpm/100 cm^2. The results were likely skewed due to high sample weight (maximum pCi/g result 0.34 pCi/g Am and Pu, sample mass at same location 470 grams). The three (3) elevated locations were resampled in 2003. Per the RFETS Regulatory Contact Record dated November 5, 2003, in order to minimize skewness of the data each roof layer was separated and analyzed separately. In addition, the samples were allowed to dry. All resample results at these locations were less than the DCGLw of 100 dpm/100cm^2. The original three (3) elevated location results out of twenty (20) total samples were replaced with the updated data. Since these three (3) locations were replaced with seven (7) samples, a total of twenty-four (24) total samples were reported. Refer to the map in Attachment B for sample locations.

Per the RFETS Regulatory Contact Record dated November 5, 2003, fifteen (15) random TSA/RSA measurements were collected above and below the roofing material. The gravel was removed from the top layer and TSA/RSA data collected on the exposed tar. The tar/gravel/felt layer was then removed, exposing the base concrete. Fifteen (15) additional TSA/RSA measurements were then collected on the concrete. In addition, field checks of the gravel were also performed. All TSA and RSA survey results were less than the applicable PDS transuranic DCGL values. The random TSA/RSA measurements could not be performed on the original building 771/774 roof due to poor drainage (area was and remains saturated with water to date). The areas surveyed include the 320 roof and the plenum building (Room 441) roof. Refer to the map in Attachment A for survey locations.

At the request of the CDPHE, on April 2, 2004, fifteen (15) additional biased TSA/RSA measurements were taken on horizontal surfaces of the Building 771 roof that have been in place since original construction. Results of these samples were all less than the DCGLw. Refer to the map in Attachment A for survey locations.

Due to the geometry of the tar and stone material on the roof, surface scans were not performed.

Radiological survey data, statistical analysis results, survey locations, and radiological scan maps for survey unit 771103 are presented in Attachment A, *Survey Unit 771103 Radiological Data Summary and Survey Map.*

Additional Radiological Considerations

An approximately 100 ft^2 section of the metal corrugated roof covering the B771 main plenum exhaust tunnel was contaminated from a spill occurring during D&D operations. This occurred in September of 2002 during the removal of a waste oil transfer line originating in B776 and terminating in B774 (IWCP T0109841). Although the spill was immediately cleaned up and removable contamination levels were <20 dpm/100cm^2,

fixed contamination, with a range of 174 to 423 dpm/100cm^2, remains on this section of roof. This section of roof was excluded from this survey unit and will be disposed of as radioactive waste. Refer to Attachment E for location of area to be removed.

4 CHEMICAL CHARACTERIZATION AND HAZARDS

4.1 Asbestos

Building 771 Roof

Asbestos-containing building material is present in the building 771 roof (Refer to Attachment B for sampling locations and results). Approximately 2600 square feet of silver painted tar-impregnated built up roofing and roof flashing is still present on the 771 roof. The material is non-friable and will be removed during building demolition and disposed of as non-friable asbestos sanitary waste.

Building 774 Roof

Asbestos containing building material is present in the building 774 roof (Refer to Attachment B for sampling locations and results). Approximately 2250 square feet of asbestos containing roofing material, and 600 square feet silver painted tar impregnated built up roofing, as well as roof flashing is still present on the 774 roof. The material is non-friable and will be removed during building demolition and disposed of as non-friable asbestos sanitary waste.

4.2 Beryllium (Be)

The roof of building 771 and 774 is not and has never been a beryllium-controlled area. There is no potential source for beryllium to contaminate the roof.

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

The incidental lead-sheeting installed as flashing on piping system vents will be removed during or prior to demolition and disposed of hazardous waste (D008). Estimated volume for this type of material is 60 ft^2.

4.4 Polychlorinated Biphenyls (PCBs)

Many "older" roofing tars used PCBs in their construction, and "hits" for PCBs have been found on the roofs of buildings 707 and 779. The assumption must be made that the roof tar of building 771 and 774 contains PCBs unless analysis can prove otherwise. As such, the roof tarring material should be handled as PCB Bulk Product Waste.

5 PHYSICAL HAZARDS

Physical hazards associated with the B771/774 Roof consist of those common to standard industrial environments, and include hazards associated with utilities, and trips and falls.

There are no other unique hazards associated with the facility. The facility has been relatively well maintained and is in good physical condition, therefore, does not present hazards associated with building deterioration.

Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practices.

6 DATA QUALITY ASSESSMENT

Data used in making management decisions for decommissioning of Building 771/774 Roof, and consequent waste management, is of adequate quality to support the decisions documented in this report. The data presented in this report (Attachments A and B) were verified and validated relative to DOE quality requirements, applicable EPA guidance, and original project DQOs.

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

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

Details of the DQA are presented in Attachment C. The DQA Checklists are provided in the individual survey unit packages (located in the Building 771 Characterization Files).

The Minimum Detectable Activity (MDA) for each PDS instrument was determined *a priori* based on typical parameters (background, efficiency, and count time). A list of radiological field instrumentation and associated sensitivities is presented in Table 1. This table is based on Section 5.1 of the MAN-127-PDSP, *Pre-Demolition Survey Plan for D&D Facilities*, Rev. 1, July 15, 2002.

Table 1
PDS Radiological Field Instrumentation and Minimum Detectable Activities

Model	Measurement Type	MDA (dpm/100 cm^2)
NE Electra DP6	TSA	48
Eberline SAC-4	Removable (Smears)	10

7 DECOMMISSIONING WASTE TYPES

The demolition and disposal of Building 771/774 Roof will generate a variety of wastes. The roofing material will be disposed of as non-friable asbestos, PCB Bulk Product waste. The remaining concrete roof may be used as backfill onsite in accordance with the RFCA RSOP for Recycling Concrete provided that the ceiling beneath is free-released.

8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, the Building 771/774 Roof is classified as an RFCA Type 3 facility pursuant to the RFETS Decommissioning Program Plan (DPP; K-H, 1999). Based upon the results of this PDSR, the 771/774 Roof meets the unrestricted release limits specified in the site Pre-Demolition Survey Plan and is ready for demolition. The PDS for the Building 771/774 Roof was performed in accordance with the DDCP and PDSP, all PDSP DQOs were met, and all data satisfied the PDSP DQA criteria.

Radiological contamination in excess of the PDSP Table 7-1 limits was not detected in the Building 771/774 Roof.

Based upon this PDSR, the Building 771/774 Roof can be demolished and the waste managed as PCB Bulk Product waste, and the concrete can be used for backfill on-site per the RFCA RSOP for Recycling Concrete. To ensure that the facility remains free of contamination and that PDS data remain valid, Level 2 isolation controls have been established.

9 REFERENCES

B771 and B774 Hazards Characterization Report for the 771 Closure Project, dated June 12, 2001, Revision 0.

