DOE/RL-2004-77
Rev. 2

Removal Action Work Plan for 300 Area Facilities

United States
Department of Energy

DOE-RL AND/OR REGULATOR APPROVAL PAGE

Title: Removal Action Work Plan for 300 Area Facilities

Approval:

R. F. Guercia
U.S. Department of Energy, Richland Operations Office
Fuel Facilities Shutdown

Signature

Dec 18, 2007
Date

Alicia Boyd
U.S. Environmental Protection Agency
300 Area Facilities Project Manager

Alicia L Boyd
Signature

December 18, 2007
Date

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United States Department of Energy

P.O. Box 550, Richland, Washington 99352

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ACRONYMS

ACM	asbestos-containing material
ALARA	as low as reasonably achievable
ARAR	applicable or relevant and appropriate requirement
BFA	building footprint area
BMP	best management practice
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
CCRC	Centralized Consolidated Recycling Center
CFR	*Code of Federal Regulations*
CWC	Central Waste Complex
D4	deactivation, decontamination, decommissioning and demolition
DAC	Derived Air Concentration
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EE/CA	engineering evaluation/cost analysis
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
ETF	Effluent Treatment Facility
GWQC	groundwater quality criteria
HASP	health and safety plan
HEPA	high-efficiency particulate air (filter)
ISMS	Integrated Safety Management System
MITUS	Mobile Integrated Temporary Utility System
NIOSH	National Institute for Occupational Safety and Health
NPL	National Priorities List
OSHA	Occupational Safety and Health Administration
OU	operable unit
PCB	polychlorinated biphenyl
PECOS	Pacific EcoSolutions
PPE	personal protective equipment
RAWP	removal action work plan
RCF	Radiological Counting Facility
RCRA	*Resource Conservation and Recovery Act of 1976*
RCW	*Revised Code of Washington*
RDR/RAWP	Remedial Design Report/Remedial Action Work Plan
RL	U.S. Department of Energy, Richland Operations Office
ROD	record of decision
RWP	radiological work permit
S&M	surveillance and maintenance
SAP	sampling and analysis plan

Acronyms

TBC	to be considered
TEDF	Treated Effluent Disposal Facility
Tri-Party Agreement	*Hanford Federal Facility Agreement and Consent Order*
TSCA	*Toxic Substances Control Act of 1976*
TSD	treatment, storage, and disposal
UMM	unit manager's meeting
WAC	*Washington Administrative Code*
WCH	Washington Closure Hanford
WIDS	Waste Information Data System

METRIC CONVERSION CHART

Into Metric Units		
If You Know	*Multiply By*	*To Get*
Length		
inches	25.4	Millimeters
inches	2.54	Centimeters
feet	0.305	Meters
yards	0.914	Meters
miles	1.609	Kilometers
Area		
sq. inches	6.452	sq. centimeters
sq. feet	0.093	sq. meters
sq. yards	0.836	sq. meters
sq. miles	2.6	sq. kilometers
Acres	0.405	Hectares
Mass (weight)		
ounces	28.35	Grams
pounds	0.454	Kilograms
ton	0.907	metric ton
volume		
teaspoons	5	Milliliters
tablespoons	15	Milliliters
fluid ounces	30	Milliliters
cups	0.24	Liters
pints	0.47	Liters
quarts	0.95	Liters
gallons	3.8	Liters
cubic feet	0.028	cubic meters
cubic yards	0.765	cubic meters
Temperature		
Fahrenheit	subtract 32, then multiply by 5/9	Celsius
Radioactivity		
picocuries	37	Millibecquerel

Out of Metric Units		
If You Know	*Multiply By*	*To Get*
Length		
millimeters	0.039	inches
centimeters	0.394	inches
meters	3.281	feet
meters	1.094	yards
kilometers	0.621	miles
Area		
sq. centimeters	0.155	sq. inches
sq. meters	10.76	sq. feet
sq. meters	1.196	sq. yards
sq. kilometers	0.4	sq. miles
hectares	2.47	acres
Mass (weight)		
grams	0.035	ounces
kilograms	2.205	pounds
metric ton	1.102	ton
Volume		
milliliters	0.033	fluid ounces
liters	2.1	pints
liters	1.057	quarts
liters	0.264	gallons
cubic meters	35.315	cubic feet
cubic meters	1.308	cubic yards
Temperature		
Celsius	multiply by 9/5, then add 32	Fahrenheit
Radioactivity		
millibecquerels	0.027	picocuries

1.0 INTRODUCTION

This document contains the removal action work plan (RAWP) for performing deactivation, decontamination, decommissioning, and demolition (D4) of surplus facilities[1] in the 300 Area of the Hanford Site. These buildings, vaults, structures, and pipelines are owned and operated by the U.S. Department of Energy (DOE), in Benton County, Washington (Figure 1-1). The facilities were constructed and operated as a reactor fuel fabrication and laboratory complex. Past operations, disposal practices, spills, and unplanned releases have resulted in contamination of the facility structures, underlying soil, and underlying groundwater in the 300 Area. Consequently, in November 1989, the 300 Area was one of four areas of the Hanford Site that were placed on the U.S. Environmental Protection Agency (EPA) National Priorities List (NPL) under the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA). The EPA and the DOE, Richland Operations Office (RL) have determined that hazardous substances[2] in the facilities (listed in Table 1-1) present a potential threat of release that poses a substantial risk to human health and the environment to the extent that a removal action[3] is warranted.

Alternatives for conducting a non-time-critical removal action for various facilities in the 300 Area were considered in the following documents:

- Facilities located in the north section of the 300 Area were addressed in the *Engineering Evaluation/Cost Analysis #1 for the 300 Area* (EE/CA) (DOE-RL 2004b), which included approximately 70 facilities.

- Alternatives for the 324 and 327 facilities, and their associated ancillary structures, were addressed in the *Engineering Evaluation/Cost Analysis #2 for the 300 Area* (DOE-RL 2006c). Implementation of the associated removal action was addressed in the *Removal Action Work Plan #2 for the 324/327 Buildings and Ancillary Facilities* (DOE-RL 2006e), which will be considered obsolete upon EPA approval of this work plan as the facilities and their associated requirements have been incorporated into this removal action work plan.

[1] The term "facility" is used generically to encompass all the contaminated and potentially contaminated surface and subsurface structures, buildings, foundations, aboveground utilities, fencing, piping, ducting, etc., associated with the buildings listed in Table 1-1.

[2] "Hazardous substances" means those substances defined by the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA), Section 101(14), and include both radioactive and chemical substances.

[3] "Remove" or "removal" as defined by CERCLA, Section 101(23), refers to the cleanup or removal of released hazardous substances from the environment; actions if a threat of release of hazardous substances occur; actions to monitor, assess, and evaluate the release (or threat of release) of hazardous substances; the disposal of removed material; or other actions that may be necessary to prevent, minimize, or mitigate damage to public health or welfare or to the environment, which may otherwise result from a release or threat of release. If a planning period of at least 6 months exists before onsite actions must be initiated, the removal action is considered non-time-critical and an engineering evaluation/cost analysis (EE/CA) is conducted.

- The *Engineering Evaluation/Cost Analysis #3 for the 300 Area* (DOE-RL 2006d) addressed the remaining facilities (approximately 145 buildings and structures) in the 300 Area. The EE/CAs resulted in the recommendation for performing D4 of the facilities (Table 1-1) in the 300 Area (Figure 1-2)[4]. The recommendation was approved as a non-time-critical removal action in three action memoranda (DOE-RL 2005b, 2006a, 2006b) signed by EPA and DOE. The DOE is the agency responsible for implementing the removal actions in the 300 Area. The EPA is the lead regulatory agency for facilities in the 300 Area. This RAWP directs the implementation of the three non-time-critical removal actions (DOE-RL 2005b, 2006a, 2006b).

The 300 Area NPL site is subdivided into three operable units (OUs) to address cleanup of the soil and groundwater contamination that resulted from past operations. The 300-FF-1 and 300-FF-2 OUs address contamination at liquid disposal sites, burial grounds, and soil waste sites. The 300-FF-5 OU addresses groundwater contamination beneath the burial grounds and soil waste sites that are addressed by the 300-FF-1 and 300-FF-2 Records of Decision.

1.1 PURPOSE AND OBJECTIVE OF THE REMOVAL ACTION WORK PLAN

The purpose of this RAWP is to establish the methods and activities required to perform the following functions:

- Complete D4 of facilities (e.g., building contents, aboveground structures, on-grade floor slabs, and the below-grade foundations and piping) addressed within the EE/CAs (DOE-RL 2004b, 2006c, 2006d)

- Manage and dispose of all waste generated during these actions.

This RAWP satisfies the requirement to submit a work plan outlining how compliance with the removal action objectives and applicable or relevant and appropriate requirements (ARARs) (see Section 4.1) will be achieved. This RAWP was prepared in accordance with Section 7.2.4 of the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) (Ecology et al. 1989).

This RAWP directs the removal action activities including the development of specific project tasks that are described in work packages and subcontract task orders. Using the most recent information concerning facility conditions, field-level work packages will be developed to direct work activities and instruct workers in the most applicable work methods. Work packages will be written in accordance with, and do not supersede, the requirements outlined in this RAWP. Existing contractor procedures and specifically developed instructions will be used to perform and control the facility removal and disposal actions.

[4] Table 1-1 includes facility additions that have been made since the action memorandum was approved.

Figure 1-1. Hanford Site Map.

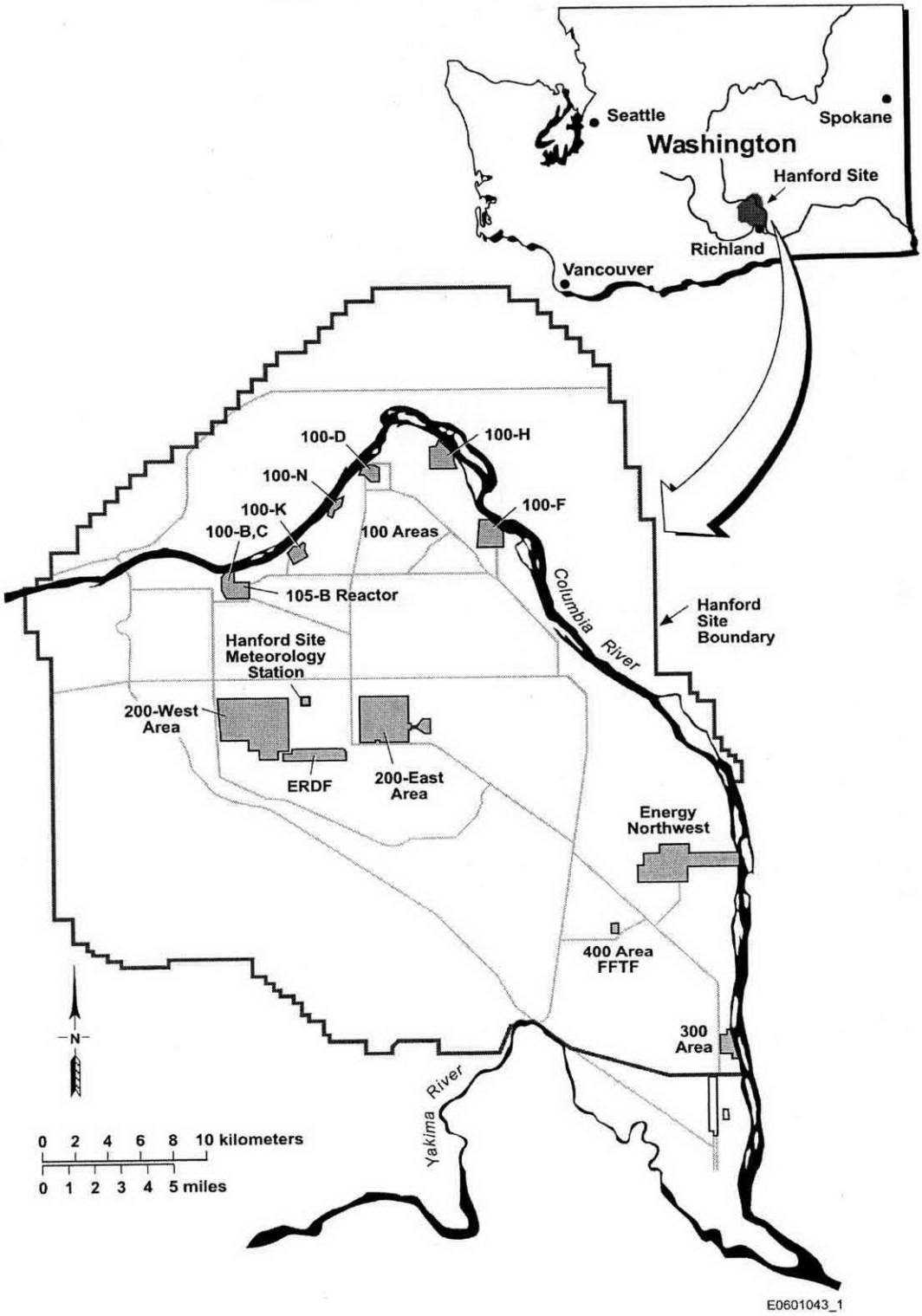

Table 1-1. Status of 300 Area Facilities Addressed Under this Removal Action Work Plan. (12 Pages)

Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Removal Action Authority[a]	Building Status
303A	Storage Building	300-15, 300-16, 300-24, 300-28, 300-43	Action Memorandum #1	Demolished February 2006
303B	Storage Building	300-15, 300-28, 300-43, 300-48, 300-251	Action Memorandum #1	Demolished April 2006
303C	Material Evaluation Laboratory	300-28, 300-48	Action Memorandum #1	Demolished July 2006
303E	Storage Building	N/A	Action Memorandum #1	Demolished March 2006
303F	Pumphouse	300-224, 313 ESSP, 300-219, UPR-300-39, UPR-300-40, UPR-300-45, 300-28	Action Memorandum #1	Demolished April 2006
303G	Storage Building	300-224, 300-219, UPR-300-39, UPR-300-40, UPR-300-45	Action Memorandum #1	Demolished February 2006
303J	Material Storage Building	300-15	Action Memorandum #1	Demolished March 2006
303K	Waste and Material Storage		DOE Authority	Demolished 2001
303M	Uranium Oxide Facility	300-259, 303-M SA, 333 ESHWSA, 303-M UOF, 618-1	Action Memorandum #1	Demolished March 2006
304	Uranium Concretion Facility	300-15, 300-28, 300-43, 300-251, 300-249	Action Memorandum #1	Demolished February 2006
304A	Uranium Concretion Change Room	300-15, 300-28, 300-43, 300-251, 300-249	Action Memorandum #1	Demolished February 2006
305	Engineering Testing Facility, Former Test Pile	300-4, 300-15, 300-29, 300-260	Action Memorandum #1	Demolished September 2006
305A	Storage Facility, Former Electrician and Pipefitter Shop		DOE Authority	Demolished December 2004
305B	Hazardous Waste Storage Facility/Engineering Development Laboratory Annex	300-15, 300-16, 300-29	Action Memorandum #1	Demolished September 2006
305BA	Boiler Annex	N/A	Action Memorandum #1	Demolished September 2006

Table 1-1. Status of 300 Area Facilities Addressed Under this Removal Action Work Plan. (12 Pages)

Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Removal Action Authority[a]	Building Status
305P	Engineering Testing Support Building		DOE Authority	Removed between 2001 and 2004
306E	Development, Fabrication, and Test Laboratory (includes 306E Neutralization Tank)	300-258, 300-33, 300-256, 300-42	Action Memorandum #1	Demolished January 2006
306EBA	Boiler Annex	300-256	Action Memorandum #1	Demolished October 2007
306W	Material Development Laboratory	300-15, 300-224, 300-33, 300-256, 300-42	Action Memorandum #1	Demolished October 2007
307	Retention Basins	340 Complex, UPR-300-1, 300-15	Action Memorandum #3	Active
308	Fuels Development Laboratory	300-15	Action Memorandum #3	Inactive
308A	Fuels Development Laboratory	N/A	Action Memorandum #3	Inactive
309	Plutonium Recycle Test Reactor (PRTR)	UPR-300-5, 300-22, 300-255, 300-15	Action Memorandum #3	Inactive
310	Treated Effluent Disposal Facility (TEDF)	600-117	Action Memorandum #3	Active
310S	Drum Storage Area	600-117	Action Memorandum #3	Active
310T1	Equalization Tank T1	600-117	Action Memorandum #3	Active
310T1A	Equalization Tank T1A	600-117	Action Memorandum #3	Active
310T2	Diversion Tank T2	600-117	Action Memorandum #3	Active
310T3	Diversion Tank T3	600-117	Action Memorandum #3	Active
310T7A	Clarifier T7A	600-117	Action Memorandum #3	Active
310T7B	Clarifier T7B	600-117	Action Memorandum #3	Active
310V	Valve Vault	600-117	Action Memorandum #3	Active
311TF	Tank Farm	300-224, UPR-300-39, UPR-300-40, UPR-300-45	Action Memorandum #1	Demolished February 2006

Table 1-1. Status of 300 Area Facilities Addressed Under this Removal Action Work Plan. (12 Pages)

Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Removal Action Authority[a]	Building Status
3128	Gas Bottle Dock	N/A	Action Memorandum #3	Inactive
313[b]	Former Fuels Manufacturing Building	300-15, 300-24, 300-28, 300-224, 300-251, 300-260, 313 ESSP, UPR-300-38, 300-270	Action Memorandum #1	Demolished May 2005
314[b]	Research and Craft Facility, Former Engineering Development Laboratory	300-15, 300-16, 300-24, 300-251, 300-260, 300-80, 300-218	Action Memorandum #1	Demolished February 2006
314B[b]	Stress Rupture Test Facility for 314 Fuel Fabrication Operations	300-15, 300-16, 300-24, 300-251, 300-260, 300-80, 300-218	Action Memorandum #1	Demolished December 2005
315	Filter Water Plant Building	300-15	Action Memorandum #3	Inactive
315A	Backwash Disposal Pond	N/A	Action Memorandum #3	Inactive
315B	Chlorine Storage Facility	N/A	Action Memorandum #3	Inactive
315C	Backwash Lift Station and Sedimentation Pond	N/A	Action Memorandum #3	Inactive
315D	Backwash Recycle Pump Station	N/A	Action Memorandum #3	Inactive
320	Physical Sciences Laboratory	300-15	Action Memorandum #3	Active
320-BA	320 Boiler Annex	300-15	Action Memorandum #3	Active
321	Hydromechanical/Seismic Facility	UPR-300-4, 300-15	Action Memorandum #3	Active
321B	Model Heat Loop	UPR-300-4, 300-15	Action Memorandum #3	Inactive
321C	Core Pump Shelter	UPR-300-4, 300-15	Action Memorandum #3	Inactive
321D	Seismic Testing Facility	UPR-300-4, 300-15	Action Memorandum #3	Inactive
3221[c]	Sandblasting Support Building		DOE Authority	Demolished May 2002
3222[c]	Storage Building		DOE Authority	Demolished May 2002
3223[c]	Storage Building		DOE Authority	Demolished May 2002
3224[c]	Storage Building		DOE Authority	Demolished May 2002
3225[c]	Bottle Dock	N/A	Action Memorandum #1	Demolished December 2005

Table 1-1. Status of 300 Area Facilities Addressed Under this Removal Action Work Plan. (12 Pages)

Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Removal Action Authority[a]	Building Status
3228[c]	Craft Lunchroom		DOE Authority	Demolished May 2002
3229	Deactivated Former Storage Building		DOE Authority	Demolished November 2004
323	Mechanical Properties Laboratory	UPR-300-4	Action Memorandum #3	Inactive
3231	Electrician Shop		DOE Authority	Demolished 2004
3232	Storage Building		DOE Authority	Demolished 2004
3234[c]	Storage Building		DOE Authority	Removed from the 300 Area
323-BA	323 Boiler Annex	UPR-300-4	Action Memorandum #3	Active
324	Chemical Engineering Laboratory (Waste Technology Engineering Lab)	300 RLWS, 300 RRLWS, 300-15, 300-93, 300-94, 300-263, 300-265, 300-25	Action Memorandum #2	Active
324A	Chemical Engineering Building	300 RLWS, 300 RRLWS, 300-15, 300-93, 300-94, 300-263, 300-265, 300-25	Action Memorandum #2	Active
324B	Chemical Engineering Laboratory Exhaust Stack	300 RLWS, 300 RRLWS, 300-15, 300-93, 300-94, 300-263, 300-265, 300-25	Action Memorandum #2	Active
324C	Experimental Lithium Enclosure	300 RLWS, 300 RRLWS, 300-15, 300-93, 300-94, 300-263, 300-265, 300-25	Action Memorandum #2	Active
324D	Stack Sampling Facility	300 RLWS, 300 RRLWS, 300-15, 300-93, 300-94, 300-263, 300-265, 300-25	Action Memorandum #2	Active
324S	Wet Storage Basin	300 RLWS, 300 RRLWS, 300-15, 300-93, 300-94, 300-263, 300-265, 300-25	Action Memorandum #2	Active
324-BA	324 Boiler Annex	N/A	Action Memorandum #2	Active

Table 1-1. Status of 300 Area Facilities Addressed Under this Removal Action Work Plan. (12 Pages)

Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Removal Action Authority[a]	Building Status
326	Material Science Laboratory	300-15	Action Memorandum #3	Active
326-BA	326 Boiler Annex	N/A	Action Memorandum #3	Active
327	Post-Irradiation Test Laboratory	300 RLWS, 300 RRLWS, 300-15, 300-214, 300-264	Action Memorandum #2	Active
327 Stack	327 Stack		Action Memorandum #2	Active
327-BA	327 Boiler Annex	N/A	Action Memorandum #3	Active
328	Engineering Services and Safety Building	300-15	Action Memorandum #3	Demolished November 2007
328A	Sheet Metal Shop	N/A	Action Memorandum #3	Demolished October 2007
328-BA	328 Boiler Annex	N/A	Action Memorandum #3	Demolished November 2007
329	Chemical Sciences Laboratory	300-15, 300 RLWS	Action Memorandum #3	Active
331C[d]	Storage Facility	N/A	Action Memorandum #3	Active
331D[d]	Biomagnetic Effects Laboratory	N/A	Action Memorandum #3	Active
331G[d]	Interim Tissue Repository	N/A	Action Memorandum #3	Active
331H[d]	Aerosol Wind Tunnel Research Facility	N/A	Action Memorandum #3	Active
332	Packaging Test Facility	618-1	Action Memorandum #3	Inactive
333	N Fuels Building (includes 333 West Tank Farm)	300-224, 300-32, 300-219, UPR-300-17, UPR-300-46, 618-1, 300-109, 300-110, 333 WSTF, 300-259, 303-M SA, 333 ESHWSA, 303-M UOF	Action Memorandum #1	Demolished September 2006
334[b]	Process Sewer Monitor Facility 300	300-224, 300-219, 300-258, 300-259, 618-1, 300-258, 300-110	Action Memorandum #1	Demolished December 2005
334A[b]	Waste Acid Storage Building	300-224, 300-219, 300-259, 618-1, 300-110	Action Memorandum #1	Demolished December 2005
335	Sodium Test Facility	300-15	Action Memorandum #3	Inactive

Table 1-1. Status of 300 Area Facilities Addressed Under this Removal Action Work Plan. (12 Pages)

Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Removal Action Authority[a]	Building Status
336	High-Bay Testing Facility	300-15	Action Memorandum #3	Active
337	Technical Management Center	300-15	Action Memorandum #3	Inactive
337B	High-Bay and Service Wing	N/A	Action Memorandum #3	Inactive
337-BA	337 Boiler Annex	N/A	Action Memorandum #3	Active
338	Maintenance Building	300-15	Action Memorandum #3	Active
340	Waste Neutralization Facility Structure	340 Complex, UPR-300-2, UPR-300-11	Action Memorandum #3	Active
340A	Waste Retention Building	340 Complex, UPR-300-2, UPR-300-11	Action Memorandum #3	Active
340B	Waste Loadout Building	340 Complex	Action Memorandum #3	Active
342	Collection Sump 1 – 300 Area TEDF Sewer Line	N/A	Action Memorandum #3	Active
342A	Instrument/Electrical Building Shop – TEDF	N/A	Action Memorandum #3	Active
342B	Transformer Pad/Vault – TEDF	N/A	Action Memorandum #3	Active
342C	Generator Pad – TEDF Sump	N/A	Action Memorandum #3	Active
3503A	Electrical Cable Pit No. 2	N/A	Action Memorandum #1	Active
3503B	Electrical Cable Pit	N/A	Action Memorandum #3	Active
3506A	Powerhouse Maintenance Shop	N/A	Action Memorandum #3	Slab removal remaining
3506B	Maintenance Shop	300-15	Action Memorandum #3	Slab removal remaining
3508T2	Siren northeast of California and Apple Streets	N/A	Action Memorandum #1	Active
352E	Switch Station East Side	N/A	Action Memorandum #3	Active
352F	Electrical Switch House, 2.4 kV	N/A	Action Memorandum #3	Active
3605	Fences, Power Poles, Guard Shacks, and other unnumbered aboveground structures/items	N/A	Action Memorandum #3	

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Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Removal Action Authority[a]	Building Status
3621-66	Petroleum Tank (Diesel) Replaces Tanks 3621-D	N/A	Action Memorandum #3	Inactive
3621BC	Emergency Generator Building	N/A	Action Memorandum #3	Inactive
3621D	Emergency Generator Building and Shop	N/A	Action Memorandum #3	Inactive
366A	Underground Fuel Oil Bunker		DOE Authority	Removed April 2000
3701A[c]	Guard House, west gate (Apple Street)		DOE Authority	Demolished
3701D	Office Building (slab and below-grade structure)	UPR-300-4	Action Memorandum #3	Slab and below-grade structure removal remaining
3701U	Security Office Building	N/A	Action Memorandum #3	Slab removal remaining
3703A	Modular Offices		DOE Authority	Removed between 2001 and 2004
3704	Deactivated Former Insulators Storage Facility		DOE Authority	Demolished November 2004
3705	Photography Building	300-15	Action Memorandum #1	Demolished June 2006
3705BA	Boiler Annex	N/A	Action Memorandum #1	Inactive
3706/3706A[e]	Communications and Documentation Services	300-46	Action Memorandum #1	Demolished June 2007
3706BA	Boiler Annex	N/A	Action Memorandum #1	Inactive
3707B[c]	Power House Offices		DOE Authority	Demolished June 1996
3707D	Information Services Building	300-28	Action Memorandum #1	Demolished March 2006
3707E	Deactivated Construction Storage Facility		DOE Authority	Demolished November 2004
3707F	Radiation Monitoring Building	N/A	Action Memorandum #3	Active
3707G	Changehouse		Action Memorandum #3	Demolished 2001

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Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Removal Action Authority[a]	Building Status
3707H	Changehouse	N/A	Action Memorandum #1	Demolished May 2007
3708[c]	Radioanalytical laboratory	300-15	Action Memorandum #1	Demolished July 2006
3709[f]	Paint Shop	300-15	Action Memorandum #3	Demolished May 2007
3710A[c]	Oil Storage Building		DOE Authority	Demolished November 2001
3711[c]	Maintenance Storage Building	N/A	Action Memorandum #1	Demolished April 2006
3712	Storage Building	300-40, 3712 USSA	Action Memorandum #1	Demolished January 2006
3713	Carpenter Shop	N/A	Action Memorandum #1	Demolished February 2006
3714	Soils Laboratory	300-175, 300-15	Action Memorandum #3	Inactive
3715	Spare Parts Warehouse	N/A	Action Memorandum #1	Demolished February 2006
3716	Storage Building	UPR-300-17	Action Memorandum #1	Demolished January 2006
3717[c]	Spare Parts Warehouse	300-15	Action Memorandum #1	Demolished June 2006
3717B[c]	South Maintenance Facility	300-15	Action Memorandum #1	Demolished June 2006
3717C	Materials Archive Building	N/A	Action Memorandum #3	Inactive
3718	Office and Storage Building	N/A	Action Memorandum #3	Active
3718A	Laboratory Equipment Central Pool Building	N/A	Action Memorandum #3	Inactive
3718B	Laboratory Equipment Central Pool Building	N/A	Action Memorandum #3	Inactive
3718C	Storage Building	N/A	Action Memorandum #3	Inactive
3718E	Storage Building		Action Memorandum #2	Inactive
3718G	Storage Building		Action Memorandum #2	Active
3718M	Sodium Storage Facility	N/A	Action Memorandum #3	Inactive
3718N	Insulation Shop	N/A	Action Memorandum #3	Inactive
3718O[c]	HEPA Filter Storage		DOE Authority	Demolished

Table 1-1. Status of 300 Area Facilities Addressed Under this Removal Action Work Plan. (12 Pages)

Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Removal Action Authority[a]	Building Status
3718P	General Storage	N/A	Action Memorandum #3	Active
3718S	General Storage	N/A	Action Memorandum #3	Inactive
3719	Computer Facility	N/A	Action Memorandum #1	Demolished May 2007
3720	Chemistry and Metal Sciences Laboratory	300-15	Action Memorandum #1	Demolished July 2007
3720BA	Boiler Annex	300-15	Action Memorandum #1	Demolished July 2007
3721	Classified Shredder Facility	N/A	Action Memorandum #3	Inactive
3722	Fabrication Shop (includes 3226 and 3227)	300-15	Action Memorandum #1	Demolished February 2006
3723	Solvent and Acid Storage Building		Action Memorandum #2	Active
3727	Classified Vault	316-3	Action Memorandum #3	Inactive
3728	Geotechnical High-bay	N/A	Action Memorandum #3	Inactive
3730	Gamma Irradiation Facility	300-15	Action Memorandum #3	Active
3731	Laboratory Equipment Central Pool	N/A	Action Memorandum #1	Demolished May 2007
3731A	Graphite Machine Shop	N/A	Action Memorandum #1	Demolished May 2007
3732	Storage Building		DOE Authority	Demolished September 1996
3734A[c]	Paint Storage Building		DOE Authority	Demolished November 2001
3745	Radiological Calibration and Standards	300-15	Action Memorandum #3	Inactive
3745A	Van deGraff Electron Accelerator	300-15	Action Memorandum #3	Demolished May 2007
3745B	Van deGraff Positive Ion Accelerator	300-15	Action Memorandum #3	Demolished May 2007
3746[f]	Irradiation Physics Building	N/A	Action Memorandum #3	Inactive
3746A[f]	Radiological Physics Building	N/A	Action Memorandum #3	Inactive
3746D[c]	Technical Service Annex	N/A	Action Memorandum #1	Demolished April 2006
3760	Hanford Technical Library	N/A	Action Memorandum #3	Active

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Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Removal Action Authority[a]	Building Status
3762[g]	Technical Security (remaining slab and below-grade structure)	N/A	Action Memorandum #3	Slab removal
3763	Office Building	N/A	Action Memorandum #3	Slab removal
3764	Office Building (remaining slab and below-grade structure)	N/A	Action Memorandum #3	Slab removal
3766	Office Building	300-2	Action Memorandum #3	Inactive
3768	Office Building (remaining slab and below-grade structure)	N/A	Action Memorandum #3	Slab removal
3769	Office Building (remaining slab and below-grade structure)	N/A	Action Memorandum #3	Slab removal
377	Former Geotechnical Engineering Laboratory	N/A	Action Memorandum #1	Demolished June 2006
3770[g]	Office Building (remaining slab and below-grade structure)	N/A		Slab removal
3790	Security Office Building	N/A	Action Memorandum #3	Active
3802A	Steam PRV Station	N/A	Action Memorandum #3	Active
382	Pump House Building	300-15	Action Memorandum #3	Active
382B	382B Fire Pump Station	N/A	Action Memorandum #3	Active
382-BA	382 Boiler Annex	N/A	Action Memorandum #3	Active
382C	Sanitary Water Storage Tank	N/A	Action Memorandum #3	Active
382D	Sanitary Water Storage Tank	N/A	Action Memorandum #3	Active
384	Powerhouse Building	UPR-300-42	Action Memorandum #1	Inactive
3902A[c]	West 75,000-gallon Elevated Water Tank		DOE Authority	Demolished
3902B[c]	East 100,000-gallon Elevated Water Tank		DOE Authority	Demolished September 2002

Table 1-1. Status of 300 Area Facilities Addressed Under this Removal Action Work Plan. (12 Pages)

Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Removal Action Authority[a]	Building Status
3906	Sanitary and Process Lift Station	300-15	Action Memorandum #3	Active
3906A	Sanitary Sewer Lift Station #1	N/A	Action Memorandum #3	Active
3906B	Sanitary Sewer Lift Station #2	300-15	Action Memorandum #3	Active
3906C	Sanitary Sewer Sample Station	N/A	Action Memorandum #3	Active
Misc.	Miscellaneous Conex box storage, modular buildings such as "HS" designated structures, unnumbered aboveground structures/items, laydown areas and yard storage areas, slabs and/or foundations for previously demolished structures	N/A	Action Memorandum #3	
MO-026[h]	Mobile Office	N/A	Action Memorandum #1	Demolished June 2006
MO-036	Mobile Office	340 Complex	Action Memorandum #3	Inactive
MO-052[e,c]	Mobile Office	618-1	Action Memorandum #1	Demolished December 2005
MO-059	Mobile Office	N/A	Action Memorandum #3	Inactive
MO-258	Mobile Office	N/A	Action Memorandum #3	Active
MO-262	Mobile Office	N/A	Action Memorandum #3	Active
MO-263	Mobile Office	N/A	Action Memorandum #3	Active
MO-265[f]	Mobile Office	N/A	Action Memorandum #3	Active
MO-270	Mobile Office	N/A	Action Memorandum #3	Inactive
MO-271	Mobile Office	N/A	Action Memorandum #3	Inactive
MO-274	Mobile Office	N/A	Action Memorandum #3	Inactive
MO-275	Mobile Office	N/A	Action Memorandum #3	Inactive
MO-391	Mobile Office	N/A	Action Memorandum #3	Inactive
MO-423[f]	Mobile Office	N/A	Action Memorandum #3	Inactive