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

DOE Order 5400.5, *Radiation Protection of the Public and the Environment*

DOE Order 414.1A, *Quality Assurance*

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

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

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

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

MAN-077-DDCP, *Decontamination and Decommissioning Characterization Protocol*, Rev. 4, July 15, 2002.

MAN-127-PDSP, *Pre-Demolition Survey Plan for D&D Facilities*, Rev. 1, July 15, 2002.

MARSSIM - *Multi-Agency Radiation Survey and Site Investigation Manual* (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. 2, March 10, 2003.

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

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

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

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

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

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

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

RFETS, RFCA RSOP for Recycling Concrete, September 28, 1999

ATTACHMENT A

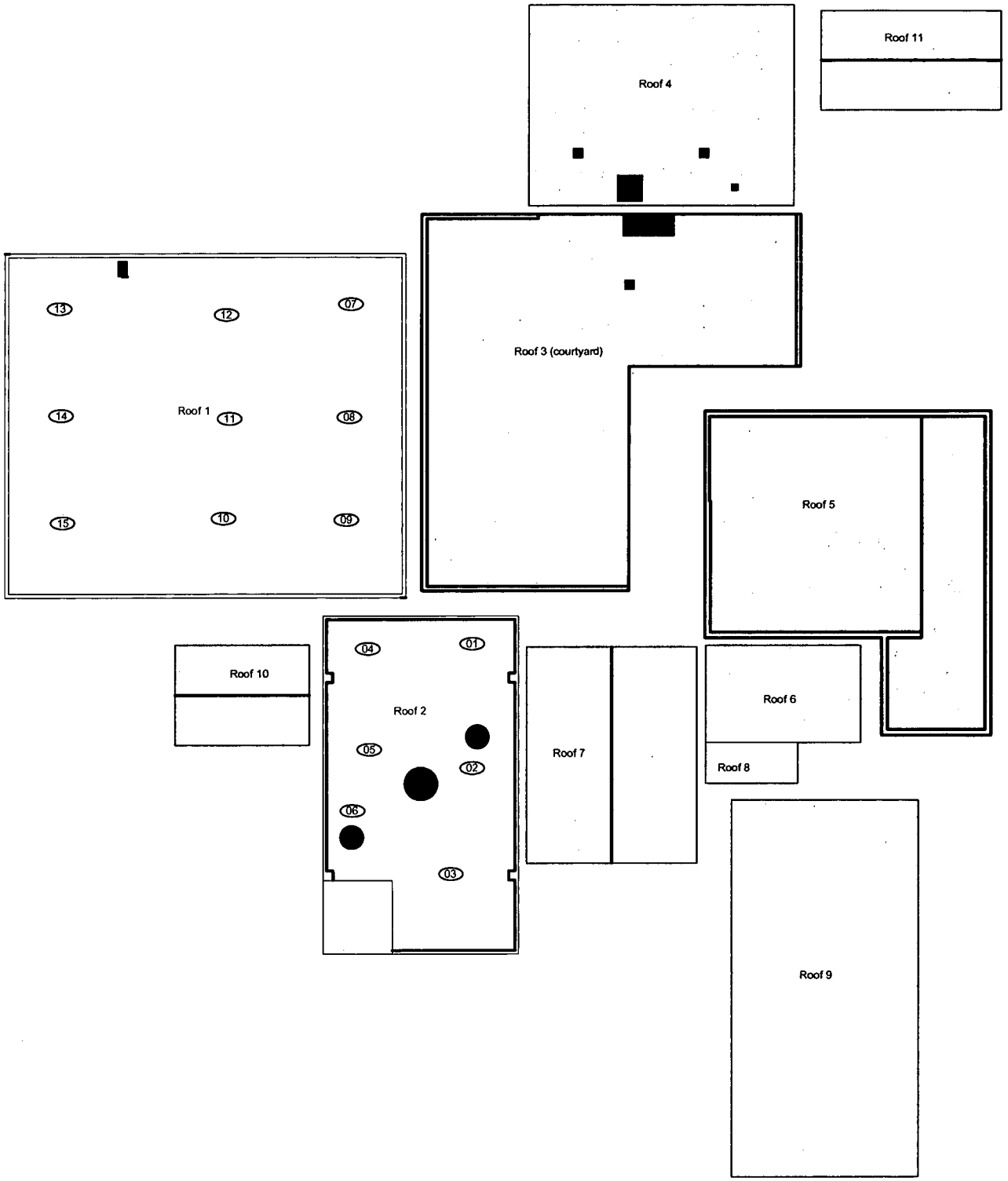
Survey Unit 771103
Radiological Data Summary and Survey Unit Overview Maps

RADIOLOGICAL CLOSEOUT SURVEY FOR THE 771 CLUSTER

Survey Area: AL **Survey Unit: 771103** **Classification: 3**
Building: 771/774
Survey Unit Description: 774 Roofing Areas