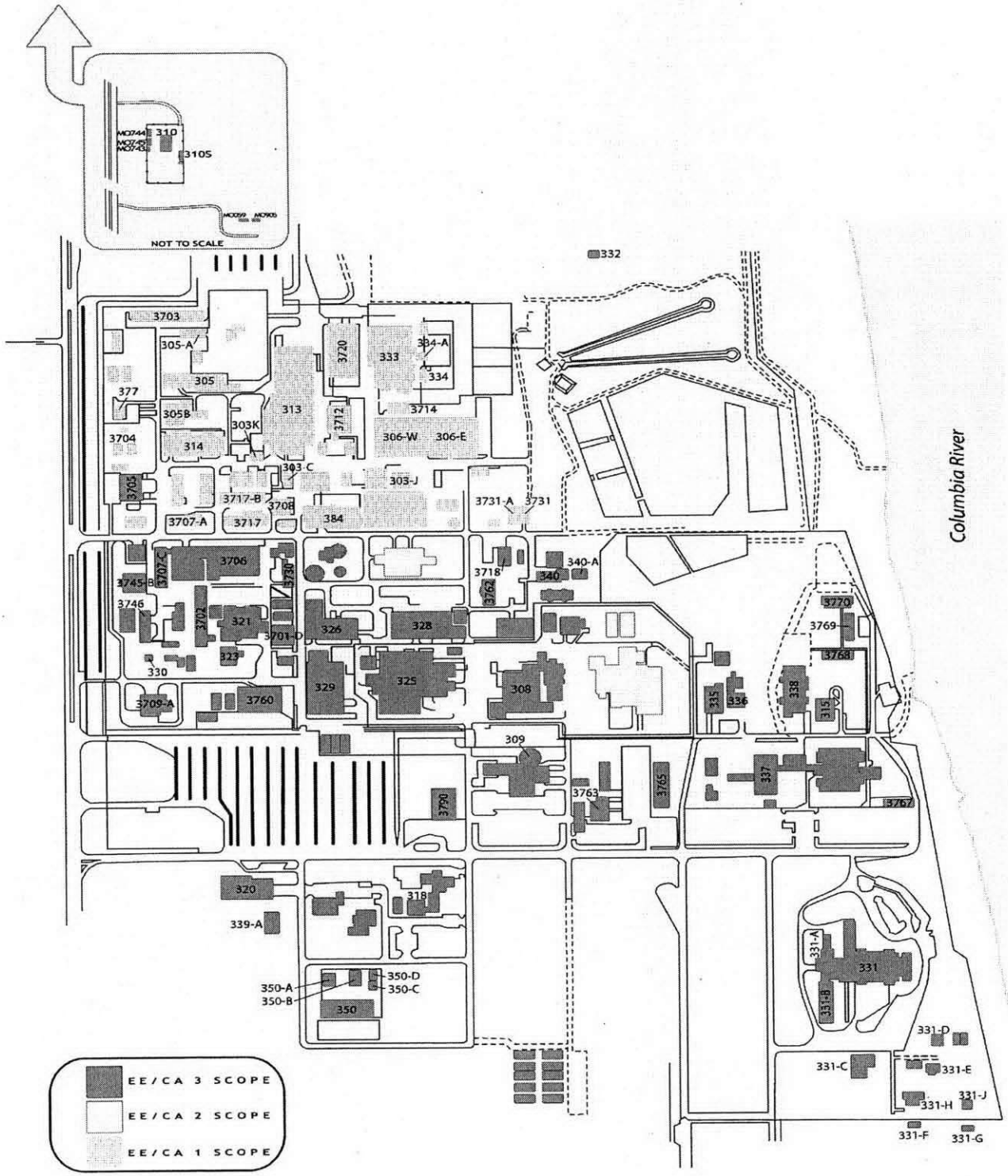
Table 1-1. Status of 300 Area Facilities Addressed Under this Removal Action Work Plan. (12 Pages)

Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Removal Action Authority[a]	Building Status
MO-443	Mobile Office at TEDF	N/A	Action Memorandum #3	Active
MO-741	Mobile Office	N/A	Action Memorandum #3	Active
MO-744	Mobile Office at TEDF	N/A	Action Memorandum #3	Active
MO-745	Mobile Office at TEDF	N/A	Action Memorandum #3	Active
MO-905	Mobile Office	N/A	Action Memorandum #3	Demolished July 2007

[a] Demolition of facilities may be performed under DOE removal action authority if found to be free of CERCLA hazardous constituents
[b] Below-grade structures deferred.
[c] Below-grade structures removed.
[d] Facilities approved for inclusion under the removal action with issuance or Revision 2 of the RAWP. Additionally, the following facilities were excluded from the removal action: 351A, 351B, and 3614A.
[e] Facilities approved for inclusion under the removal action in September 2005 Unit Manager Meeting.
[f] Facilities are being used to support CERCLA activities.
[g] Foundations are included into the scope of the removal action upon EPA approval of this RAWP.
[h] Facility approved for inclusion under the removal action in June 2006 Unit Manager Meeting.

CERCLA = *Comprehensive Environmental Response, Compensation, and Liability Act*
D4 = deactivation, decontamination, decommissioning, and demolition
DOE = U.S. Department of Energy
EPA = U.S. Environmental Protection Agency
ESHWSA = Exploratory Shaft Hazardous Waste Storage Area
ESSP = east side storage pad
HEPA = high-efficiency particulate air (filter)
N/A = not applicable
RAWP = removal action work plan
RLWS = radioactive liquid waste sewer
RRLWS = Retired Radioactive Liquid Waste Sewer
SA = storage area
TEDF = Treated Effluent Disposal Facility
UOF = uranium oxide facility
UPR = unplanned release
USSA = uranium scrap storage
WIDS = Waste Information Data System
WSTF = west side tank farm

Figure 1-2. Portion of the 300 Area Addressed by this Removal Action Work Plan.



Removal actions will be performed on a schedule that ensures that demolition of the 300 Area facilities is completed by September 30, 2015, in accordance with Tri-Party Agreement Milestone M-94-00. Interim milestones were also established to track the progress in meeting Milestone M-94-00. A listing of these milestones is provided in Table 1-2.

Table 1-2. Summary of Relevant Tri-Party Agreement Milestones. (2 Pages)

Milestone	Description	Due Date
M-94-00	Complete disposition of 300 Area surplus facilities to be defined as the 220 facilities listed in the Hanford River Corridor Closure Contract Solicitation #DE-RP06-04RL14655. Completion of facility disposition is defined as the completion of deactivation, decontamination, decommissioning, and demolition and obtains EPA and/or Ecology approval of the appropriate project closeout documents. The cleanup of 300-FF-2 waste sites associated with 300 Area surplus facilities will be performed in accordance with Tri-Party Agreement Major Milestone M-16-00B.	9/30/2015
M-094-01	Submit a schedule and Tri-Party Agreement milestones to complete disposition of the surplus facilities in the 300 Area. The milestone deliverable shall include at least (1) a schedule for submittals of EE/CAs, removal action memoranda, removal action work plans, closure/post-closure plans, and other documents that require EPA and/or Ecology approval; (2) a schedule that defines initiation and completion dates for the disposition of groups of surplus facilities and associated waste sites; and (3) a Tri-Party Agreement change package that includes milestones for groups of surplus facilities and associated waste sites that will ensure completion of M-094-00. These schedules shall be included (and updated as appropriate) in 300 Area removal action work plans submitted for EPA and/or Ecology approval and will be aligned with the associated schedules required by Milestone M-016-63.	12/31/2005 (milestone completed December 2005)
M-094-03	Complete disposition of the following surplus facilities: 303M, 332, 333, 334, 334A, 3221, 3222, 3223, 3224, 3225, 324, 324B, and 327.	9/30/2010
M-094-05	Complete deactivation, decontamination, decommissioning and demolition (D4) of the 313 and 314 Facilities. Foundations, subsurface structures, and/or soil contamination can be deferred to a comprehensive remedial action program, but waste sites will be established in the interim to track this cleanup commitment.	9/30/2006 (milestone completed February 2006)
M-094-06	Complete the selected removal and/or remedial actions that are scheduled for 3 of the following 19 high-priority facilities: 305B, 306E, 306W, 307 Retention Basins; 308, 309, 321, 323, 324, 324B, 325, 326, 327, 329, 333, 340, 3706, 307 Trenches; and 3720; **to include the 333 Facility**. The 307 Trench (also known as the 316-3 waste site) is a candidate waste site. Completion of this milestone commitment for the 307 Trench includes the necessary characterization to determine if further remediation is necessary and will be met when the sampling results have been accepted by EPA. The selected removal action for the other 18 facilities listed is or is expected to be completion of D4 of the facility. In accordance with approved work plans, foundation, subsurface structures, and/or soil contamination can be deferred to a comprehensive remedial action program, but waste sites will be established in the interim to track this cleanup commitment.	6/30/2008

Table 1-2. Summary of Relevant Tri-Party Agreement Milestones. (2 Pages)

Milestone	Description	Due Date
M-094-07	Complete the selected removal and/or remedial actions that are scheduled for 3 of the following 19 high-priority facilities: 305B, 306E, 306W, 307 Retention Basins; 308, 309, 321, 323, 324, 324B, 325, 326, 327, 329, 333, 340, 3706, 307 Trenches; and 3720; **to include the 306E, 306W, 3720, and 305B Facilities.** The 307 Trench (also known as the 316-3 waste site) is a candidate waste site. Completion of this milestone commitment for the 307 Trench includes the necessary characterization to determine if further remediation is necessary and will be met when the sampling results have been accepted by EPA. The selected removal action for the other 18 facilities listed is or is expected to be completion of D4 of the facility. In accordance with approved work plans, foundation, subsurface structures, and/or soil contamination can be deferred to a comprehensive remedial action program, but waste sites will be established in the interim to track this cleanup commitment.	12/30/2009
M-094-08	Complete the selected removal and/or remedial actions that are scheduled for 3 of the following 19 high-priority facilities: 305B, 306E, 306W, 307 Retention Basins; 308, 309, 321, 323, 324, 324B, 325, 326, 327, 329, 333, 340, 3706, 307 Trenches; and 3720. The 307 Trench (also known as the 316-3 waste site) is a candidate waste site. Completion of this milestone commitment for the 307 Trench includes the necessary characterization to determine if further remediation is necessary and will be met when the sampling results have been accepted by EPA. The selected removal action for the other 18 facilities listed is or is expected to be completion of D4 of the facility. In accordance with approved work plans, foundation, subsurface structures, and/or soil contamination can be deferred to a comprehensive remedial action program, but waste sites will be established in the interim to track this cleanup commitment.	12/31/2011
M-094-09	Complete the selected removal and/or remedial actions that are scheduled for 3 of the following 19 high-priority facilities: 305B, 306E, 306W, 307 Retention Basins; 308, 309, 321, 323, 324, 324B, 325, 326, 327, 329, 333, 340, 3706, 307 Trenches; and 3720; **to include the 323 Facility and the 307 Trench.** The 307 Trench (also known as the 316-3 waste site) is a candidate waste site. Completion of this milestone commitment for the 307 Trench includes the necessary characterization to determine if further remediation is necessary and will be met when the sampling results have been accepted by EPA. The selected removal action for the other 18 facilities listed is or is expected to be completion of D4 of the facility. In accordance with approved work plans, foundation, subsurface structures, and/or soil contamination can be deferred to a comprehensive remedial action program, but waste sites will be established in the interim to track this cleanup commitment.	9/30/2013

D4 = deactivation, decontamination, decommissioning, and demolition
Ecology = Washington State Department of Ecology
EE/CA = engineering evaluation/cost analysis
EPA = U.S. Environmental Protection Agency

1.2 OBJECTIVES

The primary goal of CERCLA removal actions is to minimize or eliminate threats to public health or the environment caused by the presence of hazardous substances. The EE/CAs for the 300 Area facilities (DOE-RL 2004b, 2006c, 2006d) presented three alternatives for future facility management and the resulting levels of protection of public health and the environment that may be anticipated. Based on the evaluation, deactivation followed by decontamination, decommissioning, and demolition was the recommended alternative. This alternative was chosen based on its overall ability to protect human health and the environment and its effectiveness in maintaining protection for both the short term and the long term. The alternative would also reduce the potential for a release by reducing the inventory of contaminants available to the environment. This alternative provides the best balance of protecting human health and the environment, protecting workers, meeting the removal action objectives, achieving cost effectiveness, and providing an end state that is consistent with future cleanup actions and commitments to the Tri-Party Agreement (Ecology et al. 2003). The selection and approval of this approach are documented in the action memoranda (DOE-RL 2005b, 2006a, 2006b).

Based on the potential hazards identified in Section 1.4, the following removal action objectives have been identified:

- Protect human receptors from exposure to radiological and hazardous substances in facility structures above acceptable exposure levels for nonradiological general employees
- Control the release of radiological and hazardous substances from the facilities into the environment
- Facilitate remediation of 300 Area waste sites in accordance with the 300-FF-2 Record of Decision (EPA 2001)
- Achieve ARARs to the fullest extent practicable
- Safely treat, as appropriate, and dispose of waste streams generated by the removal action.

1.3 SCOPE

The 300 Area facilities addressed in the scope of this RAWP include all the facilities within the 300 Area industrial complex, excluding those where DOE has identified a long-term use for the facility[1]. Figure 1-2 illustrates the geographical boundaries of the removal action. The list of facilities that are addressed within this RAWP is provided in Table 1-1. It is recognized that the status of the 300 Area facilities will change over time. Changes could include, but are not limited to, modifying the status of facilities from active to inactive, adding scope to removal action that was previously missed or excluded, and changing the status of facilities from

[1] Approximately 30 facilities listed in EE/CA #3 for the 300 Area were excluded from Action Memorandum #3 for the 300 Area because a long-term use was identified for the buildings.

demolished to closed and/or transferred. Missed or excluded facilities cannot be added unless they are located in the same geographical area identified within the action memoranda (DOE-RL 2005b, 2006a, 2006b). Changes to Table 1-1 are agreed upon by the DOE and EPA and documented in the unit manager's meeting (UMM) minutes or equivalent. This RAWP will be revised and Table 1-1 updated as needed to incorporate the changes documented in the UMM minutes.

This revision of the RAWP includes all of the surplus facilities addressed in the EE/CAs (DOE-RL 2004b, 2006c, 2006d). Some of the facilities, as noted in Table 1-1, were demolished prior to implementing this removal action. Where below-grade structures remain, a decision may be made to remove the foundation while performing demolition at an adjacent facility. In other cases, the below-grade structures may remain in place until they are removed to provide access to 300-FF-2 OU waste sites. Or, if the remaining structure and underlying soils are determined to be clean, then no further action will be required.

It is possible that some of the facilities identified in this removal action could be found to be free of or contain de minimis levels of CERCLA hazardous substances. If this situation occurs, then the facilities would be addressed under DOE authority instead of being addressed under this removal action. Section 2.2.1 describes the process that will be used to ensure that facilities are being addressed under the appropriate authority.

1.4 FACILITY AND HAZARD DESCRIPTION

This section discusses the hazards in the 300 Area facilities included in this RAWP. The facilities addressed are limited to those facilities included in Table 1-1. At this time, not all of the facilities in this document have been fully characterized; therefore, CERCLA hazardous substances have not been conclusively identified in all of the facilities. Following characterization, the CERCLA hazardous substances will be known.

The hazardous substances will be managed in accordance with as low as reasonably achievable (ALARA) considerations, the applicable requirements provided in Section 4.1, and the waste management plan (Section 4.2) of this RAWP. Compliance with hazardous material protection requirements is ensured as described in the contractor's operating procedures.

1.4.1 Facility Descriptions

The descriptions of the facilities addressed under this plan have been extracted from the respective EE/CAs and are provided in Appendix A. Orphan, excluded, or otherwise unidentified facilities (e.g., foundations or subsurface structures) may be added to the scope of this removal action via UMM minutes, or equivalent, as identified in Section 1.3.

1.4.2 Radiological Hazards

Many of the 300 Area facilities are posted as radiologically controlled areas. In general, the primary contaminants of concern are the following radionuclides:

- Americium-241
- Cesium isotopes
- Cobalt-60
- Curium isotopes
- Europium isotopes
- Niobium-94
- Radium-226
- Selenium-79
- Strontium-90
- Plutonium isotopes
- Technetium-99
- Thorium isotopes
- Uranium isotopes.

Most of the radiological inventory has been removed from the 300 Area facilities. However, residual materials can be found in the facilities. In general, the source term of individual isotopes are not currently known, but will be determined as necessary for worker safety and to support disposal. For many other facilities it is not known at this time whether radiological contamination is present. Additional characterization will be required to document the radiological conditions in those facilities and to support disposal.

1.4.3 Chemical Hazards

The inactive 300 Area facilities have been deactivated and all bulk chemical inventories have been removed for recycling or disposal. Bulk chemicals should be removed from active buildings prior to initiating D4 activities. Some residual quantities of hazardous chemicals may remain in the process lines, tanks, and drains. Asbestos and lead are found in the greatest quantities and are located throughout the facilities. In addition, several other hazardous materials remain in the 300 Area facilities, including the following:

- Asbestos
- Cadmium
- Beryllium
- Lead
- Polychlorinated biphenyls (PCBs)
- Mercury (in electrical switches)
- Refrigerants (Freon®)
- Lubricants

® Freon is a registered trademark of E. I. duPont de Nemours & Company.

- Commercial solvents
- Corrosives
- High-efficiency particulate air (HEPA) filter media (desiccants)
- Sodium vapor and mercury vapor lighting
- Biological hazards from animal intrusion in facilities
- Chemicals (old containers of residual chemical constituents).

The removal of these materials will be performed in accordance with contractor procedures that ensure control over hazardous substances. The contractor's standards and procedures for asbestos and lead ensure that personnel removing, handling, and disposing of waste performed in a manner that achieves the following objectives:

- Protect the safety of employees and the general public
- Minimize spills and releases to the environment
- Meet applicable DOE, federal, state, and local regulatory requirements.

1.4.3.1 Asbestos. Asbestos-containing material (ACM) is found in and around the 300 Area facilities. Unnecessary disturbance of vessel or piping insulation, loose floor tiles, transite wall coverings or panels, sheetrock, electrical wire insulation, ducting, or other suspect ACM must be avoided. Personnel involved in asbestos cleanup will follow the applicable requirements of 29 *Code of Federal Regulations* (CFR) 1926.1101, "Asbestos." Task-specific requirements will be contained within the associated work package.

1.4.3.2 Cadmium. Cadmium is a byproduct of the metal finishing process. Cadmium could also be present in electrical equipment. At certain levels, cadmium is regulated as a hazardous waste. Waste containing cadmium above regulatory limits will require treatment prior to disposal.

1.4.3.3 Beryllium. Beryllium contamination is present in many of the facilities addressed under this removal action. Although beryllium is not regulated as a hazardous waste, there are health and safety requirements that must be addressed when working with beryllium-contaminated structures.

1.4.3.4 Lead. Lead may exist in surface coatings (e.g., lead-based paint, lead-shielded cables), plumbing, and as radiological shielding (e.g., lead shot, brick, sheet, and cast-lead forms) inside some of the 300 Area facilities. Personnel must exercise caution to avoid disturbing or contacting lead or suspect lead material. Workers performing job tasks that involve lead shall follow the applicable requirements in the contractor's procedures and the associated work package.

1.4.3.5 PCBs. PCBs may be found in the painted surfaces of facilities and in the waste oils generated during facility decontamination and deactivation. Material that is painted and for which the paint contains PCBs will be managed as "PCB Bulk Product Waste."

1.4.3.6 Mercury. Mercury could be present in electrical equipment. At certain levels, mercury is regulated as a dangerous waste. Waste containing mercury above regulatory limits will require treatment prior to disposal. The expectation is that most (if not all) mercury waste will be treated within the boundary of the removal action.

1.4.3.7 Refrigerants. Refrigerants are regulated due to their effect on the ozone layer of the atmosphere. Refrigerants will be "recovered" prior to disposal of the equipment.

1.4.3.8 Lubricants. Lubricants sometimes contain hazardous substances. Equipment will be drained of lubricants to the extent practical prior to disposal.

1.4.3.9 Commercial Solvents. Commercial solvents may designate as a dangerous waste. Equipment will be drained of commercial solvents and may require treatment prior to disposal.

1.4.3.10 Corrosives. Corrosives may be present in facilities that have not been deactivated. In the State of Washington, corrosive solids and liquid waste above the regulatory limits must be managed, treated, and disposed of as a dangerous waste.

1.4.3.11 HEPA Filter Media. HEPA filter media may contain toxic metals above the regulatory limits. HEPA filters may need to be sampled prior to disposal to demonstrate whether (or not) they contain toxic metals above the regulatory limits.

1.4.3.12 Sodium Vapor and Mercury Vapor Lighting. Sodium vapor and mercury vapor lighting will be dispositioned through the Hanford Site Centralized Consolidated Recycling Center (CCRC) whenever possible. Sodium above a certain concentration is regulated within the State of Washington as a dangerous waste. Mercury above a certain concentration is regulated as a dangerous waste.

1.4.3.13 Biological Hazards. Biological hazards could be encountered in the facilities contained in this RAWP. Examples of biological hazards include bird and rodent carcasses and feces. Biological hazards will be identified as part of the surveillance and maintenance (S&M) and facility deactivation process.

1.4.3.14 Chemicals. Some bulk chemical inventories have been disposed or recycled during deactivation of many of the 300 Area facilities; however, the potential exists for the discovery of old containers of residual chemical constituents (e.g., solvents, greases, hydraulic and fuel oils, and aerosols).

2.0 REMOVAL ACTION ELEMENTS

The following sections provide a general description of how work activities will be performed to remove the 300 Area facilities. The general scope of work involved to implement this removal action includes the following activities:

- Surveillance and maintenance (S&M) activities
- Characterization sampling and analysis
- Site mobilization and preparation activities
- Facility deactivation, decontamination, and decommissioning
- Facility demolition
- Site completion
- Site stabilization
- Equipment decontamination
- Disposing of waste (including waste generated during S&M activities prior to D4)
- Demobilization.

2.1 SURVEILLANCE AND MAINTENANCE

The goal of the long-term S&M is to sustain a facility in a safe condition. S&M activities are applicable to facilities prior to demolition and may also apply to remaining structures and waste sites following demolition. The S&M measures include routine radiological and hazard monitoring of a facility, safety inspections, and maintenance activities necessary to keep the facility in a safe condition. The S&M activities are tailored to the specific conditions of the facility. Waste generated during this period shall be evaluated for disposal at the Environmental Restoration Disposal Facility (ERDF). Waste generated during the S&M period sometimes does not require or is not eligible for disposal at ERDF. Examples include, but are not limited to, "replacement in kind" items such as light bulbs or trash that do not contain CERCLA hazardous substances. It is expected that most waste generated during S&M activities will meet the acceptance criteria for ERDF.

2.2 CHARACTERIZATION SAMPLING AND ANALYSIS

Characterization is necessary to support waste disposal activities, to define contaminants present before or after the completion of the removal action, and in some cases to support site closure documentation.

Waste characterization documents produced to support this removal action include the development of the *Data Quality Objective Summary Report for D&D Waste Characterization of the 300 Area Buildings* (BHI 2004), which was used as an input to the waste characterization sampling and analysis plan (SAP) (DOE-RL 2005a). Waste characterization will be conducted prior to and during D4 activities for each facility, as needed. Facility-specific historical

information will be used to identify which waste streams are expected to be generated; the initial characterization data needs; and the rationale, strategy, and requirements for the data collection and analysis. Data collection may include survey and sample data. The initial characterization data will be used to:

- Characterize waste for treatment and/or disposal;
- Identify radiological and hazardous conditions that will be encountered during D4 of the facility; or
- Specify health and safety requirements.

In-process sampling will also be performed as necessary to characterize unexpected waste materials encountered during D4 of the facilities.

At this time, it is expected that most (if not all) of the characterization activities conducted to support waste site closure will be performed as part of the 300-FF-2 work. The documents needed to support sampling and final closure verification will not be produced as part of this removal action. Instead, the *300 Area Remedial Action Sampling and Analysis Plan* (300 Area SAP) (DOE-RL 2004a) and the *Remedial Design Report/Remedial Action Work Plan for the 300 Area* (RDR/RAWP) (DOE-RL 2004c) established under the 300-FF-2 work scope will be used in cases where it is appropriate to demonstrate that a waste site is below the desired cleanup levels. Final characterization sampling will be performed during site completion as described in Section 2.6.

2.2.1 Characterization for Potentially Contaminated Facilities

Some of the facilities listed in Table 1-1 are considered to be potentially contaminated. Prior to performing D4 of the facility, an evaluation of the following information will be performed:

- Facility history (e.g., what the building was used for, construction materials)
- Potential for radiological contamination from outside sources (e.g., biological intrusion)
- Radiological and industrial hygiene surveys performed in the facility
- Characterization data, as appropriate
- Criteria for disposal to an offsite disposal facility.

If this information shows that the facility is free of, or contains de minimis[1] levels of, CERCLA hazardous constituents, and meets the criteria for disposal to an offsite disposal facility, then the facility will be addressed under DOE authority. Changes in removal action authority will be approved by DOE and EPA and documented in the UMM minutes. The authority change will be identified in future updates to this RAWP.

[1] De minimis is not a CERCLA defined term, but is used to convey the notion that there are some items with very low levels of CERCLA hazardous substances where the CERCLA process does not apply.

2.3 SITE MOBILIZATION AND PREPARATION WORK

Upon initiation of D4 activities, personnel will be mobilized and required equipment and materials will be procured. The first activities to be performed will include mobilizing personnel and trailers to support project activities. Personnel will also terminate and/or verify termination of the 300 Area facilities services and utilities, as appropriate. Electrical systems that will be used throughout the D4 activities are discussed in further detail in Section 3.4.

Concurrent with these activities, waste storage areas will be set up within the building footprint area (BFA) (see Section 4.2.3.1) or within the onsite location outside the BFA to facilitate transportation of the material for recycling or disposal in accordance with this document. Supervisor trailers, lunch trailers, change trailers, office trailers, mobile shower trailers, and restroom facilities will also be mobilized as required at the sites to prepare for D4 activities. Temporary power will be connected from an outside line or generator, and temporary power and lighting will be installed, as needed. Occupational Safety and Health Administration (OSHA) concerns (e.g., fall protection, guarding, and electrical) will be managed as the concerns are identified.

2.4 DEACTIVATION, DECONTAMINATION, AND DECOMMISSIONING ACTIVITIES

In general, work activities will begin by developing a baseline of the facility conditions. Biological cleanup, general housekeeping, and removal of hazardous materials may also be necessary. Fluids will be drained from piping and equipment. Overhead utilities and adjacent concrete and asphalt will be removed, as needed, from the BFA to support demolition activities. Contaminated materials may be fixed in place. These activities will be managed in accordance with the contractor's procedures and work packages that address removing, handling, and disposing of these materials in a manner that protects the safety of employees and the general public, minimizes spills and releases to the environment, and meets all regulatory requirements.

Many of the facilities are suspected to contain beryllium contamination. Special controls will be necessary when working with beryllium-contaminated materials. Beryllium-contaminated materials will be managed in a manner that ensures worker protection. Prior to facility demolition, beryllium contamination may be fixed in place, as required.

Friable and nonfriable ACM and presumed ACM will be removed prior to demolition of the area, as appropriate. Unattached, not-in-use, and accessible lead bricks and sheeting; PCBs (primarily motor oils, and light ballasts); mercury (primarily in lighting components and switches); and other hazardous materials will be removed and disposed as hazardous or mixed waste or will be recycled. Guidelines for waste management are found in Section 4.2.

Most of the loose, accessible radiological contamination will either be removed or fixed in place, depending on the levels, accessibility, complex shapes (e.g., grating), and type of contamination found. Some of the equipment/piping will be removed, and loose contamination will be wiped or vacuumed with a HEPA filter-equipped vacuum. If loose contamination remains after the

initial decontamination effort (unless the area will be inaccessible after completion of the removal project, or if the building configuration or conditions make removal of loose contamination impractical), the contamination may be fixed in place, as required. Removal of fixed contamination (radiological or chemical) will generally be performed using nonaggressive means (e.g., wiping or using decontamination solutions). Aggressive means of decontamination (e.g., scabbling, grinding, or other abrasive/mechanical means) are planned to be used only as necessary.

Groundwater wells may be located near or within the footprint of the structures undergoing demolition. The groundwater wells may or may not be affected by the facility demolition. If required, the wells will be decommissioned prior to initiating facility demolition.

2.5 FACILITY DEMOLITION

The facilities will be demolished using standard demolition techniques (e.g., excavator with a hoe-ram, a hydraulic shear with steel shear jaws, concrete pulverizer jaws or breaker jaws, and/or controlled explosives). Water may be used to control dust generated from demolition activities. The amount of water used will be minimized to prevent ponding and runoff. Additional work practices/controls may need to be implemented to control runoff because the 300 Area is mostly covered by asphalt. Controls will be described in work controlling documents (e.g., work packages) and could include removing asphalt to allow water to infiltrate into the ground as well as establishing berms around the demolition area. Metals will be segregated for salvage if economically feasible and if meeting DOE criteria for free release from radiological controls. The above-grade structures of the facilities will be demolished and disposed.

How the below-grade structures are addressed will depend on the condition of the structures and if any soil contamination site may be affected by the D4 activities. The portions of the below-grade areas of the facilities that meet the cleanup criteria and that do not interfere with future remediation efforts may be left in place. Portions of the below-grade structures that are above cleanup levels will either be removed during facility demolition or deferred to the 300-FF-2 remedial action, as described in Sections 2.6 and 2.7, respectively.

2.6 SITE COMPLETION

Site completion will be pursued when there are no known waste sites underlying the building foundation, or when the waste site is small and is not expected to require extensive soil excavation. When pursuing facility completion, a Facility Status Change Form will be prepared to provide a summary of the completed actions, the as-left condition of the area, the characterization data collected during the removal action, and an assessment of the underlying soil. The form will be approved by DOE and EPA to document completion of the removal action. The form and instructions for completing the form are provided in Appendix D.

When there are no known waste sites underlying the building foundation, field investigation and a visual inspection will be performed to support facility completion. Field investigation results

will be reviewed to determine that no radiological contamination exists in the soil or remaining below-grade structures (if present). A visual inspection will be performed to confirm that there is no soil staining or anomalies present. Should the visual inspection identify anomalies in the soil, verification sampling will be performed in accordance with the 300 Area SAP (DOE-RL 2004a). After investigation/inspections indicate that no further remediation is necessary, the below-grade void spaces will be backfilled with clean soil. The area will be backfilled (approximately the top 0.6 to 1.0 m [2 to 3.3 ft]) to facilitate future revegetation of the site. The final grade of the site will match the surrounding terrain. Existing borrow pits will be used to obtain the backfill material.

When final closure of a 300-FF-2 waste site is pursued, verification samples will be collected and analyzed in accordance with the 300 Area SAP (DOE-RL 2004a). After verification sampling of the site indicates that cleanup levels for both soils and any remaining below-grade structures (if present) have been met, the below-grade void spaces will be backfilled with nonhazardous/nonrecyclable material (e.g., clean concrete rubble and/or soil). Approximately the top 0.6 to 1 m (2 to 3.3 ft) will be backfilled with clean soil to facilitate future revegetation of the site. The final grade of the site will match the surrounding terrain. Existing borrow pits will be used to obtain clean backfill material. Based on safety concerns and access issues during D4 activities, backfilling in and around the facilities may occur prior to the preparation of site closure documentation. Final waste site closeout documentation will be submitted in accordance with 300-FF-2 remedial action documents.

If in-process measurements or final characterization sampling indicates that the cleanup standards have not been met, an evaluation will be performed (e.g., location, site access, contaminants of concern) to determine how much, if any, of the site will be backfilled. If it is determined that cleanup actions must stop, the site will be stabilized in a manner that will not unduly hinder future remediation. Site completion will be coordinated with 300 Area remedial actions. Available characterization information for this area will document the status of conditions at the conclusion of this project. Determination of whether to proceed with waste site cleanup or to perform the work later under the remedial action will be approved by EPA. Safety concerns and access issues may necessitate backfilling in and around the facilities prior to the site being closed out. In this circumstance, the remaining contamination will be documented in the Waste Information Data System (WIDS) database so that the information is available when the waste site undergoes final remediation.

Other contaminated underground structures (including pipelines, pipe tunnels, and pipe trenches) may be exposed or affected by removing the below-grade ancillary facility structures. "Chasing" these other contaminated underground structures will be evaluated on a case-by-case basis to determine the practicality of removing the structure as part of this removal action work scope or deferring to a later remedial action.

In the event that large volumes of contaminated soil are encountered, other soil contamination sites are adversely affected by D4 activities, utilities of active facilities are impacted, or removal of contaminated soil inhibits D4 activities, the removal of contaminated soils may be accomplished under a future remedial action with concurrence of EPA. The sites will be stabilized in a manner that will not unduly hinder future remediation. Future cleanup efforts of

the facility (if necessary) or deferral of the removal action scope to later remedial action will be coordinated with and approved by EPA. Future cleanup efforts will occur at the same time that waste sites are addressed in the 300-FF-2 OU.

2.7 SITE STABILIZATION (IF CLOSURE IS NOT COMPLETED)

As described in the EE/CAs (DOE-RL 2004b, 2006c, 2006d), on a case-by-case basis, the facility slab or foundation may be left in place where the facilities are located above or adjacent to known or suspected 300-FF-2 OU waste sites. The D4 activities may leave at-grade or below-grade structures in place to accomplish one or more of the following objectives:

- Limit infiltration into an underlying waste site during the period between demolition and remedial action
- Minimize/reduce potential exposure to contaminants from an underlying waste site
- Avoid double-handling and potential cross-contamination of clean backfill material that would be excavated as part of the remedial action remedy
- Avoid negative impact on active 300 Area utilities (e.g., electrical, sewer, water) or on adjacent facilities or operations.

If the site does not meet the 300-FF-2 closure criteria following the facility demolition activity, the site will be stabilized in a manner that will mitigate industrial safety hazards and not unduly hinder future remediation. Stormwater run-on and/or run-off issues will be addressed. Characterization information for the area will be generated to document the status of conditions at the conclusion of D4. S&M requirements will be established for the site. The WIDS database will be updated to reflect the condition of the site following the D4 activity. Additional data may be included in deferral documents. The EPA will be provided documentation describing the environmental conditions at the end of the D4 activity.

Should the decision be made to leave at- or below-grade structures (listed in Table 1-1) in place, approval would be sought from the EPA and DOE. This approval will be documented in a Facility Status Change Form (Appendix D) to provide a summary of the completed actions, the as-left condition of the area, the characterization data collected during the removal action, and a justification for leaving the at- or below-grade structures.

2.8 EQUIPMENT DECONTAMINATION

Gross equipment decontamination methods will be employed to remove loose contamination within the contamination area. Best management practices (BMPs) for gross cleaning and/or decontamination of heavy equipment and vehicles consist of using wipes and nonhazardous materials to remove loose contamination. Wet grit blasting or grinding may be used if other methods are not effective. Decontamination that is necessary to allow removal of demolition

equipment from contamination areas will be accomplished using standard industry practices and BMPs. Water may be used to clean equipment in the contamination area; however, the use of water will be minimized. Soaps, detergents, or other cleaning agents will not be added to the wash water. Pressure washing (if required) will normally be performed using cold water; however, hot water may be used if needed. Steam cleaning may be used if other decontamination methods prove to be ineffective.

One or more areas will be established within the BFA or in the onsite area, at a location that may or may not have been previously contaminated, to conduct additional or final decontamination. Spent decontamination water and associated contamination from the decontamination of equipment (e.g., trackhoe excavators, front-end loaders) will be discharged to the ground within the decontamination area. EPA and RL will agree on a case-by-case basis whether (or not) a decontamination area shall be clean closed at the end of D4 activities or whether the final cleanup can be deferred to a later remedial action. Closeout of decontamination areas will be performed in accordance with the 300 Area SAP (DOE-RL 2004a) and the 300 Area RDR/RAWP (DOE-RL 2004c) prior to completion of 300 Area D4 activities.

Decontamination practices will be documented in the field superintendent's/work supervisor's (as appropriate) status log. Personnel responsible for equipment decontamination will be knowledgeable of the applicable requirements of this RAWP.

2.9 WASTE MANAGEMENT AND DISPOSAL

The D4 activities will be conducted within the footprint of a given facility (although staging may occur in an onsite location outside the 300 Area fence line); however, the size of the area needed to excavate soils and/or demolish structures will exceed the size of the footprint. It is important to note when waste is moved outside the BFA (except as noted above) because when waste leaves the BFA, the substantive requirements of the *Resource Conservation and Recovery Act of 1976* (RCRA) and *Washington Administrative Code* (WAC) 173-303 are applicable to any hazardous or dangerous waste.