Total Floor Area: NA **Total Area: 484 sq. m** **Grid Size: N/A**

SURVEY UNIT 771103 - MAP 1 OF 1



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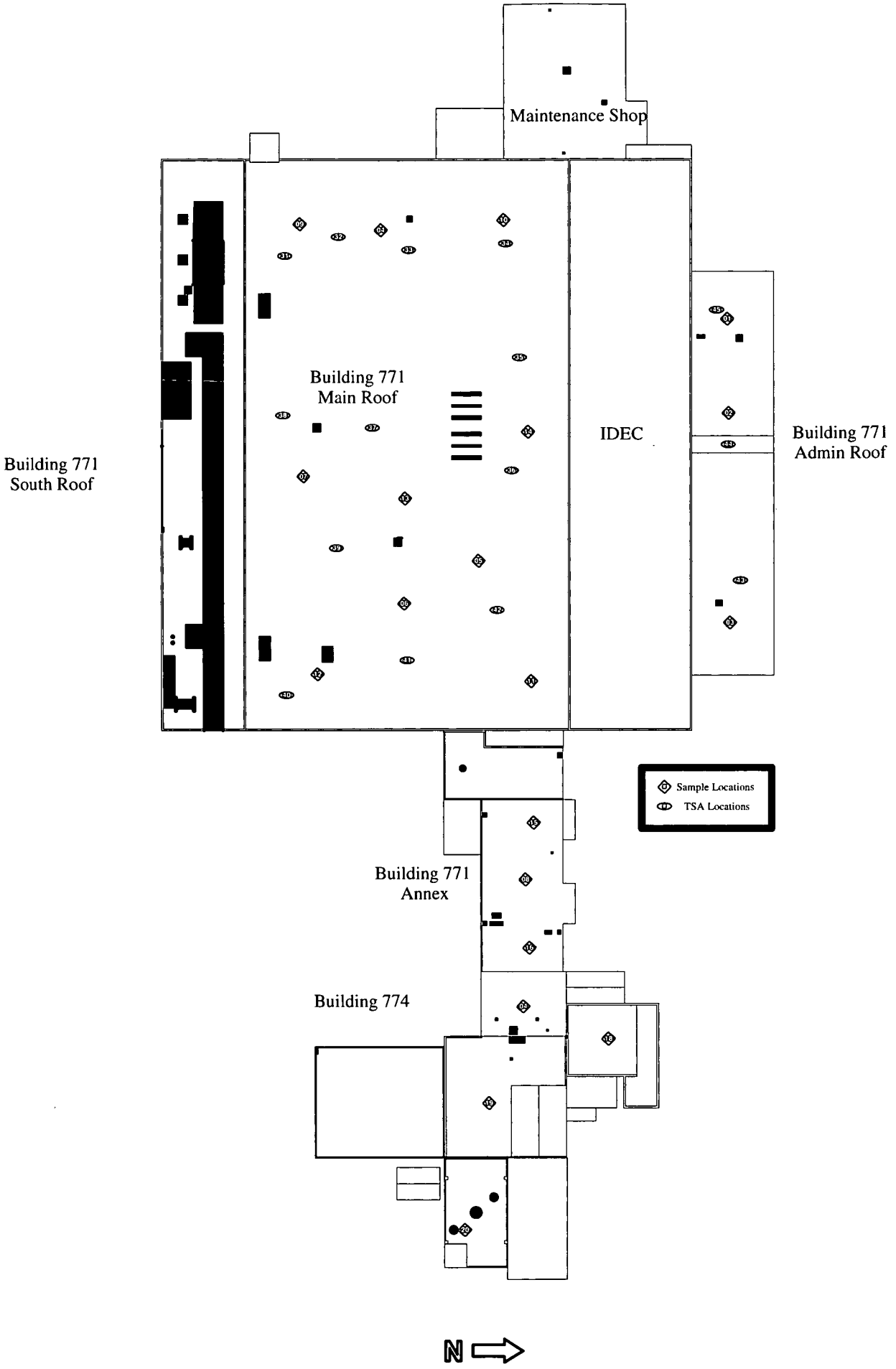
Building 771/774 Roof Sample Locations



Survey Area: AL	Survey Unit: 771103	Building: 771
Description: B771/B774 Roof		

Rocky Flats Environmental Technology Site
Final Radiological Survey Summary Results

Total Surface Activity Measurements

Number Required: 45 Number Performed 30 Number QC Performed: 6

Alpha

Maximum:	65.9 dpm/100cm²
Minimum:	<20.7> dpm/100cm²
Mean:	13.9 dpm/100cm²
Standard Deviation:	23.9
Transuranic DCGLw:	100.0 dpm/100cm²
Transuranic DCGLemc:	300.0 dpm/100cm²
Uranium DCGLw:	5,000.0 dpm/100cm²
Uranium DCGLemc:	15,000.0 dpm/100cm²

Removable Surface Activity Measurements

Number Required: 45 Number Performed: 30

Alpha

Maximum:	2.4 dpm/100cm²
Minimum:	<1.5> dpm/100cm²
Mean:	<0.4> dpm/100cm²
Standard Deviation:	1.0
Transuranic DCGLw:	20.0 dpm/100cm²
Uranium DCGLw:	1,000.0 dpm/100cm²

Media Sample Results

Number Required: 20 Number Samples: 24

Uranium

Maximum:	NA dpm/100cm²
Minimum:	NA dpm/100cm²
Mean:	NA dpm/100cm²
Standard Deviation:	NA
Uranium DCGLw:	5,000.0 dpm/100cm²
Uranium DCGLemc:	15,000.0 dpm/100cm²

Transuranic

Maximum:	87.0 dpm/100cm²
Minimum:	<25.0> dpm/100cm²
Mean:	15.5 dpm/100cm²
Standard Deviation:	26.3
Transuranic DCGLw:	100.0 dpm/100cm²
Transuranic DCGLemc	300.0 dpm/100cm²

Survey Area: AL	Survey Unit: 771103	Building: 771
Description: B771/B774 Roof		

Instrument Data Sheet

Inst/RCT Number	RCT ID	Analysis Date	Instr Model	Instru S/N	Probe Type	Calibration Due Dt	Instru Efficiency		A-Priori MDA (dpm/100cm²)	
							Alpha	Beta	Alpha	Beta
1	512326	11/19/03	SAC-4	1053	NA	04/14/04	0.333	NA	10.00	10.00
2	512326	11/19/03	SAC-4	1491	NA	03/25/04	0.333	NA	10.00	10.00
3	512326	11/19/03	SAC-4	1354	NA	02/22/04	0.333	NA	10.00	10.00
4	512326	11/19/03	SAC-4	1410	NA	04/07/04	0.333	NA	10.00	10.00
5	515011	11/19/03	SAC-4	1053	NA	04/14/04	0.333	NA	10.00	10.00
6	515011	11/19/03	SAC-4	1491	NA	03/25/04	0.333	NA	10.00	10.00
7	515011	11/19/03	SAC-4	1354	NA	02/22/04	0.333	NA	10.00	10.00
8	515011	11/19/03	SAC-4	1410	NA	04/07/04	0.333	NA	10.00	10.00
9	512326	11/19/03	Electra	395	DP-6	05/04/04	0.223	NA	48.00	NA
10	515011	11/19/03	Electra	392	DP-6	03/16/04	0.224	NA	48.00	NA
11	512326	04/02/04	Electra	1367	DP-6	06/17/04	0.220	NA	48.00	NA
12	702381	04/02/04	Electra	391	DP-6	08/20/04	0.221	NA	48.00	NA
13	702381	04/02/04	SAC-4	1185	NA	08/09/04	0.333	NA	10.00	10.00
14	702381	04/02/04	SAC-4	1053	NA	07/22/04	0.333	NA	10.00	10.00