Waste management will include both S&M activities conducted prior to D4 as well as wastes generated during D4. All waste management activities will be performed in accordance with waste management ARARs identified in the action memoranda for the 300 Area facilities (DOE-RL 2005b, 2006a, 2006b) and this RAWP. Certain materials are eligible for salvage and recycling, which is encouraged if the appropriate regulatory and project requirements are met and it is economically feasible for the project to do so. It is believed that nearly all the CERCLA waste from the removal action will be disposed at ERDF. Treatment of waste may be necessary prior to disposal at ERDF.

An interim step between load-out of the ERDF roll-off containers and disposal at ERDF is placement on the container in a queue. In most cases, the containers are in the queue for less than 24 hours. However, there is the potential for two additional waste streams to be generated while managing the waste. The first is water (e.g., from dust suppression or moisture in the air) found in an ERDF roll-off container. Water is found in both containers that have been loaded

with demolition debris and in empty containers. In these instances, the water will either be absorbed in the container or the container will be returned to the demolition load-out area to be repackaged prior to being shipped to ERDF. The second waste stream is from leaking equipment (e.g., hydraulic fluid, diesel, oil). These spills are appropriate for ERDF disposal when the spill occurs from equipment supporting the CERCLA activity, the waste meets the ERDF waste acceptance criteria, and the spill occurred within the CERCLA onsite area. Waste will be managed in accordance with Section 4.2.3.

EPA has provided its approval for sample waste generated as part of this removal action, which is shipped to Hanford Site laboratories for analysis, to be returned to the point of origin for disposal. The approval is documented within the waste characterization SAP (DOE-RL 2005a). If transuranic waste or mixed waste that cannot be sent to ERDF is encountered, storage (for eventual disposition) is allowed at the Central Waste Complex (CWC) per the approved offsite determination for this facility (EPA 2002). Any transuranic waste generated will be shipped to the Waste Isolation Pilot Plan for final disposition in accordance with this work plan and a schedule established for remedial actions, no later than September 30, 2024. Liquid waste will either be sent to the Hanford Site's Effluent Treatment Facility (ETF) or treated to meet the acceptance criteria of the receiving facility. Liquid waste sent to the ETF will be treated separately from other non-CERCLA sources, and any treatment residues that meet ERDF waste acceptance criteria (BHI 2002) may be disposed at ERDF. By approval of this work plan, EPA has determined that the ETF is an acceptable facility for storage and treatment of liquid waste (with segregated treatment residues disposed at ERDF) generated from this removal action, in accordance with 40 CFR 300.440, provided the applicable facility waste acceptance criteria are met.

2.10 DEMOBILIZATION

At the completion of D4 activities, the trailers and equipment used to perform this removal action may be demobilized or turned over to personnel conducting the soil remediation work under the 300-FF-2 work scope.

In some cases equipment, including change rooms and shower trailers, may no longer be used due to levels of contamination or disrepair. In these instances, the equipment will be deactivated in accordance with Section 2.4 and demolished with the facility in accordance with Section 2.5.

3.0 SAFETY AND HEALTH MANAGEMENT AND CONTROLS

3.1 EMERGENCY MANAGEMENT

The contractor's Emergency Management Program (including preparedness, planning, and response) contains the administrative responsibilities for compliance with the *Hanford Emergency Management Plan* (DOE-RL 2002) and applicable DOE requirements. The Washington Closure Hanford (WCH) Emergency Management Program establishes a coordinated emergency response organization capable of planning for, responding to, and recovering from industrial, security, and hazardous material incidents. Emergency action plans for contractor-managed hazardous facilities identify the capabilities necessary to respond to emergency conditions, provide guidance and instruction for initiating emergency response actions, and serve as a basis for training personnel in emergency actions for each facility. The emergency response actions within the emergency action plan are provided for recognizing incidents and/or abnormal conditions, initiating initial protective actions, and making the proper notifications. The emergency action plans are consistent with Hanford Site emergency procedures and meet the requirements of the *Hanford Emergency Management Plan* (DOE-RL 2002).

All emergency planning and preparedness activities for these projects will be consistent with planning and preparedness actions taken by other Hanford Site contractors and similar projects. Activities will be in a manner that ensures the health and safety of workers and the public and the protection of the environment in the event of an abnormal incident during D4 of the 300 Area facilities.

3.2 SAFEGUARDS AND SECURITY

Access to the 300 Area is controlled via postings (warning signs), fencing, and security patrols. Access and keys to 300 Area facilities are controlled by the contractor. Access requirements for employees and/or visitors are defined in contractor's procedures.

3.3 STRUCTURES, SYSTEMS, AND COMPONENTS TO PROTECT FACILITY WORKERS

Controls that will be employed during the 300 Area facilities removal project include temporary confinement enclosures, glovebag containments, and personal protective equipment (PPE), as directed by the work planning documents. To control emissions, vacuums will be equipped with HEPA and/or charcoal filters, and the exhausters will be equipped with HEPA filters. Radiological work permits (RWPs) and work packages specifically addressing the hazards associated with D4 activities will also be in place. Personnel monitoring and area monitoring will be used as required to determine and document worker exposures and work conditions.

Temporary confinement enclosures will be constructed as required to provide proper airflow conditions and will be fabricated of noncombustible and fire-retardant materials. A standard type of temporary confinement is a glovebag enclosure, which will essentially be a one-time-use protective measure used to prevent contamination release during specific operations (e.g., pipe cutting and sample collection). Glovebags are available in a variety of sizes and designs and will be ordered to tailored specifications in accordance with their intended uses. Radiological containments will be evaluated and constructed in accordance with the contractor's procedure(s).

3.4 ELECTRICAL SYSTEMS

The removal of electrical systems is typically the last isolation activity performed because power would be needed to support many of the D4 and remediation activities. However, if the existing electrical systems pose a threat to workers (e.g., underground conduit interfering with an excavation or demolition), the electrical system would be deactivated first and alternative power supplies would be used.

Alternative power will consist of either generators or a stand-alone power system separate from the facility.

3.5 HEALTH AND SAFETY PROGRAM

3.5.1 Worker Safety Program

The contractor's Hazardous Waste Operations Safety and Health Program was developed for employees involved in hazardous waste site activities. The program was developed to comply with the requirements of 29 CFR 1910.120 and 10 CFR 835 to ensure the safety and health of workers during hazardous waste operations. The Integrated Safety Management System (ISMS) will be incorporated into all work activities. The program includes the following elements:

- Organizational structure that specifies the official chain of command and the overall responsibilities of supervisors and employees
- Comprehensive work plan developed before work begins at a site to identify operations and objectives and to address the logistics and resources required to accomplish project goals
- Development of a site-specific health and safety plan when workers may be exposed to hazardous substances
- Worker training commensurate with individual job duties and work assignments
- Medical surveillance program administered to comply with the OSHA requirements (29 CFR 1910.120)

- Contractor's procedures and project/task-specific implementing plans and procedures
- Voluntary Protection Plan.

3.5.2 Site-Specific Health and Safety Plan and Activity Hazards Analysis

The *Health and Safety Plan for the 300 D4 Project* (HASP) (WCH 2007) defines the chemical, radiological, and physical hazards and specifies the controls and requirements for work activities. Building access and work activities are controlled in accordance with approved work packages, as required by established contractor procedures. The HASP addresses the health and safety hazards of each phase of site operation and includes the requirements for hazardous waste operations and/or construction activities, as specified in 29 CFR 1910.120. As part of work package development, a hazards analysis will be written to identify the hazards associated with specific tasks not already covered under a HASP. The elements included in the HASP are as follows:

- A general overview of the hazards associated with the facility or facilities and the appropriate actions necessary to mitigate the hazards
- List of employee training assignments
- List of PPE to be used by employees at the work site
- Medical surveillance requirements
- Work site control measures
- Emergency response
- Confined space entry procedures
- Spill containment program.

In addition to the HASP, an RWP will be prepared for work in areas with potential radiological hazards. The RWP extends the Radiological Protection Program (discussed in Section 3.5.3) to the specific work site or operation. All personnel assigned to the project and all work site visitors must strictly adhere to the provisions identified in the HASP and RWP.

Before work and each activity begin, a pre-job briefing will be held with the involved workers. This briefing includes reviews of the hazards that may be encountered and the associated requirements. Throughout an activity, daily briefings may also be held, as well as special briefings prior to major evolutions.

3.5.3 Radiological Controls and Protection

The Radiological Controls and Protection Program is defined in DOE-approved programs and contractor-approved procedures. The Radiological Controls and Protection Program implements the contractor's policy to reduce safety or health risks to levels that are ALARA and to ensure the adequate protection of workers. The contractor's Radiological Protection Program meets the requirements of 10 CFR 835. Appropriate dosimetry, RWPs, PPE, ALARA planning, periodic surveys, and radiological control technical support will also be provided.

The standard contractor's controls for work in radiological areas are assessed as adequate to control project activities. These controls provide for radiological controls planning to identify the specific conditions, and the controls also govern the specific requirements for an activity, periodic radiation and contamination surveys of the work area, and periodic or continuous observation of the work by the Radiological Controls organization. The ALARA planning process will be used to identify shielding requirements, contamination control requirements (including local ventilation controls), radiation monitoring requirements, and other radiation control requirements for the individual tasks conducted during the projects.

Boundary air samplers, to monitor worker protection, will be stationed around the perimeter of the demolition area; these air samplers will be positioned in accordance with prevailing wind directions and can be moved as conditions warrant. Additionally, an air sampler may be mounted on the heavy equipment used for demolition. All air samples are analyzed on a daily operating basis. The demolition area will be posted as an Airborne Radioactivity Area at 1 Derived Air Concentration (DAC) or 12 DAC-h based on a 40-hour work week (0.3 DAC). If analysis of samples indicates anomalous results, the work processes will be reassessed as appropriate to ensure worker protection and help prevent an offsite release.

Measures are also taken to minimize the possibility of releases to the environment. The air monitoring section of this document (see Appendix B) addresses the radionuclide inventory and activities that could cause potential release of this inventory, but not to the exclusion of 10 CFR 835 requirements.

4.0 ENVIRONMENTAL MANAGEMENT AND CONTROLS

4.1 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

40 CFR 300.415(j) requires that ARARs be met (or waived) to the extent practicable during the course of removal actions. When requirements are identified, a determination must be made as to whether those requirements are applicable or relevant and appropriate. A requirement is applicable if the specific terms (or jurisdictional prerequisites) of the law or regulations directly address the circumstances at a site. If not applicable, a requirement may nevertheless be relevant and appropriate if (1) circumstances at the site are, based on best professional judgment, sufficiently similar to the problems or situations regulated by the requirement; and (2) the use of the requirement is well suited to the site.

ARARs include only substantive requirements of environmental standards. ARARs do not include administrative requirements, including requirements to obtain any federal, state, or local permits (40 CFR 300.400[e] and CERCLA 42 U.S.C. Section 9621[e]).

To-be-considered (TBC) information consists of nonpromulgated advisories or guidance issued by federal or state governments that are not binding legally and do not have the status of ARARs. As appropriate, TBC information should be considered in determining the removal action necessary for protection of human health and the environment. Requirements drawn from TBC information may be included in the selected alternative.

Because the alternatives would result primarily in waste generation and potential releases to the environment, the key ARARs identified for the alternatives considered include waste management standards, standards controlling releases to the environment, standards for protection of natural resources, and safety and health standards[1]. The ARARs are discussed generally in the following sections.

The ARARs for this removal action were identified in the action memoranda for the 300 Area facilities (DOE-RL 2005b, 2006a, 2006b). These ARARs include waste management standards; standards controlling releases to the environment; cleanup standards; and standards for the protection of cultural, historical, and ecological resources. A discussion of how the removal action will comply with these ARARs is provided in the following subsections.

4.2 WASTE MANAGEMENT PLAN

Waste management activities performed in this RAWP shall be in accordance with the waste management ARARs identified in the action memoranda for the 300 Area facilities

[1] Safety standards are not environmental standards per se and therefore not potential ARARs. Instead, compliance with applicable safety regulations, such as OSHA requirements, is required external to the CERCLA ARAR process. However, due to the nature and importance of these standards, a discussion of the safety requirements is included in this work plan.

(DOE-RL 2005b, 2006a, 2006b). Waste management activities will be performed in accordance with the following ARARs:

- The *Toxic Substances Control Act of 1976* (TSCA), as implemented by 40 CFR 761 and WAC 173-303-071(3)(k) with regards to management of PCB waste
- RCRA, as implemented by 40 CFR 260-268 and WAC 173-303 with regards to management of dangerous waste
- The *Hazardous Material Transportation Act of 1974* (49 U.S.C. 1801 to 1813), as implemented by 49 CFR 100-179 with regards to offsite transportation of hazardous materials.

The requirements specified by the ARARs and other applicable guidance will be addressed in the contractor's procedures or work control documents. The work control documents will address designation, waste minimization, packaging, handling, marking and labeling, storage, transportation, and treatment as they specifically apply to waste streams associated with the 300 Area facilities. Waste will be generated from both S&M activities conducted prior to D4 as well as from D4 activities. The expected waste streams include, but are not limited to, the following:

- Solid waste (nonradioactive, nondangerous waste)
- Low-level radioactive waste
- Hazardous and dangerous wastes
- Mixed waste (waste that is both low-level radioactive waste and hazardous waste)
- Asbestos waste
- PCB wastes
- Transuranic waste
- Refrigerants (ozone-depleting substances).

4.2.1 Waste Characterization and Designation

The waste characterization requirements were developed as part of the data quality objectives process (BHI 2004). Waste generated will be characterized in accordance with the contractor's procedures, the requirements of the receiving facility, and the *300 Area D&D Waste Sampling and Analysis Plan* (DOE-RL 2005a). Characterization will be conducted through process knowledge, sampling/analysis, and radiological and industrial hygiene surveys.

A team of select personnel will inspect the portions of the facilities as the removal action/maintenance occurs. The inspection will identify suspect chemical/hazardous and radiological materials in order to identify the waste streams for project planning.

Radiological surveys will be performed using hand-held and/or large-area detection equipment that may be augmented with data logging equipment for record keeping during surveys.

Additional advanced characterization equipment (e.g., AIL GammaCam™ M31 gamma-ray/video imaging system, for locating hot spots, or a Canberra In Situ Object Counting System gamma-ray spectrometric system) may be deployed for the rapid, economical, and accurate characterization of materials for radiological contamination.

The data generated as part of waste characterization will be used to develop the following information (as applicable):

- Contaminant identification
- Contaminant concentrations
- Waste treatment requirements
- Waste packaging and disposal requirements
- Worker health and safety conditions
- Decontamination requirements
- Operational precautions
- Waste acceptance documents
- Transportation documents.

Additional characterization may be required based on disposal facility acceptance criteria.

4.2.2 Waste Minimization

Waste minimization practices will be followed to the extent technically and economically feasible during all phases of waste management. Waste materials will be recycled, reused, or reclaimed when feasible. To be suitable for recycling or reuse, the materials in question must (1) be needed or in demand, (2) be able to meet the DOE and Hanford Site free release criteria, and (3) not result in an excessive cost to the government. The decision of whether or not the materials meet the criteria will be made by contractor management with input from technical personnel.

Introduction of clean materials into a contamination area and contamination of clean materials will be minimized to the extent practicable. During all phases of waste management, emphasis will be placed on source reduction to eliminate or minimize the volume of wastes that will be generated.

All materials released offsite for disposal/recycle must be certified free of radiological contamination in accordance with the contractor's material release procedures. Waste materials with no or de minimis levels of 300 Area CERCLA hazardous substance are not considered CERCLA waste and are therefore not subject to the 40 CFR 300.440 offsite acceptability determination.

™ GammaCam is a trademark of AIL Systems, Inc., Deer Park, New York.

4.2.3 Waste Handling, Storage, and Packaging

CERCLA Section 104(d)(4) states that where two or more noncontiguous facilities are reasonably related on the basis of geography or on the basis of the threat or potential threat to the public health or welfare or the environment, these facilities may be treated as one for the purposes of this section. The preamble to the "National Oil and Hazardous Substances Pollution Contingency Plan" (40 CFR 300) clarifies the stated EPA interpretation that when noncontiguous facilities are reasonably close to one another and wastes at these sites are compatible for a selected treatment or disposal approach, CERCLA Section 104(d)(4) allows the lead agency to treat these related facilities as one site for response purposes and, therefore, allows the lead agency to manage waste transferred between such noncontiguous facilities without obtaining a permit. For CERCLA wastes that are transferred to a facility not considered "onsite," 40 CFR 300.440 requires an offsite acceptability determination from the EPA for the receiving facility. With respect to this removal action, EPA has issued determinations[2] for the following locations/waste streams:

- The ERDF is considered "onsite" for management/disposal of waste from removal actions addressed in the action memoranda (DOE-RL 2005b, 2006a, 2006b)
- The CWC, in accordance with the approved offsite acceptability determination (EPA 2002) for transuranic and mixed waste (including radioactive PCB waste) that cannot be sent to ERDF
- Pacific EcoSolutions (PECOS), in accordance with the approved offsite acceptability determination (EPA 2006) for waste requiring treatment consistent with Section 4.2
- The ETF, in accordance with this RAWP is approved to store and treat liquid waste generated from this removal action, provided the facility waste acceptance criteria are met.

In addition to these previously established determinations, a noncontiguous onsite approval is appropriate for the Radiological Counting Facility (RCF) in the 300 Area to receive and analyze CERCLA samples associated with 100 Area and 300 Area CERCLA actions and ERDF. Activities in the RCF (composed of MO-265 and MO-423) involve the preparation and counting of radiological samples (e.g., soil, smears) from Hanford Site CERCLA projects. This facility receives and processes only samples associated with Hanford Site CERCLA response actions. Air discharge standards associated with operation of the RCF are presented in the Air Monitoring Section (Appendix B). Approval of this RAWP constitutes EPA approval of the RCF as a noncontiguous onsite facility under CERCLA Section 104(d)(4) for receipt and processing of samples associated with Hanford Site CERCLA actions in the 100 and ERDF; and a contiguous onsite facility determination for the 300 Area CERCLA actions.

[2] EPA will notify DOE in writing of any change in the offsite determination of these listed facilities.

4.2.3.1 Building Footprint Area and Onsite Area. The BFA for this removal action is defined to include the individual facility footprint and the surrounding area needed to support the excavation of soils and/or demolition of the structure.

Any waste management locations outside of the BFA and within the onsite area must meet the substantive requirements of all ARARs. For waste management inside the BFA, safe and effective management practices shall be established to ensure protection of human health and the environment. Substantive provisions of waste management ARARs may be used, when appropriate, within the BFA in this regard. Standards for managing waste within and outside the BFA shall be documented in the contractor's work control documents.

For the 300 Area facilities addressed under this action, the onsite area is defined as the main industrial portion of the 300 Area (see Figure 1-2), and includes the ERDF container queue located directly north of the 300 Area boundary fence, which is shared between 300-FF-2 remedial actions and the removal actions performed under this work plan. Within the onsite area only the substantive requirements of the ARARs apply.

4.2.3.2 Staging Piles. As an alternative to storage within the BFA, waste that is not immediately transported to ERDF or other EPA-approved disposal facility may be stored in staging piles. Staging piles used for the onsite management of RCRA hazardous or dangerous waste must be operated in accordance with the standards and design criteria prescribed in 40 CFR 264.554, paragraphs (d) through (k). General requirements for staging piles include the following:

- Staging piles are to be used only as part of this removal action for temporary storage at a facility and must be located within the contiguous property where the waste to be managed in the staging piles is oriented.

- The staging pile must be designed to prevent or minimize releases of hazardous wastes and hazardous constituents into the environment and minimize or adequately control cross-media transfer. To protect human health and the environment, this can include installation of berms, dust control practices, or using plastic liners or covers, as appropriate.

- The staging pile must not operate more than 2 years (measured from the first time remediation waste is placed in the pile), except when EPA grants an operating term extension. A record of the date when remediation waste was first placed in the staging pile must be maintained until final closeout of the site is achieved.

- Ignitable or reactive waste must not be placed in a staging pile unless it has been treated or mixed before being place in the pile so that the waste no longer meets the definition of ignitable or reactive waste, or the waste is managed in order to protect it from exposure to any material or condition that may cause it to ignite.

- Incompatible wastes may not be placed in the same staging pile, unless the requirements in 40 CFR 264.17(b) have been met. The incompatible materials must be separated or the waste may not be piled on the same base where incompatible wastes or materials were

previously piled, unless the base has been decontaminated sufficiently to comply with 40 CFR 264.17(b).

Approval of this RAWP by EPA constitutes general authorization to operate staging piles during the execution of this removal action. Specific staging pile locations will be identified in project drawings and approved by EPA in the UMM minutes. Field operation of staging piles within the referenced regulatory provisions will be accomplished compliant with the requirements described above.

Once the materials have been removed, to close out the staging pile, samples of the residual soil will be collected in accordance with the 300 Area SAP (DOE-RL 2004a). In cases where staging piles for industrial waste sites are located in an uncontaminated area, the sample results should be compared against the soil cleanup levels identified in the 300 Area RDR/RAWP (DOE-RL 2004c). If the sample results exceed the cleanup levels, the area shall be further remediated or deferred to the 300-FF-2 work following lead regulator concurrence.

4.2.3.3 Common Waste Handling, Storage, and Packaging Requirements. The requirements in the following paragraphs are common to both the BFA and the onsite area.

Nonbulk containers or packages of waste requiring tracking (e.g., hazardous, mixed) will be assigned a package identification number by a waste transportation specialist. Containers in poor condition will have the contents transferred to a container in good condition. Portable fire extinguishers and spill-control equipment will be available.

Bulk waste may be placed in bulk roll-off containers for ERDF disposal. The containers will be covered. Lightweight material (e.g., paper and plastic) will be bagged, if appropriate, prior to placement in the container to eliminate the potential of the materials blowing out of the container.

All containers, packages, or items requiring storage in a radioactive materials area will be marked/labeled with radioactive material markings. Storage of all containers (except for containers used to collect fluorescent light tubes) will be closed and secured when not being filled or emptied. Containers will be appropriately labeled and/or marked in accordance with all applicable requirements. Containers will be stored to prevent the accumulation of water.

4.2.3.4 Specific Waste Handling, Storage, and Packaging Requirements. The following specific requirements apply only outside the BFA, either in the onsite area or at an offsite facility for the variety of wastes that may be encountered during S&M and the D4 removal actions.

Solid Waste. Nondangerous solid waste will be managed in accordance with WAC 173-350, with an emphasis on recycling. Management under WAC 173-303 is addressed in the Hazardous/Dangerous Waste subsection. Recyclable wastes (i.e., lead, aerosols, fluorescent light tubes) should be managed in accordance with the Management Plan for Recyclable Materials administered by the Hanford Site's CCRC. All materials released offsite for disposal, recycle, or salvage must be certified as free of radioactive contamination in accordance with the contractor's material release procedures. Additionally, waste containing CERCLA hazardous substances

(unless present in de minimis[3] concentrations) may only be released to an offsite facility that has received approval from EPA in accordance with 40 CFR 300.440.

Low-Level Radioactive Waste. Liquids will be collected in appropriate containers. Dependant upon volume and characteristics (e.g., pH, oils, waste codes), containers will vary from drums to bulk holding tanks.

Demolition debris will be sized in accordance with the waste acceptance criteria of the disposal facility. Radioactive solids will be placed in containers for ERDF disposal.

Hazardous/Dangerous Waste. Hazardous/dangerous waste managed outside of the BFA will be packaged and stored to prevent dispersion and public exposures as required by WAC 173-303. Waste-specific storage and packaging requirements will be described in the contractor's work control documents, as appropriate, to address WAC and U.S. Department of Transportation (DOT) requirements.

Mixed Waste. Mixed waste will be managed in compliance with the substantive requirements for both hazardous/dangerous wastes and radioactive waste. Storage is allowed at the Hanford Site's CWC under the offsite acceptability determination issued by EPA (EPA 2002).

Asbestos. Multiple forms of asbestos are expected to be encountered. Removal and disposal of asbestos and ACM are regulated under the *Clean Air Act Amendments of 1977* (implemented via 40 CFR 61, Subpart M) and under health and safety regulations promulgated pursuant to the OSHA regulations (implemented via 29 CFR 1926.1101, 29 CFR 1910.1001, and WAC 296-62 Part I). The 40 CFR 61 requirements applicable to this removal action are contained in 40 CFR 61.145(c) and 40 CFR 61.150. These regulations establish removal requirements based on quantity present, and specify handling, packaging, and disposal requirements for regulated sources having the potential to emit asbestos. Asbestos work, air monitoring, and worker safety requirements will be performed in accordance with 40 CFR 61.145(c), 40 CFR 61.150, 29 CFR 1926.1101, and the contractor's procedures for ACM removal.

All friable and most nonfriable ACMs and presumed ACMs will be removed prior to demolition of the area. Asbestos removal will be performed by trained asbestos certified workers, and oversight will be provided by a competent person trained in asbestos regulations. This person must be on site at all times that work is being performed on ACMs. ACM typically consists of insulation for piping, floor tiles, and cement asbestos board. Insulation on piping and surfacing materials (e.g., sprayed on fire stop) will be removed as Class I asbestos work, and nearly all other ACM in the facilities will be removed as Class II (e.g., floor tiles and cement asbestos board). There could be instances where friable asbestos is to be left in place during demolition because the facility is structurally unsound and in danger of imminent collapse. In these cases only the requirements of 40 CFR 61.145(c)(4) through (c)(9) would apply, in accordance with 40 CFR 61.145(a)(3). The substantive requirements of the *Clean Air Act Amendments of 1977* standards are applicable to the abatement of asbestos and ACMs. Both the substantive and

[3] De minimis is not a CERCLA defined term, but is used to convey the notion that there are some items with very low levels of CERCLA hazardous substances where the CERCLA process does not apply.

administrative requirements of the OSHA standards are applicable to the removal of asbestos and ACM. Asbestos removal and waste management practices will be further addressed in work-specific documents.

Ozone-Depleting Substances. 40 CFR 82, Subpart F establishes requirements for the recovery, recycling, and reclamation of ozone-depleting substances from refrigeration equipment that may be present within facilities addressed by this removal action. The substantive requirements of Subpart F will apply to actions being taken within the onsite area. The substantive and administrative requirements are applicable when performing recovery, recycling, reclamation, or disposal actions at offsite facilities. Wastes containing CERCLA hazardous substances (unless present in de minimis concentrations) may only be released to an offsite facility that has received approval from EPA in accordance with 40 CFR 300.440.

PCBs. PCBs are identified as potential contaminants in the 300 Area facilities, and PCB-contaminated waste will likely be generated. The various waste matrixes that may contain PCBs include PCB oils, PCB remediation waste, and PCB-contaminated items.

The PCB bulk product waste or remediation waste will be managed within the facility of origination or a centralized area within the CERCLA onsite area (following approval of a centralized area by EPA). Outside the facility, containers will be marked with a M_L marking (CAUTION – CONTAINS PCBs) as required by the TSCA.

Areas outside the facility containing packaged PCBs will be marked with signs posting "DANGER-UNAUTHORIZED PERSONNEL KEEP OUT" at each entrance. The M_L marking will also be posted in accordance with 40 CFR 761.

Staging of PCB waste at the 300 Area facilities must be done in a manner that satisfies substantive provisions of 40 CFR 761.65(b). The use of an "overpack" container is acceptable for outside storage. Although the "overpack" containers may not represent the typical concept of a "facility," they satisfy the substantive requirements for roof, walls, nonporous floors, and spill protection.

Transuranic Waste. If encountered, transuranic waste will be managed in accordance with the contractor's procedure. The CWC or the Waste Receiving and Processing facility will be used for interim storage of any transuranic waste encountered. Storage is allowed at the Hanford Site's CWC under the offsite acceptability determination issued by EPA (EPA 2002). An offsite acceptability determination from EPA will be required under 40 CFR 300.440 prior to sending any waste to the Waste Receiving and Processing facility.

Liquid Waste. All liquid waste treated or disposed of at a location other than ERDF must first be approved by EPA. Possible disposal locations include the ETF or a facility outside of the Hanford Site. This does not include liquid waste that is free or contains de minimis levels of CERCLA hazardous substances. Water meeting groundwater quality criteria (GWQC) (WAC 173-200) can be used for dust suppression.

Radiological Counting Facility Sample Wastes. The RCF (MO-432 and MO-265) will continue to process samples under CERCLA authority for an extended period of time prior to being subject to D4. The primary waste materials generated from radiological counting at the RCF includes samples, sample residues, and secondary waste (e.g., personnel protective equipment such as gloves and wipes). Laboratory calibration standard wastes or inter-laboratory comparison sample wastes may be generated. Some waste may be generated from maintenance or calibration of sample equipment.

Sample counting wastes, including any associated secondary waste, will routinely be sent back to the project of origin for disposition. Alternatively, sample counting associated wastes, including existing sample wastes from Hanford Site CERCLA projects, may be sent directly to ERDF for disposal if the waste meets the ERDF waste acceptance criteria.

Other RCF sample-related waste, such as inter-laboratory comparison samples and maintenance/calibration waste, may also be sent to ERDF for disposal if it contains CERCLA hazardous substances (including potentially radiologically contaminated wastes) and meets the waste acceptance criteria. Otherwise, the wastes will be handled as solid waste as described above. Some oils associated with the equipment may be recycled as appropriate.

For wastes containing CERCLA hazardous substances that must be sent offsite for disposal, EPA approval of the offsite facility would be sought in accordance with 40 CFR 300.440.

4.2.4 Waste Treatment

Treatment of waste streams may be necessary to provide for safe transport or storage. Treatment may also be required prior to disposal or to meet the appropriate waste acceptance criteria. For example, if hot cell encapsulation is to take place in the 300 Area, an EPA-approved waste treatment plan will be required. The type of treatment for RCRA hazardous or dangerous waste and the location of treatment will be determined by DOE and EPA on a case-by-case basis in accordance with the substantive requirements of RCRA and WAC 173-303. Upon EPA approval, solidification, encapsulation, neutralization, and size reduction/compaction may be employed to treat various wastes. For wastes requiring treatment, the techniques will be documented in a treatment plan approved by EPA.

Several mixed waste streams have already been reviewed and approved for treatment and disposal at ERDF. These mixed waste streams are as follows:

- Radioactively contaminated elemental mercury may be amalgamated within the geographical area of the removal action.
- Radioactively contaminated elemental lead or hazardous/dangerous waste debris may be macroencapsulated at ERDF.
- Aqueous solutions may be treated in accordance with the approved waste treatment plan and sent to ERDF.

Stabilization of soils contaminated with lead or other heavy metals may be treated at ERDF, provided the soils meet the ERDF waste acceptance criteria.

The above-listed waste streams will be treated as they are encountered, and the contractor will notify DOE and regulatory agencies via e-mail. If waste is encountered for which there is no available treatment, DOE will meet with the regulatory agencies to determine the appropriate action for the waste stream.

4.2.5 Waste Transportation and Shipping

All shipments will be made in accordance with DOT regulations, 49 CFR 171-179, applicable sections of WAC 173-303, and the contractor's waste transportation procedures.

The removal action is expected to require offsite transportation of wastes and potentially contaminated samples. The offsite handling and shipping of wastes and potentially contaminated samples will be in accordance with the *Hazardous Materials Transportation Act of 1974*, as implemented through 49 CFR 100 through 179.

4.2.6 Disposal

All waste resulting from this action will be evaluated to determine if the waste meets ERDF waste acceptance criteria for disposal. CERCLA waste disposed of at any disposal facility other than ERDF requires EPA approval in accordance with 40 CFR 300.440. Any PCB waste that does not meet ERDF waste acceptance criteria (BHI 2002) may be transported for disposal to a TSCA offsite disposal facility following the receipt of an offsite acceptability determination by EPA.

Solid waste may be sent for offsite disposal at a municipal/industrial landfill. Disposal of materials containing no or de minimis levels of CERCLA hazardous substances would not require an offsite acceptability determination per 40 CFR 300.440.

The *Hanford Site Solid Waste Acceptance Criteria* (FH 2006) identifies criteria for acceptance of waste at the CWC. The *Liquid Waste Processing Facilities Waste Acceptance Criteria* (FH 2005) identifies criteria for acceptance of waste at the ETF. The *Environmental Restoration Disposal Facility Waste Acceptance Criteria* (BHI 2002) and ERDF supplemental waste acceptance criteria (BHI 2003) provide the waste acceptance criteria for ERDF.

4.2.7 Recycling

Some of the waste from the D4 of the 300 Area facilities may contain materials that could be beneficially recycled. As applicable, these materials would be managed/recycled in accordance with the contractor excess procedures or the CCRC management plan. Recycling of materials from D4 activities that contain CERCLA hazardous substances will require an offsite acceptability determination from EPA in accordance with 40 CFR 300.440.

Recycling of materials (e.g., noncontaminated wood, steel, masonry brick) containing no or de minimis levels of CERCLA hazardous substances would not require an offsite acceptability determination per 40 CFR 300.440. Recycling of items generated as a result of routine operational or maintenance activities (e.g., replacement of burned-out light bulbs or discharged batteries from functioning equipment) would also not require an offsite acceptability determination. Aqueous waste may be reused for dust suppression with EPA approval.

4.3 STANDARDS CONTROLLING RELEASES TO THE ENVIRONMENT

4.3.1 Standards Controlling Air Emissions to the Environment

The proposed removal action alternatives would have the potential to generate both radioactive and nonradioactive airborne emissions.

The federal *Clean Air Act* and the "Washington Clean Air Act" (Revised Code of Washington [RCW] 70.94) regulate both criteria/toxic and radioactive airborne emissions. Implementing regulations found in 40 CFR 61.92 set limits for emissions of radionuclides from the entire facility to ambient air. Radionuclide emissions cannot exceed those amounts that would cause any member of the public to receive an effective dose equivalent of 10 mrem/yr. Compliance with this standard is determined on a Hanford Site-wide basis and is documented in the annual radionuclide air emissions report for the Hanford Site.

Radioactive air emissions are to be controlled through the use of best available radionuclide control technology (WAC 246-247-040[3]) or ALARA control technology (WAC 246-247-040[4]). Emissions of radionuclides are to be measured for point sources (40 CFR 61.93) and for nonpoint sources (WAC 246-247-075[8]). Measurement techniques may include, but are not limited to, sampling, calculation, smears, or other reasonable method for identifying emissions as determined by EPA. The substantive requirements of these regulations are applicable because fugitive, diffuse, and point source emissions of radionuclides to the ambient air may result from activities performed during the removal action. Appendices B and C describe how the substantive portions of these requirements are to be implemented for this removal action.

WAC 173-400 and 173-460 establish requirements for emissions of criteria/toxic air pollutants. The primary source of emissions resulting from this removal action would be fugitive particulate matter. Requirements applicable to this removal action are contained in WAC 173-400-040(3) and (8). These regulations require that reasonable precautions be taken to (1) prevent the release of air contaminants associated with fugitive emissions resulting from materials handling, demolition, or other operations; and (2) prevent fugitive dust from becoming airborne from fugitive sources of emissions.

WAC 173-460 may be applicable to removal actions that require the use of a treatment technology that emits toxic air pollutants. No treatment requirements have been identified at this time that would be required to meet the substantive applicable requirements of WAC 173-460. Treatment of some waste encountered during the removal action may be required to meet ERDF

waste acceptance criteria. In most cases, the type of treatment anticipated would consist of solidification/stabilization techniques such as macroencapsulation or grouting, and WAC 173-460 would not be considered an ARAR. If more aggressive treatment is required that would result in the emission of toxic air pollutants, the substantive requirements of WAC 173-460-030, WAC 173-460-060, and WAC 173-460-070 would be evaluated to determine if the requirements are applicable.