Survey Area: AL	Survey Unit: 771103	Building: 771
Description: B771/B774 Roof		

Removable Surface Activity Data Sheet

Random Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)			
771103PRP-N001	1	-.9	N/A			
771103PRP-N002	4	-1.5	N/A			
771103PRP-N003	2	.3	N/A			
771103PRP-N004	2	-1.2	N/A			
771103PRP-N005	1	-.9	N/A			
771103PRP-N006	2	-1.2	N/A			
771103PRP-N007	3	.9	N/A			
771103PRP-N008	4	-1.5	N/A			
771103PRP-N009	1	-.9	N/A			
771103PRP-N010	2	.3	N/A			
771103PRP-N011	3	2.4	N/A			
771103PRP-N012	4	.0	N/A			
771103PRP-N013	1	-.9	N/A			
771103PRP-N014	2	-1.2	N/A			
771103PRP-N015	3	.9	N/A			
771103PRP-N016	5	-.9	N/A			
771103PRP-N017	6	-1.2	N/A			
771103PRP-N018	5	-.9	N/A			
771103PRP-N019	7	-.6	N/A			
771103PRP-N020	8	-1.5	N/A			
771103PRP-N021	5	-.9	N/A			
771103PRP-N022	7	.9	N/A			
771103PRP-N023	8	-1.5	N/A			
771103PRP-N024	5	-.9	N/A			
771103PRP-N025	6	.3	N/A			
771103PRP-N026	7	.9	N/A			
771103PRP-N027	8	.0	N/A			
771103PRP-N028	5	.6	N/A			
771103PRP-N029	6	-1.2	N/A			
771103PRP-N030	7	.9	N/A			

Biased Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)			
771103PBP-N031	13	-.3	N/A			

Survey Area: AL	Survey Unit: 771103	Building: 771
Description: B771/B774 Roof		

Removable Surface Activity Data Sheet

Random Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)			
Biased Sample Location	**Inst / RCT Nbr**	**Net Alpha (dpm/100cm²)**	**Net Beta (dpm/100cm²)**			
771103PBP-N032	14	-1.2	N/A			
771103PBP-N033	13	2.7	N/A			
771103PBP-N034	14	.3	N/A			
771103PBP-N035	13	2.7	N/A			
771103PBP-N036	14	.3	N/A			
771103PBP-N037	13	1.2	N/A			
771103PBP-N038	14	1.8	N/A			
771103PBP-N039	13	-.3	N/A			
771103PBP-N040	14	.3	N/A			
771103PBP-N041	13	2.7	N/A			
771103PBP-N042	14	1.8	N/A			
771103PBP-N043	13	-.3	N/A			
771103PBP-N044	14	.3	N/A			
771103PBP-N045	13	-.3	N/A			

Comments: Surveys 1-15 taken on base of roof. Surveys 16-30 taken on top of tar media. The "a priori" MDA for the SAC-4 is 10 dpm/100cm2 (from PDSP, Rev. 1, Section 5.1). An additional 15 bias RSA and TSA were taken on the roof on flat spots.

Survey Area: AL	Survey Unit: 771103	Building: 771
Description: B771/B774 Roof		

Total Surface Activity Data Sheet

Random Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)			
771103PRP-N001	9	51.1	N/A			
771103QRP-N001	10	12.1	N/A			
771103PRP-N002	9	9.4	N/A			
771103PRP-N003	9	-5.9	N/A			
771103PRP-N004	9	33.1	N/A			
771103PRP-N005	9	24.2	N/A			
771103PRP-N006	9	27.3	N/A			
771103PRP-N007	9	47.9	N/A			
771103PRP-N008	9	47.9	N/A			
771103PRP-N009	9	30.0	N/A			
771103PRP-N010	9	6.2	N/A			
771103PRP-N011	9	54.2	N/A			
771103PRP-N012	9	15.2	N/A			
771103PRP-N013	9	27.3	N/A			
771103QRP-N013	10	23.7	N/A			
771103PRP-N014	9	65.9	N/A			
771103PRP-N015	9	27.3	N/A			
771103QRP-N016	9	-3.0	N/A			
771103PRP-N016	10	32.8	N/A			
771103PRP-N017	10	.3	N/A			
771103PRP-N018	10	10.5	N/A			
771103PRP-N019	10	-14.9	N/A			
771103PRP-N020	10	-6.0	N/A			
771103PRP-N021	10	-2.9	N/A			
771103PRP-N022	10	-17.6	N/A			
771103PRP-N023	10	.3	N/A			
771103PRP-N024	10	.3	N/A			
771103PRP-N025	10	-14.9	N/A			
771103PRP-N026	10	9.2	N/A			
771103PRP-N027	10	-20.7	N/A			
771103QRP-N028	9	-17.8	N/A			

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Survey Area: AL	Survey Unit: 771103	Building: 771
Description: B771/B774 Roof		

Total Surface Activity Data Sheet

Random Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)			
771103PRP-N028	10	-16.3	N/A			
771103PRP-N029	10	.3	N/A			
771103PRP-N030	10	-2.9	N/A			
771103QRP-N031	12	-2.8	N/A			
771103QRP-N045	11	6.4	N/A			

Biased Sample Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)			
771103PBP-N031	11	7.2	N/A			
771103PBP-N032	12	7.0	N/A			
771103PBP-N033	11	16.3	N/A			
771103PBP-N034	12	3.9	N/A			
771103PBP-N035	11	43.6	N/A			
771103PBP-N036	12	3.9	N/A			
771103PBP-N037	11	28.1	N/A			
771103PBP-N038	12	31.0	N/A			
771103PBP-N039	11	28.1	N/A			
771103PBP-N040	12	9.7	N/A			
771103PBP-N041	11	43.6	N/A			
771103PBP-N042	12	27.8	N/A			
771103PBP-N043	11	37.2	N/A			
771103PBP-N044	12	18.8	N/A			
771103PBP-N045	12	.7	N/A			

Comments: Surveys 1-15 taken on top of tar media. Surveys 16-30 taken on base of roof, 31-45 Bias locations with flat surfaces.

Survey Area: AL	Survey Unit: 771103	Building: 771
Description: B771/B774 Roof		

Media Samples Data Sheet

Site Sample ID / Nbr / Description	Nuclide	Sample (pCi/g)	Sample MDA (pCi/g)	Weight (g)	Surface Area (in^2)	Sample Nuclide ($dpm/100cm^2$)	Sample Nuclide MDA ($dpm/100cm^2$)	Sample Total ($dpm/100cm^2$)
03Z1944-001.001 1 B771 Office Area West End. Original Location # 1, sub-bottom layer	U234	NA	NA	49.20	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0624	0.4241			4	27	**Transuranic**
	Am241	0.0088	0.0599			1	4	5
03Z1944-002.001 2 B771 Office Area West End. Original Location # 1, bottom layer	U234	NA	NA	5.00	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	1.7912	2.8674			12	19	**Transuranic**
	Am241	0.2530	0.4050			2	3	13
03Z1944-003.001 3 B771 Office Area West End. Original Location # 1, top layer	U234	NA	NA	51.10	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	-0.1239	0.2011			-8	13	**Transuranic**
	Am241	-0.0175	0.0284			-1	2	-10
03Z1944-004.001 4 B771 Roof Central Original Location # 6, bottom layer	U234	NA	NA	68.90	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0786	0.5636			7	51	**Transuranic**
	Am241	0.0111	0.0796			1	7	8
03Z1944-005.001 5 B771 Roof Central Original Location # 6, top layer	U234	NA	NA	36.10	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	-0.4588	1.9966			-22	94	**Transuranic**
	Am241	-0.0648	0.2820			-3	13	-25
03Z1944-006.001 6 B771 Roof Near NW Floor Drain, Original Location #10, top layer	U234	NA	NA	72.70	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.1798	1.0337			17	98	**Transuranic**
	Am241	0.0254	0.1460			2	14	20
03Z1944-007.001 7 B771 Roof Near NW Floor Drain, Original Location #10, top layer	U234	NA	NA	3.92	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.2082	6.5348			1	34	**Transuranic**
	Am241	0.0294	0.9230			0	5	1
01N0073-002.001 8 B771 Office Area Roof, mid	U234	NA	NA	344.52	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0160	0.0126			7	6	**Transuranic**
	Am241	-0.0110	0.1350			-5	61	2