Beryllium contamination is present in many of the facilities addressed under this removal action. Although beryllium is not regulated as a hazardous waste, there are health and safety requirements that must be addressed when working with beryllium-contaminated structures. When work is performed inside a beryllium building, monitoring will be performed to insure that airborne beryllium levels inside of the building do not exceed 0.1 $\mu g/m^3$. Once the building structure is breached, perimeter sampling will be conducted for airborne beryllium using 0.8 micron dust filters analyzed for beryllium using National Institute for Occupational Safety and Health (NIOSH) method 7300. Monitoring will be conducted whenever demolition activities are being performed on buildings found to be beryllium contaminated and will be discontinued upon completion of facility demolition. The control limit at the boundary will follow the Hanford Site Chronic Beryllium Disease Prevention Program for a safe level of exposure for sensitized workers.

Emissions to the air will be minimized during D4 activities through the use of standard industry practices such as the application of water sprays and fixatives, temporary confinement enclosures/glovebag containments that may be HEPA filtered, and HEPA-filtered and/or charcoal-filtered vacuums. These techniques are considered to be reasonable precautions to control fugitive emissions as required by the regulatory standards and are the same techniques as those applied to control radionuclide air emissions.

Conditions and limitations for the control and monitoring of radioactive and nonradioactive emissions for the 320, 326, 329, 340, 340B, and 3730 facilities are currently incorporated into the *Hanford Air Operating Permit* (Ecology 2001). The substantive regulatory requirements associated with these facilities may, over time, be incorporated into this RAWP (Appendix B for radioactive emission sources) as part of future revisions to this RAWP, if the emission unit is not shut down prior to transition to CERCLA. The terms and conditions contained in the Washington State Department of Health License, the Washington State Department of Ecology Approval Orders, and the Hanford Site Air Operating Permit will be considered obsolete upon incorporation of the facility-specific substantive regulatory requirements from the air operating permit into an EPA-approved RAWP.

Appendices B and C of this document provide additional information pertaining to the release and control of potential radiological contaminants to the air, and are applicable only to emissions of radiological materials to the air.

4.3.2 Stormwater Discharges and Well Decommissioning

Stormwater runoff from some of the facilities listed in the action memoranda (DOE-RL 2005b, 2006a, 2006b) discharge to engineered structures (e.g., injection wells). These injection wells

are registered pursuant to WAC 173-218. State Waste Discharge Permit ST 4511 (Ecology 2005) issued pursuant to WAC 173-216 addresses discharges of stormwater to engineered structures. Substantive provisions of the permit include the implementation of BMPs, which are intended to prevent or reduce the spread of contamination and pollution of groundwater of the state, and meeting the GWQC. The substantive requirements of WAC 173-218 are applicable to the decommissioning of underground injection control wells that do not require further remediation under the 300-FF-2 OU. Sampling and analysis of the stormwater discharge is not normally required as long as the proper pollution prevention and BMPs are followed, unless contamination exists. Stormwater that has become contaminated (i.e., stormwater found in basements or pits located in contaminated buildings) is to be sampled to verify that the GWQC are met prior to discharge to the injection well.

The BMPs identified in State Waste Discharge Permit ST 4511 (Ecology 2005) will be implemented as appropriate. These BMPs include actions such as conducting inspections to identify and remove materials, etc., that could contaminate stormwater discharges; implementing good housekeeping practices to segregate and store materials and wastes in a manner to prevent the potential for contaminating stormwater; taking reasonable efforts to minimizing ponding; collecting discharges that have become contaminated; cleaning up spilled materials and liquids promptly; and informing work crews of the appropriate BMPs to be implemented.

The removal actions specified in the action memoranda (DOE-RL 2005b, 2006a, 2006b) will result in a unique set of circumstances for each facility. Additional BMPs may be needed to prevent the discharge of contaminated stormwater runoff to an injection well. These practices could include berming, rerouting stormwater discharges, creating new discharge locations, or closing the injection well. If an existing injection well must be closed and does not require further action under CERCLA, it will be decommissioned in accordance with WAC 173-218. Where additional BMPs are required to prevent contamination of stormwater runoff to the injection wells, they will be documented in facility-specific work controlling documents (e.g., work packages). Creating a new injection well will require prior EPA approval.

The substantive requirements of the "Minimum Standards for Construction and Maintenance of Wells" (WAC 173-160) are applicable when decommissioning groundwater wells that are found to require closure prior to performing D4 activities (i.e., the well is located within the BFA boundary).

There is also overland stormwater runoff from areas adjacent to some of the facilities. Some of this stormwater runoff has the potential to reach the bank of the Columbia River, or possibly the Columbia River, through drainage ditches, erosion areas, or other conveyances. These areas were at one time included in a stormwater pollution prevention plan written to address the requirements of a National Pollutant Discharge Elimination System general permit issued pursuant to 40 CFR 122. It was subsequently determined that the activities that are discharging water to the existing discharge points are excluded from the permit requirements. The potential to impact these areas during the removal action will be evaluated, and the potential for runoff from these areas will be eliminated or appropriate best management practices. Controls will be implemented, as necessary, to ensure that the removal action does not impact the discharge points. Substantive control requirements from the General Permit for Storm Water Discharges

from Construction Activities will be considered, as appropriate. Appropriate controls will be documented in work controlling documents.

4.4 CLEANUP STANDARDS

4.4.1 RCRA Closure Plan Requirements for the 324 Building

Tri-Party Agreement Milestone M-89-00 requires closure of the nonpermitted mixed waste units in the 324 Building's B Cell, D Cell, and High-Level Vault. Closure of the cells and vault will be performed in conjunction with this removal action. Closure documentation will be submitted to Ecology in accordance with the 324 Building closure plan (DOE-RL 2005a).

4.4.2 Final Characterization

As previously stated, it is anticipated that very few waste sites will be closed as part of this removal action. The process for performing waste site closure is described in Section 2.6 of this document. Where the building foundation is above, or intersecting, significant underground contamination or active utilities characterization information for the area will be generated to document the status of conditions at the conclusion of this project, as described in Section 2.7 (Site Stabilization).

4.4.3 Release of Property

All property that is released for offsite disposal and/or reuse and recycle is nonreal property. The release of nonreal property will follow the guidance provided in the contractor's documents. Property released via this process shall contain no or de minimis levels of CERCLA hazardous substances and therefore will not be subject to CERCLA.

4.5 STANDARDS FOR THE PROTECTION OF NATURAL AND HISTORICAL RESOURCES

The *Archeological and Historic Preservation Act of 1974* (16 U.S.C. 469-469c) provides for the preservation of historical and archeological data (including artifacts) that might be irreparably lost or destroyed as the result of a proposed action. Although the removal action will occur in previously disturbed areas and the discovery of artifacts is unlikely, this law would be applicable to any significant artifacts that may be discovered. The likelihood would be greater at borrow sites from which backfill material is obtained. Awareness training will be provided to site workers. If archeological materials are discovered, a mitigation plan will be developed in consultation with appropriate authorities.

The *Native American Graves Protection and Repatriation Act of 1990* (as implemented by 43 CFR 10) requires agencies to consult and notify culturally affiliated tribes when Native American human remains are inadvertently discovered during project activities. It is unlikely that work proposed in this removal action would inadvertently uncover human remains.

If human remains were encountered, the procedures documented in the *Hanford Cultural Resources Management Plan* (DOE-RL 2003) would be followed.

The *National Historic Preservation Act of 1966* (as implemented by 36 CFR 800) requires federal agencies to evaluate historic properties for National Register of Historic Places (36 CFR 800, Section 106) eligibility and to mitigate adverse effects of federal activities on any site eligible for listing in the Register. A programmatic agreement prepared by DOE (DOE-RL 1996) specifies how activities at the Hanford Site will identify, evaluate, and treat buildings and historic archaeological remains from the Hanford era. The accompanying treatment plan (DOE-RL 1998) directs the process for evaluating properties on the Hanford Site, and identifies several 300 Area buildings within the scope of this RAWP as contributing facilities recommended for individual documentation. Stipulation V(C) of the programmatic agreement requires that an interior assessment be undertaken for these facilities to identify artifacts that may have interpretative or education value prior to D&D/D4 activities. Historic items tagged during this walkdown will either be photographed or the items will be retrieved and transported to an appropriate curation facility as stipulated by DOE.

The *Endangered Species Act of 1973* and WAC 232-012-297 require the conservation of critical habitat on which endangered or threatened species depend and prohibit activities that threaten the continued existence of listed species or destruction of critical habitat. The *Migratory Bird Treaty Act of 1918* makes it illegal to remove, capture, or kill any migratory bird or any part of nests or the eggs of any such birds. Although adverse impacts to endangered or threatened species or migratory birds are not expected, activity specific ecological reviews will be conducted to identify and mitigate any potentially adverse impacts prior to beginning field work.

5.0 PROJECT MANAGEMENT AND ORGANIZATION

5.1 PROJECT SCHEDULE AND COST ESTIMATE

The 300 Area facilities' removal action will be scheduled and estimated using the contractor's hierarchy of schedules, which include activity logic and restraints. Activities will be resource loaded for both nonmanual and manual personnel. Equipment needs are identified, and other materials are estimated and included in the budgeted cost of work scheduled.

The schedule, which encompasses the work scope of the 300 Area facilities' removal action, was approved by Tri-Party Agreement interim Milestone M-94-01. The schedule for accomplishing this removal action will support completion of the Tri-Party Agreement Milestone M-94-00 series, subject to modifications necessary to allow continued long-term use of the 300 Area research and development facilities.

5.1.1 Project Cost and Schedule Tracking

Performance measurement and analysis is performed by the contractor. Project cost and schedule are controlled and updated using the contractor's Management Control System.

An earned-value system tracks the cost, schedule, and performance as the project progresses towards completion. Cost/schedule performance reports provide budgeted cost of work-scheduled comparisons and budgeted costs of work performed against the actual cost of work performed. These reports provide variances to the baseline schedule and cost as budgeted in the project's detailed work plan. Variances above threshold values are documented, as well as the rationale for the variance(s) and any recovery plan required.

Trends and baseline change proposals are readily identified through the contractor's formal trend and change control program. All changes that affect the baseline are documented. The contractor's trend register, which is reviewed monthly by contractor senior management, categorizes trends from conception to final resolution. Trends are identified as either performance trends or scope trends and are further defined as resolved or unresolved.

Fiscal year project staffing, as budgeted, is reconciled monthly during project review meetings to the actual number of full-time-equivalent personnel used during the month. Likewise, the corresponding number of hours actually worked are presented and compared to the budgeted current work plan. Actual overtime is monitored monthly (by department) and is reconciled to the current budgeted overtime.

Cost and schedule variances to the current budget are tracked both on a monthly and to-date basis and are reconciled back to the cause of the variance. Project impacts due to the cost and/or schedule variance are described and corrective actions are identified and tracked to the point of final resolution.

5.2 CONDUCT OF OPERATIONS

Conduct of operations is imposed to ensure that work is performed in a controlled and organized manner, such that all facets of work activities have been considered, and that necessary documentation is maintained. Line organizations review existing and planned programs important to safe and reliable facility operations and assess the effectiveness of corporate directives, plans, or procedures at facilities under their cognizance.

Conduct of operations strongly emphasizes technical competency, workplace discipline, and personal accountability to ensure the achievement of a high level of performance during all activities. Safety is the first priority, and all planning will include appropriate safety analyses to identify potential safety and health risks and the means to appropriately mitigate these risks. Workers will not start work until approved safety procedures, instructions, and directions implementing ISMS are provided.

Conduct of operations requires workers to be alert and aware of conditions affecting the job site. Operators and workers conducting field activities should be notified of changes in the building and/or work area status, abnormalities, and difficulties encountered in performing project operations. Similarly, operators and workers will notify the chain of command of any unexpected situations. In accordance with the severity of a finding (e.g., emergency condition), notification requirements will be expanded to include upper tier management and regulatory agencies.

5.3 CHANGE MANAGEMENT/CONFIGURATION CONTROL

If a change arises that results in a fundamental change to the selected response action that is not within the scope of work, another EE/CA or proposed plan and supporting documentation will be prepared to allow DOE and the EPA to select a revised response action.

Established configuration/change control processes ensure that proposed changes are reviewed in relation to the specified commitments. If a breach of these commitments is discovered, work ceases so stabilization and/or recovery actions may be identified and implemented as appropriate. Change management will comply with the appropriate contractor's procedures.

Change management for facilities that have a hazard categorization of Nuclear-Less than Category 3 will comply with the contractor's procedure for management of change process. Change management for facilities that have a hazard categorization of Nuclear-Category 3 will comply with the contractor's procedure for unreviewed safety question process.

5.4 PERSONNEL TRAINING AND QUALIFICATIONS

During the performance of project activities, the experience and capabilities of the operating staff are extremely important in maintaining worker and environmental safety. Day-to-day knowledge of ongoing operations, month-to-month understanding of conditions encountered, and lessons learned will be imperative to continued safe operations.

Training requirements will ensure that personnel have been instructed in the methods and technologies to work safely in and around radiological areas, and to maintain their individual radiation exposure and the radiation exposures of others ALARA. Standardized core courses and training material will be presented, and site-specific information and technologies will be added to adequately train workers.

Health physics workers are required to have completed and be current in radiological control technician qualification training. These training courses require the successful completion of examinations to demonstrate understanding of theoretical and classroom material.

Specialized training will be provided as needed to instruct workers in the use of nonstandard equipment, in the performance of abnormal operations, and in the hazards of specific activities. Specialized training may be provided by on-the-job training activities, classroom instruction and testing, or pre-job briefings. The depth of training in any discipline will be commensurate with the degree of the hazard(s) involved and the knowledge required for task performance.

Some activities will require the acquisition of expert services as opposed to project staff training. Assaying of waste packages and dismantling the facility by specialized methods (e.g., diamond wire sawing) are examples of activities requiring expert assistance.

The contractor training program provides workers with the knowledge and skills necessary to safely execute assigned duties. A graded approach is used to ensure that workers receive a level of training commensurate with their responsibility that complies with applicable requirements. Specialized employee training includes pre-job safety briefings, plan-of-the-day meetings, and facility/work site orientations. The following training and qualifications may be applicable as required by job assignment for work activities:

- Training in accordance with 29 CFR 1910.120
  - 40-Hour Hazardous Waste Worker/8-Hour Refresher
  - 24-Hour Experience Component
  - 8-Hour Supervisor Training (for selected individuals)
  - HASP and RWP
  - Respirator Training
  - First Aid (two qualified persons per shift/crew)
  - Certified Asbestos Worker and/or Asbestos Awareness
  - Lead Worker
  - Radiation Worker
  - Beryllium Training
- Training in accordance with 49 CFR 172 Subpart H, "Training"
- Hazardous material training

- Medical surveillance requirements
  - Hazardous waste worker physical
  - Mask fit
  - Lead worker baseline
  - Asbestos worker
- Dosimetry and bioassay requirements
  - Thermoluminescent dosimeter (as directed in the applicable RWP)
  - Plutonium bioassay (as determined by the Radiological Controls organization)
  - Whole body count.

The HASP, RWP, and hazards analysis will include specific requirements for project activities being conducted, which include PPE and required training for project personnel. This is discussed in detail in Section 3.5.

5.5 QUALITY ASSURANCE REQUIREMENTS

Overall quality assurance for the RAWP will be planned and implemented in accordance with 10 CFR 830.120 and other applicable standards. The quality assurance activities will be graded based on the potential impact on the environment, safety, health, reliability, and continuity of operations. Specific activities include quality assurance implementation, responsibilities and authority, document control, quality assurance records, and audits.

5.5.1 Quality Assurance Implementation

All project-related activities will establish and implement appropriate quality assurance requirements. Conditions adverse to quality will be identified in nonconformance reports, audit reports, surveillance reports, and/or corrective action requests. Investigation and corrective actions in response to these adverse conditions will be completed in a timely manner.

5.5.2 Responsibilities and Authority

The contractor must perform quality engineering, design reviews, surveillance, and audits (as necessary) to achieve quality assurance objectives. The contractor must also ensure that the various contractors and design agencies establish design and quality assurance programs to control design in accordance with applicable requirements.

5.5.3 Document Control

All technical documents (e.g., specifications and drawings) will be controlled in accordance with approved configuration management procedures. The responsible design agency will maintain control of the design documents through acceptance of the documents. A project records checklist will be initiated to identify those records required for the final project file.

5.5.4 Quality Assurance Records

Each organization that maintains quality assurance records will be required to control the records in accordance with applicable contractor quality assurance requirements.

5.5.5 Audits/Assessments

Internal and external audits are to be performed by the contractor's Quality Assurance and Services organization to ensure project compliance with the quality assurance program requirements.

5.5.6 Self-Assessments

Self-assessments will be conducted by project personnel to determine compliance in accordance with the requirements of the contractor's procedure.

5.6 PROJECT CLOSEOUT

At the completion of all removal action activities, any documentation that addresses remaining facility conditions that has not already been recorded will be forwarded to the records retention center where it will be stored with records from the 300 Area facilities. Updates to WIDS will be performed, as necessary, and end state condition of facilities at the time of project closeout will be provided to the EPA.

6.0 REFERENCES

10 CFR 830, "Nuclear Safety Management," *Code of Federal Regulations,* as amended.

10 CFR 835, "Occupational Radiation Protection," *Code of Federal Regulations*, as amended.

29 CFR 1910, "Occupational Safety and Health Standards," *Code of Federal Regulations,* as amended.

29 CFR 1926, "Safety and Health Regulations for Construction," *Code of Federal Regulations,* as amended.

36 CFR 800, "Protection of Historic and Cultural Properties," *Code of Federal Regulations*, as amended.

40 CFR 61, "National Emission Standards for Hazardous Air Pollutants," *Code of Federal Regulations,* as amended.

40 CFR 82, "Protection of Stratospheric Ozone," *Code of Federal Regulations,* as amended.

40 CFR 122, "EPA Administered Permit Programs: The National Pollutant Discharge Elimination System," *Code of Federal Regulations*, as amended.