Comments: Sample location numbers 1 through 7 are resamples of RIN 01N0073, points 1, 6, and 10 per Contact Record dated November 5, 2003, 0930

JB

Survey Area: AL	Survey Unit: 771103	Building: 771
Description: B771/B774 Roof		

Media Samples Data Sheet

Site Sample ID / Nbr Description	Nuclide	Sample (pCi/g)	Sample MDA (pCi/g)	Weight (g)	Surface Area (in^2)	Sample Nuclide ($dpm/100cm^2$)	Sample Nuclide MDA ($dpm/100cm^2$)	Sample Total ($dpm/100cm^2$)
01N0073-003.001 9 B771 Office Area Roof, east end	U234	NA	NA	285.85	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	-0.0050	0.1710			-2	64	**Transuranic**
	Am241	0.0210	0.1640			8	61	6
01N0073-004.001 10 B771 Roof, near center roof drain	U234	NA	NA	391.56	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	-0.0280	0.1950			-14	100	**Transuranic**
	Am241	0.0190	0.1520			10	78	-5
01N0073-005.001 11 B771 Roof, north center	U234	NA	NA	523.24	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0850	0.1920			58	131	**Transuranic**
	Am241	0.0280	0.2230			19	153	77
01N0073-007.001 12 B771 Roof, south center	U234	NA	NA	883.10	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	-0.0180	0.2050			-21	237	**Transuranic**
	Am241	0.0340	0.0920			39	106	19
01N0073-008.001 13 Annex Roof, East End	U234	NA	NA	192.18	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.2890	0.1310			73	33	**Transuranic**
	Am241	0.0550	0.1640			14	41	87
01N0073-009.001 14 B771 Roof, Near SW Roof Drain	U234	NA	NA	522.70	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	-0.0430	0.2380			-29	163	**Transuranic**
	Am241	0.0620	0.0850			42	58	13
01N0073-011.001 15 B771 Roof, Near NE Roof Drain	U234	NA	NA	363.75	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0340	0.0920			16	44	**Transuranic**
	Am241	-0.0130	0.1610			-6	77	10
01N0073-012.001 16 B771 Roof, SE by Trane AC Unit	U234	NA	NA	367.72	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	-0.0110	0.1350			-5	65	**Transuranic**
	Am241	0.0490	0.1460			24	70	18

Survey Area: AL	Survey Unit: 771103	Building: 771
Description: B771/B774 Roof		

Media Samples Data Sheet

Site Sample ID / Nbr Description	Nuclide	Sample (pCi/g)	Sample MDA (pCi/g)	Weight (g)	Surface Area (in^2)	Sample Nuclide ($dpm/100cm^2$)	Sample Nuclide MDA ($dpm/100cm^2$)	Sample Total ($dpm/100cm^2$)
01N0073-013.001 17 B771 Roof, Near Center Roof Drain	U234	NA	NA	434.61	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0230	0.1790			13	102	**Transuranic**
	Am241	0.0830	0.1530			47	87	60
01N0073-014.001 18 B771 Roof, SE of North Central Roof Drain	U234	NA	NA	301.15	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0050	0.1550			2	61	**Transuranic**
	Am241	0.0180	0.1440			7	57	9
01N0073-015.001 19 Annex Roof, West End	U234	NA	NA	96.57	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0530	0.1860			7	24	**Transuranic**
	Am241	0.0000	0.0900			0	11	7
01N0073-016.001 20 Annex Roof, East End	U234	NA	NA	83.97	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0390	0.2040			4	22	**Transuranic**
	Am241	0.0330	0.0890			4	10	8
01N0073-017.001 21 B774 Roof, Near West Roof Stack	U234	NA	NA	309.36	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	-0.0170	0.1980			-7	80	**Transuranic**
	Am241	-0.0130	0.1610			-5	65	-12
01N0073-018.001 22 B774 Roof, North Central	U234	NA	NA	34.30	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0890	0.1180			4	5	**Transuranic**
	Am241	0.0000	0.1160			0	5	4
01N0073-019.001 23 B774 Roof, Courtyard Near Door 15R	U234	NA	NA	376.39	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	-0.0380	0.2130			-19	105	**Transuranic**
	Am241	0.0750	0.2040			37	101	18
01N0073-020.001 24 B774 Roof, SE of Stack Near Door 14R	U234	NA	NA	185.85	26.3	NA	NA	
	U235	NA	NA			NA	NA	**Uranium**
	U238	NA	NA			NA	NA	NA
	Pu239/240	0.0570	0.1460			14	36	**Transuranic**
	Am241	0.1050	0.0950			26	23	39

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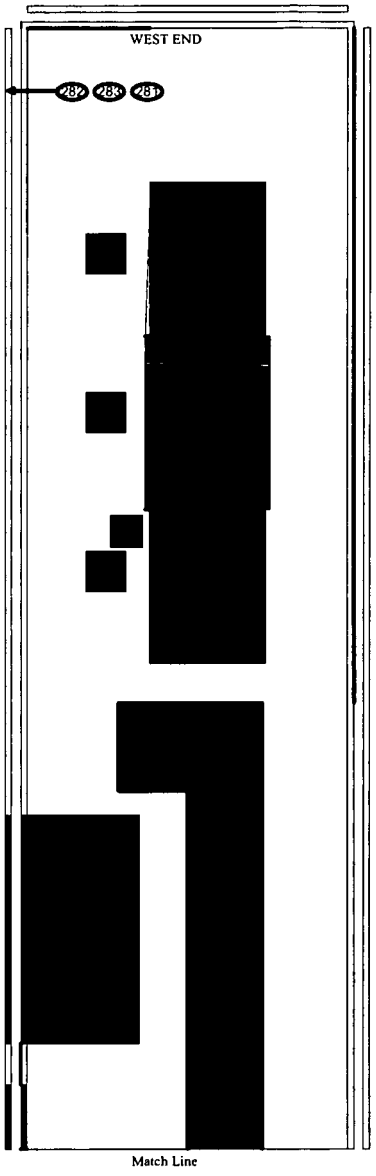
ATTACHMENT B

Chemical Data Summaries and Sample Maps

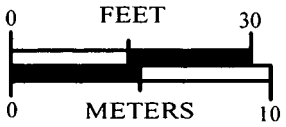
ASBESETOS CHARACTERIZATION REPORT FOR THE 771 CLUSTER

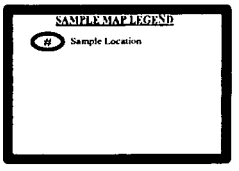
Building:
Description: Exterior

Total Floor Area: NA sq. m **Total Area: sq. m**



Location	Sample Number	Description	Result
281	771-12-18-2000-MS-281	Black fibrous tar with black black tar and silver paint	40.0% chry
282	771-12-18-2000-MS-282	Silver paint	5.0% chry
283	771-12-18-2000-MS-283	Built-up roofing, tar paper & gravel	ND

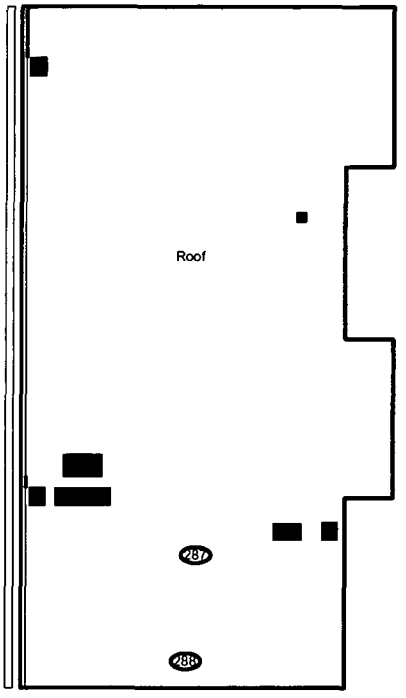




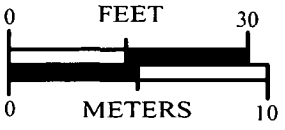
ASBESETOS CHARACTERIZATION REPORT FOR THE 771 CLUSTER

Building: 771C
Description: Roof

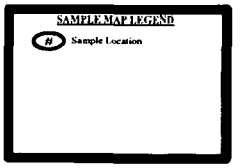
Total Floor Area: NA sq. m **Total Area: 344 sq. m**



Location	Sample Number	Description	Result
287	771-12-18-2000-MS-287	Roof flashing, silver paint & tar paper	ND
288	771-12-18-2000-MS-288	Built-up roof, tar paper & gravel	ND



N

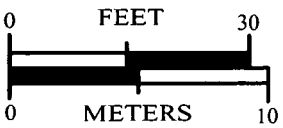


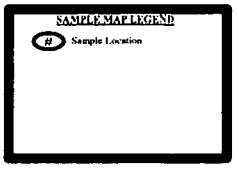
ASBESETOS CHARACTERIZATION REPORT FOR THE 771 CLUSTER

Building: 774
Description: Roof Complex

Total Floor Area: NA sq. m **Total Area: 1401 sq. m**

Location	Sample Number	Description	Result
315	771-12-27-2000-MS-315	TSI mud on ch water pipe elbow	20.0% chry
316	771-12-27-2000-MS-316	White TSI block on a steam pipe	23.0% chry
338	771-01-04-2001-MS-338	Built-up roofing	ND
339	771-01-04-2001-MS-339	Silver painted roof flashing	6.0% chry
340	771-01-04-2001-MS-340	Silver paint Black fibrous tar	6.0% chry 35.0% chry
341	771-01-04-2001-MS-341	Silver painted rock.	3.0% chry

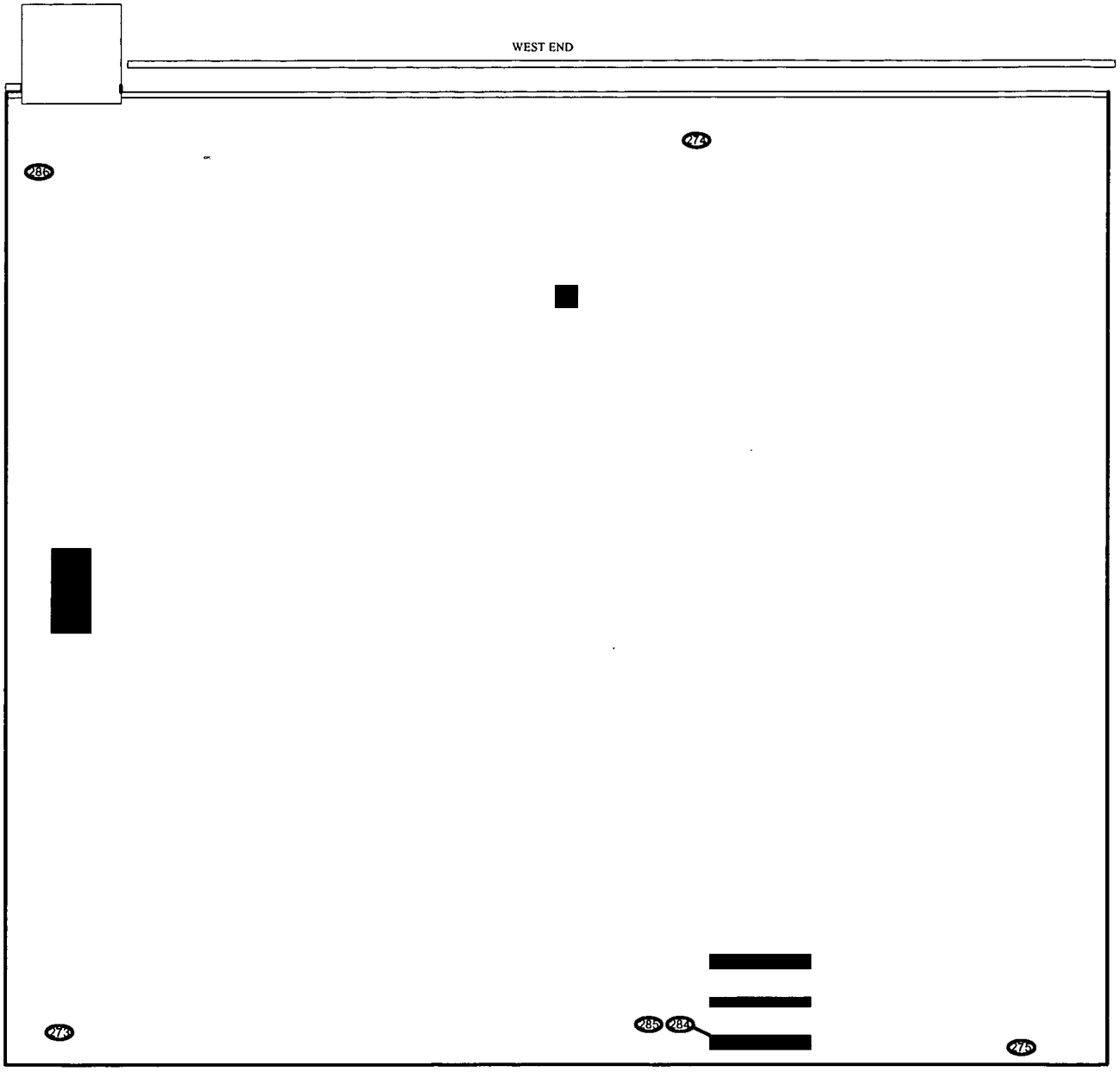




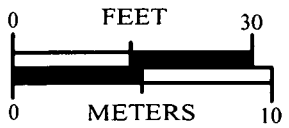
ASBESETOS CHARACTERIZATION REPORT FOR THE 771 CLUSTER

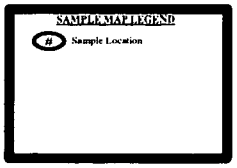
Building: 771
Description: Main Roof

Total Floor Area: NA sq. m **Total Area: sq. m**



Location	Sample Number	Description	Result
273	771-11-20-2000-MS-273	TSI mud on a steam pipe elbow	ND
274	771-11-20-2000-MS-274	TSI mud on a steam pipe elbow	ND
275	771-11-20-2000-MS-275	TSI mud on a steam pipe elbow	ND
284	771-11-20-2000-MS-284	Roof flashing silver paint & tar paper	5.0% chry
285	771-11-20-2000-MS-285	Built up roofing, tar paper & gravel	ND
286	771-11-20-2000-MS-286	Roof flashing, silver paint, sno-coat, tar paper	3.0% chry





ATTACHMENT C

Data Quality Assessment

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).

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 C-1, and asbestos in C-2. A data completeness summary for all results is given in Table C-3.

All relevant Quality records supporting this report are maintained in the B771/774 Roof Characterization Project Files. Within 30 days of approval by the regulators, this report will be submitted to the CERCLA Administrative Record for permanent storage. 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.

Survey designs were implemented based on the transuranic limits used as DCGLs in the unrestricted release decision process. All survey results were evaluated against, and were less than the Transuranic $DCGL_w$ (100 dpm/100cm^2).

SUMMARY

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

Based upon an independent review of the radiological data, it is determined that the original project DQOs satisfied MARSSIM guidance. All facility contamination levels were below applicable unrestricted release levels, except as noted above. Minimum survey requirements were met, sampling/survey protocol was performed in accordance with applicable procedures, survey units were properly designed and bounded, and instrument performance and calibration were within acceptable limits.

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 implemented to prevent the inadvertent introduction of further contamination into the facility. On this basis, the B771/774 Roof meets the RLCP and PDSP DQO criteria with the confidences stated herein.

Table C-1 V&V of Radiological Surveys – B771/774 Roof

V&V CRITERIA, RADIOLGICAL SURVEYS		K-H RSP 16.00 Series MARSSIM (NUREG-1575)		
	QUALITY REQUIREMENTS			
	Parameters	**Measure**	**Frequency**	**COMMENTS**
ACCURACY	initial calibrations	80%<x<120%	Every 6 months	Calibration using Alpha Group procedure and approved technicians.
	daily performance source checks	80%<x<120%	≥1/day	Performed daily/within range.
	local area background: Field	typically < 10 cpm	Each TSA Measurement	All local area backgrounds were within expected Ranges
PRECISION	field duplicate measurements for TSA	≥13% of real survey points	100% of survey packages	N/A
REPRESENTATIVENESS	MARSSIM methodology: Survey Unit 771103	statistical	NA	Random w/ statistical confidence.
	Survey Maps	NA	NA	Random measurement locations controlled/mapped to ±1m.
	Controlling Documents (Characterization Pkg.; RSPs)	qualitative	NA	Refer to the Characterization Package (planning document) for field/sampling procedures (located in Project files); thorough documentation of the planning, sampling/analysis process, and data reduction into formats.
COMPARABILITY	units of measure	dpm/100cm^2	NA	Use of standardized engineering units in the reporting of measurement results.
COMPLETENESS	Plan vs. Actual surveys usable results vs. unusable	>95% >95%	NA	See Table C-4 for details.
SENSITIVITY	detection limits	TSA: ≤50 dpm/100cm^2 RA: ≤10 dpm/100cm^2	all measures	MDAs ≤ ½ DCGL$_w$ per PDSP guidelines.

Table C-2 V&V of Chemical Sampling – B771/B774 Roof Area

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
ASBESTOS	**METHOD: EPA 600/R-93/116 - PLM Short Report Bulk**	**LAB ----->**	Reservoirs Environmental, Inc. Denver, Co.	
QUALITY REQUIREMENT		**RIN** Numbers	01N0044, 01N0080, 01N0097	
		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	≥ 17 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 the Asbestos Characterization Report For Building 771/774 (for field/sampling procedures and detailed results. The asbestos inspection was conducted according to the guidelines set forth by the Asbestos Hazard Emergency Response Act (AHERA).
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	Final number of samples at the Certified Building Inspector's discretion.
SENSITIVITY	Detection limits	<1% by volume	all measures	N/A

Table C-3 Data Completeness Summary – B771/774 Roof

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)[A]	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Asbestos	B771/B774 Roof	17	17	The non-friable asbestos waste from the B771/B774 Roof will be segregated during building demolition.	Final number of samples at the Certified Building Inspector's discretion
Radiological	Survey Area: AL Survey Unit: 771103 B771/774 Roof	45 α TSA (15 – Random/Systematic) and 45 α Smears (15 - Random/Systematic) 4 QC TSA 20 Media (Paint)	45 α TSA (15 – Random/Systematic) and 45 α Smears (15 - Random/Systematic) 4 QC TSA 24 Media (Paint)	No elevated contamination at any location; all values below PDS unrestricted release levels	Transuranic DCGLs Media samples targeted biased areas near roof drains RIN01N0073 (Samples numbers 03Z2052-001.001 through 020.001) RIN03Z1944 (Samples numbers 03Z2052-001.001 through 007.001) 7- Re-samples at biased locations in areas identified by sample RIN 01N0073 per Contact Record Dated November 5, 2003 0930: Of the original biased twenty (20) samples three (3) exceeded 100 dpm/100 cm^2, but were less than 300 dpm/100 cm^2. The results were likely skewed due to high sample weight (maximum pCi/g result 0.34 pCi/g Am and Pu, sample mass at same location 470 grams). The three (3) elevated locations were re-sampled in 2003 and the data replaced by the re-samples. A total of twenty-four (24) samples were entered into the FCS database. Each roof layer was separated and analyzed separately.

ATTACHMENT D

Historical Review

Building 771/774 Roof
Historical Review
March 30, 2004

Facility ID: Buildings 771/774, Roof (Survey Area AL)

Anticipated Facility Type (1, 2, or 3): Type 3. Based on low contamination potential, the roof of B771/B774 is classified as a Class 3 survey unit.

Physical Description:

The Building 771 Roof

A flat decking of steel-reinforced concrete forms the roof of Building 771. The roof has an overlay of tar and gravel. The roof is divided into three sections, which run east to west.

- Section 1, which is approximately 41 feet wide by 280 feet long, is the south section above the 2nd floor utility area. This roof section has 7 exhaust vents and 5 covered/capped openings. This section of roof has the doghouse built for the B771stack exhaust tunnel. The doghouse roof is constructed of ribbed metal over insulation. An approximately 20-foot section of the metal corrugated roof covering the B771 main plenum exhaust tunnel was contaminated due to a spill. This occurred in September of 2002 during the removal of a waste oil transfer line originating in B776 and terminating in B774 (IWCP T0109841). Samples of oil from this line indicated up to 1.1E-2 grams per liter Pu. Although the spill was immediately cleaned up, fixed contamination remained on this section of roof. This section of roof was excluded from this survey unit and will be removed prior to roof demolition
- Section 2, is the next roof north, which is approximately 162 feet wide by 280 feet long, and is also above the 2nd floor utility area and electrical motor control center rooms. Roof 2, in approximately the middle section, has 5 cooling tower units. This roof section has many plumbing and heater vents, along with 5 covered/capped openings and a large y-shaped wooden roof walkway.
- Section 3, is the Roof of the IDEC. It consists of steel reinforced concrete roof covered with insulation. At one time the roof had a rubber membrane covering the insulation however this was removed at an earlier date due to wind damage.
- Section 4, which is approximately 41 feet wide by 206 feet long and includes the Transite roof section, is the most northern roof section, and it covers the cafeteria, the "cold" offices, Dock 1, and three north entrance doors (i.e., Doors 1, 2 and 3).

The building 771 (Former 771C) Annex roof is built similar to the B771 roof.

The Building 774 roofs are reinforced concrete slabs or pre-stressed twin-tee reinforced concrete panels covered with ridged insulation, membrane or felt, and asphalt and gravel. The exception is the roof over Room 212 and the third floor break room and office. The roof over Room 212 is corrugated metal. The roof over the break room and office is a ribbed metal roof over insulation.

Historical Operations:
This survey unit consists of structural surfaces only. No processes occurred on the roofs of B771/B774. The most likely sources of contamination of this area include the 1957 Building 771 fire, the 1969 Building 776 fire, and other miscellaneous airborne emission sources from the site. However, environmental sampling performed to date indicates that the fires did not spread detectable contamination into the surrounding soils. Therefore, contamination would not be expected on structural exteriors.

Current Operational Status:
B771 and B774 are no longer in operation.

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Building 771/774 Roof
Historical Review
March 30, 2004

Contaminants of Concern
Asbestos Roof flashing
Beryllium (Be) The roofs of B771/B774 are not RFETS Beryllium (Be) Areas, based on historical and existing classifications, and historical use. Personnel interviews confirm that this area was never a Beryllium area.
Lead Metal flashing used in roof construction (especially of buildings of this age) usually has high levels of lead, and as such, should be separated from the rest of the roofing material, and disposed of as a hazardous waste (D008) under CERCLA. The sheet lead flashing installed on piping systems, such as the sanitary waste drain vents, will be removed prior to demolition. The lead, which may be present in the galvanized flashing around the roof perimeter, will be compared to the amount of other roofing material. If the level of lead is below the RCRA limits, then it will be disposed of as non-hazardous for lead along with the rest of the roof.
RCRA/CERCLA Constituents Personnel interviews indicate that RCRA storage units were never located in this area. See comments concerning lead above.
PCBs Many "older" roofing tars used PCBs in their construction, and "hits" for PCBs have been found on the roofs of buildings 707 and 779. The assumption must be made that the roof tar of building 771 and 774 contains PCBs unless analysis can prove otherwise. As such, the roof tarring material will be handled as PCB Bulk Product Waste.
Radiological Contaminants The contaminants of concern for the 771 project, including all areas of Buildings 771 and 774, are transuranic alpha-emitting radioisotopes (including Pu-238, Pu-239/240, Pu-242, and Am-241). Based on findings documented in Radiological Engineering TBD-00161, Rev. 0, alpha-only surveys assure that the unrestricted-release limits for any other isotopes that may exist in Building 771/774 will not be exceeded.
Environmental Restoration Concerns No Individual Hazardous Substance Sites (IHSS) exist on the B771/B774 exterior surfaces.
Additional Information None
References *(1) B771 and B774 Hazards Characterization Report for the 771 Closure Project*, dated June 12, 2001, Revision 0. *(2) Building 771/774 Cluster Closure Project Reconnaissance Level Characterization Report*, dated August 8, 1998, Revision 2.
Further Actions Complete the PDS process.

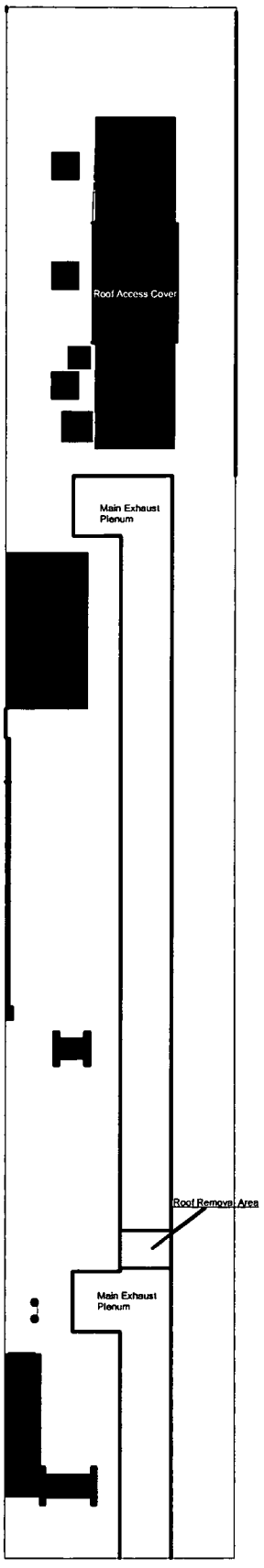
Prepared By: A. Wolff / [signature] / 3/30/04

Name Signature Date

ATTACHMENT E

Miscellaneous Supporting Documentation

WEST END



EAST END

N

771 South Area