40 CFR 260, "Hazardous Waste Management System: General," *Code of Federal Regulations,* as amended.

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APPENDIX A

300 AREA FACILITY DESCRIPTIONS FROM THE EE/CAs

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300 AREA FACILITY DESCRIPTIONS FROM THE EE/CAs

303A Storage Building, 303B Storage Building, 303C Material Evaluation Laboratory, 303E Storage Building, and 303G Storage Building. These five 303 series buildings, constructed during World War II, were used to store fresh metal (unirradiated uranium) and chemicals, as well as uranium scrap. They are all the same size (120.4 m^2 [1,296 ft^2]) and were constructed with concrete block walls, concrete foundation and floor slab, and a reinforced concrete roof.

Soon after the end of World War II, monitoring indicated contamination problems in and around these buildings similar to those encountered inside and near the 313 and 314 fuel fabrication buildings. Spontaneous fires occurring in uranium scrap barrels and in concreted uranium scrap "billets," along with oxide conversion activities, produced particulate contamination that settled in surrounding soils.

The 303C Facility was in use for storage until 1984. During the late 1990s, the 303C Facility was being considered for use as a small research and development laboratory and was renamed. It is not clear if it was ever used as a laboratory.

As of mid-2004, the 303A, 303C, 303E, and 303G facilities were empty and not in use. The 303B Facility continues to provide storage for fresh metal, chemicals, and uranium, but its contents will soon be removed. All five of these 303 buildings are radiologically contaminated and contain, contact, or are in close proximity to a number of 300-FF-2 Operable Unit (OU) waste sites.

303F Pump House. The original purpose of the 303F Building was the storage of fresh metal (uranium billets), chemicals, and uranium scrap. It was built during World War II and is constructed with concrete block walls, concrete foundation and floor slab, and a reinforced concrete roof. From 1954 to 1973 the building was used as a chemical makeup facility. Beginning in 1973, the building was used as a pump house until it ceased operation completely. It was part of the 300 Area Waste Acid Treatment System (WATS) *Resource Conservation and Recovery Act of 1976* (RCRA) treatment, storage, and disposal (TSD) unit, but the 303F Building portion of the TSD unit was clean closed in 1999. It is a reinforced concrete and concrete block structure. The building is radiologically contaminated. It is adjacent to or overlies several 300-FF-2 waste sites.

303G Storage Building. See 303A Storage Building.

303J Material Storage Building. The 303J Facility is a one-story wood frame structure built on a concrete foundation and floor slab. The siding is asbestos shake shingles and the roof is roll tar paper. The 303J Facility was used for storage and as office space. It is adjacent to several 300-FF-2 waste sites.

303M Uranium Oxide Facility. The 303-M Uranium Oxide Facility was constructed in the early 1980s to calcine saw fines and lathe turnings of slightly enriched uranium and Zircaloy-2. A RCRA Part A, Form 3 Permit Application was initially submitted as a protective filing in anticipation of using the 303M Facility to support future fuel manufacturing and depleted uranium projectile fabrication activities in May 1983; however, operations ceased in February 1987, and the unit was never incorporated into the Hanford Facility RCRA Permit. The facility is a cast concrete structure. It is located directly over the 618-1 Burial Ground. The facility is radiologically contaminated. The facility is a RCRA/*Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) integration site.

304 Uranium Concretion Facility. Originally, the 304 Facility was built for storage during World War II. Later, the 304 Facility was a pilot plant for the processes housed in the 313 Building. This operation moved in 1962, and the 304 Facility was used to store uranium scraps waiting for reclamation. The facility has been known as the Concretion Facility since 1971, at which time a process to solidify pyrophoric uranium scraps in a concrete matrix was initiated. A fire occurred in August 1977, spreading airborne particulate contamination within and near the building. This facility is a former RCRA TSD unit that has been clean closed with respect to dangerous waste constituents. However, the residual radioactive contamination site 300-249 was not closed out as part of the 304 Facility RCRA closure. Contamination is present on surfaces inside the building, and intrusive activities have the potential to spread or release contamination. This structure meets *National Historic Preservation Act of 1966* (NHPA) criteria as a historical property.

304A Uranium Concretion Facility Change Room. The 304A Building is a sheet-metal change facility that is attached to the 304 Facility.

305 Engineering Testing Facility. The 305 Engineering Testing Facility was constructed during World War II as a single-story structure with a central two-story high bay. The 305 Test Pile, as it was called, was the first operating reactor at the Hanford Site and was located in the 305 Building. The facility operated in this capacity until the late 1960s, in addition to housing quality assurance trials for N Reactor tritium production and a few critical experiments. During its years of operation, the test pile activities in the 305 Building produced no significant environmental contamination. The reactor was dismantled and disposed during the 1977 to 1978 time period. From 1968 to 1973, casting and machining activities took place in the west end of the building. In the late 1970s, a large addition was placed on the south/southeast side of the building. Various testing operations have been housed in the facility since that time.

305B Hazardous Waste Storage Facility. The original 305B Hazardous Waste Storage Facility structure was built in 1952, with a 1981 modification adding a high-bay laboratory area. The building is a RCRA TSD unit and has historic status according to NHPA criteria. The two reactors placed in the 305B Building were used to conduct experiments until the 1970s. As of mid-2004, the building is being used as a waste handling, packaging, and storage facility for hazardous materials and mixed waste. The facility will need to be vacated prior to the start of deactivation, decontamination, decommissioning, and demolition (D4). The building itself is radiologically contaminated, is designated as waste site 305-BSF, and is in close proximity to a

number of other waste sites. If the 305B Facility is not closed under RCRA prior to the start of CERCLA remediation, the facility may be a RCRA/CERCLA integration site.

306W Material Development Laboratory. The 306 Building was originally used as fuel fabrication pilot plant in support of 313 Building operations. In 1960, the facility was expanded to contain the co-extrusion fabrication process for N Reactor fuel fabrication. The building is of two-story bolted steel frame construction with insulated steel wall panels and tar and gravel roof. The first floor is reinforced concrete, and the second floor is a steel deck topped with concrete. In 1972, the west portion of the building was named 306W.

306E Development, Fabrication, and Test Laboratory. The 306 Building was originally used as fuel fabrication pilot plant in support of 313 Building operations. In 1960, the facility was expanded to contain the co-extrusion fabrication process for N Reactor fuel fabrication. The building is of two-story bolted steel frame construction with insulated steel wall panels and tar-and-gravel roof. The first floor is reinforced concrete, and the second floor is a steel deck topped with concrete. In 1972, the east half was designated as 306E, and that portion of the building became the Hanford Engineering Development Laboratory.

307 Retention Basins. The 307 Retention Basins provided a collection point for laboratory liquid wastes that contained low-level radioactive waste material. The four lined basins are constructed of reinforced concrete with above-grade tops. The basins are currently used for collection and transfer of retention process sewer to the Treated Effluent Disposal Facility (TEDF).

308 Fuels Development Laboratory. The 308 Building provides laboratory and office space. The building consists of a two-story laboratory, a high-bay, and a one-story rectangular office wing. The slightly sloped roof is a steel deck with insulating concrete and 20-year built-up asphalt and gravel finish. Exterior walls are reinforced concrete and concrete block. Ground floor interior walls are concrete block with plaster on both sides. The laboratory includes plutonium-contaminated gloveboxes and ductwork. The gloveboxes have been partially deactivated including partial decontamination, fixative application, and sealing of ports.

308A Fuels Development Laboratory. The 308A Building provides office space and loading area for a 9-metric ton (10-ton) crane. The framework of the building is bolted steel and reinforced concrete with exterior walls of reinforced concrete and concrete block. Interior walls were concrete block with plaster and polyvinyl chloride finish. The roof is slightly sloped and topped with steel deck with concrete and finished with tar and gravel. The 308A Building contains a reactor used to perform neutron radiography.

309 Plutonium Recycle Test Reactor. The 309 Facility was originally constructed to develop technology for using plutonium as a fuel in power reactors. In 1969, the facility was placed in a layaway condition. However, in 1985, the facility was designated as a test site for the space technology development program that led to an extensive cleanout of the original plutonium recycle test reactor equipment. The facility is currently unoccupied and has undergone additional deactivation measures. However, the original plutonium recycle test reactor core

remains in the facility. The containment vessel is of all-welded construction with a hemiellipsoidal bottom and a hemispherical dome. The above-grade vessel exterior is covered with 7.6 cm (3-in.) insulation with a waterproof membrane. The service building framework is welded steel. The roof is steel deck topped with 20-year built-up tar and gravel finish. Exterior walls are fluted steel insulated panels. The floor is concrete with vinyl tile.

310 TEDF, 310S Drum Storage Area, 310T1 Equalization Tank T1, 310T1A Equalization Tank T1A, 310T2 Diversion Tank T2, 310T3 Diversion Tank T3, 310T7A and T7B Clarifiers, 310V Valve Vault. The 310 TEDF was constructed as part of a *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) (Ecology et al. 1989) milestone to cease discharges to the 300 Area Process Trenches. The facility began operation in December 1994 and continues to operate. The TEDF collects nonradioactive process waste water that is discharged to the 300 Area Process Sewer from approximately 45 office buildings, research laboratories, and support facilities in the 300 Area. The facility removes metals and organic contaminants before the purified water is discharged to the Columbia River. The TEDF and associated ancillary support facilities and structures will need to be shut down prior to the start of D4.

311TF Tank Farm. The original purpose of the 311TF Tank Farm was for chemical storage and to support methanol recovery operations in support of fuel fabrication. In 1973 it became part of the 300 WATS. The 311TF Building portion of the 300 Area WATS RCRA TSD unit was clean closed in 1999. The tank farm is radiologically contaminated. It is adjacent to or overlies several waste sites. The 311TF Building was built in 1954 and consisted of four aboveground chemical storage tanks, two belowground methanol storage tanks, and the small methanol still house. The tanks were located inside a concrete containment curb or catch basins. One additional tank was built for use in the WATS program in 1985. The 311TF Building and the two belowground methanol storage tanks were removed in 1989.

313 Fuels Manufacturing Building. The 313 Metal Fabrication Building was a World War II structure that housed fuel element preparation activities from 1944 to 1989. Work involving uranium during the early years of operation was treated as ordinary foundry work, and special precautions for radiological activities were slowly added. A few isolated contamination events occurred in the 313 Building. Contamination problems in this structure resulted from the ongoing augmentation of wastes over time. Contamination during fuel fabrication resulted not only from radiological materials, but also hazardous solvents, metals (including beryllium), and other process chemicals. The majority of fabrication equipment for single-pass reactor fuel elements was removed from the 313 Building between the mid-1970s and mid-1980s. The south end of the building continued to support reactor fuel production for a period of time, but is now deactivated. The north section was leased to a private firm in the late 1990s and early 2000s, but is now vacant. The 313 Fuels Manufacturing Building was part of the 300 Area WATS RCRA TSD unit. The above-grade portion of the 313 Building that was part of the 300 Area WATS RCRA TSD unit was clean closed in 1999. The soil under the south part of the 313 Building is still part of the 300 Area WATS RCRA TSD unit and is a RCRA/CERCLA integration site. The 313 Building contains, contacts, or is in close proximity to a number of 300-FF-2 OU waste sites.

314 Engineering Development Laboratory. The 314 Building, referred to as the Press Building or the Metal Extrusion Building, originated as one of two primary fuel fabrication structures at the Hanford Site. It was a World War II structure that housed fuel element preparation activities from 1944 to 1971. Several additions have been constructed over the past years along the north side of the building. The 314 Building experienced very few large, isolated contamination events. Contaminants include metals, radiological materials, and hazardous process chemicals. No fuel element preparation activities for the single-pass reactors have taken place in the 314 Building since 1971, when the last of the single-pass reactors closed. The 314 Building was modified in the 1970s and used for a variety of research projects and crafts services. The 314 Engineering Development Laboratory Building has been designated the 300-218 waste site and also contacts, or is in close proximity to, a number of 300-FF-2 OU waste sites.

314B Stress Rupture Test Facility. The 314B Stress Rupture Test Facility supported fuel fabrication operations and shares a building with the 314 Engineering Development Laboratory at its northwest corner. The structure currently provides safe, shielded space for stress rupture and burst tests. Interior wall partitions are arranged to form eight test cells and a central corridor. Each cell has a blast door and an individual blowout roof panel providing safe, shielded space for stress rupture or burst tests for tubular materials under high-temperature and high-pressure conditions. The original mission of the 314B Building as a whole was fabrication of uranium metal fuel for single-pass production reactors, and it had numerous other uses before being retired. Permanent equipment used in processing, storing, or disposing of material or waste within the building consists of pits, sumps, drywells, tanks, trenches, air shafts, and the soil column. All are suspected of being contaminated. The 314B Building has been designated as part of the 300-218 waste site.

315 Filter Water Plant Building, 315A Backwash Disposal Pond, 315B Chlorine Storage Facility, 315C Backwash Lift Station and Sedimentation Pond, 315D Backwash Recycle Pump Station. The 315 Building and ancillary structures provide sanitary water for the 300 Area. The 315 Facility operations consisted of coagulation, sedimentation, chlorination, and filtering processes. The filter water plant is a concrete structure. The 315B Chlorine Storage Facility consists of two 0.9 metric ton (10-ton) chlorine storage containers.

320 Physical Sciences Laboratory. The 320 Building was built in 1966 to house analytical chemistry services and plant support. The current missions include radiochemical environmental analysis, sample preparation, and methods development. Throughout the years, small spills of radioactive material have occurred in the facility. In all known cases, the contamination was contained within the building.

321 Hydromechanical/Seismic Facility, 321B Model Heat Loop, 321C Core Pump Shelter, 321D Seismic Testing Facility. The 321 Facility was used for hydraulic and mechanical testing of reactor materials and components. The facility consists of one-story concrete and bolted steel framework with fiberglass insulation in the ceiling, a basement and canyon area, and 321B, 321C, and 321D additions.

323 Mechanical Properties Laboratory. The 323 Building (originally the 321-A Building) served as a support building for waste vitrification techniques in the 321 Facility. In 1968 the mission changed to metallurgical research initiatives. There are four below-grade tanks encased in concrete underlying the 323 Building.

324 Chemical Engineering Laboratory, The 324 Building (also known as the Waste Technology Engineering Lab) is a 9,449 m^2 (101,709-ft^2) concrete and steel structure constructed between 1964 and 1966. The building was designed to allow for a high degree of versatility in completing complex and varied experimentation on highly radioactive materials. These activities included chemical processing and metallurgical engineering studies on highly radioactive materials and development of approaches for waste treatment and storage. Historical information indicates that part of the building was constructed over the 618-6 Burial Ground. The burial ground was used to dispose of dry low-level waste, but the contents of 618-6 were moved in 1962 to allow for the new construction. Based on historical information, the 618-6 waste site was reclassified as a rejected waste site, under Waste Information Data System (WIDS) reclassification form 98-078. Therefore, no further actions are planned to address 618-6.

The facility contains a partial basement, and first, second, and partial third floors. The building provided office and laboratory space to support research and development activities associated with waste management, structural material for use in the nuclear industry, and nuclear fuels design and construction. The radiological laboratories included two hot cell facilities, the radiochemical engineering cells (REC) and Engineering Development Laboratory, and various low-level and nonradiological laboratories. Support facilities included the storage vault, used for storing special nuclear material, and the craft shop. Two vault areas are equipped with tanks for the temporary storage of radioactive liquid wastes and other building-generated solutions. Administrative areas include office spaces and lunchrooms. To protect against releases of radioactive material from the "hot cells" to the environment, integral metal liners with sumps (i.e., without drains) were installed in the cells and tank vaults. Confinement of radioactive particulate matter within the shielded cells is provided by a directed air flow through high-efficiency particulate air (HEPA) filter ventilation system. As a result of residues and internal facility spills during the conduct of past activities, the facility contains areas with significant fixed and dispersible mixed waste contamination.

The REC is also being addressed as a RCRA closure under the *324 Building Radiochemical Engineering Cells, High-Level Vault, Low-Level Vault, and Associated Areas Closure Plan* (DOE-RL 2005). D4 of the REC will be performed as a RCRA/CERCLA integration under the Tri-Party Agreement. The Washington State Department of Ecology will maintain regulator oversight of the REC closure, while the U.S. Environmental Protection Agency (EPA) maintains lead regulator authority for the scope of this removal action.

324A Chemical Engineering Building. The 324A Building is an 8 m^2 (84-ft^2) building located north of the 324 Building. It provides instrument support for the 324B exhaust stack.

324B Chemical Engineering Laboratory Exhaust Stack. The EP-324-S-01 exhaust stack is a 46 m (150-ft)-high concrete stack located north of the 324 Building. It traps airborne wastes that are generated at the 324 Building. Prior to the issuance of the CERCLA action memorandum, the stack was permitted under the Hanford Air Operating Permit.

324C Experimental Lithium Enclosure. The 324C facility is a 37 m^2 (84-ft^2) structure located to the northeast of the 324 Building. The purpose of the building was to support an experimental lithium system.

324D Stack Sampling Facility, 3718E Storage Building, and 3718G Storage Buildings. 324D is a 50-m^2 (540-ft^2) metal shed located north of the 324 Building. The facility is used to store equipment.

324S Wet Storage Basin. The basin is located in the 324 Building and was used for transfers from the cask handling area and underwater storage of the radioactive materials fuel elements. Shielded transfers of highly radioactive materials from the wet basin were accomplished by two remotely operated, enclosed mechanical transfer conveyors that are no longer operational. The basin was deactivated by removing the water and then filling the basin with sand and concreting the surface within the central handling area.

326 Material Science Laboratory. The 326 Building is a three-level L-shaped building with offices along the outside and wet and dry laboratories along the inside of the first and second floor. It also has a concrete basement. The 326 Building opened in 1953 and was called the material sciences laboratory. The primary mission of the 326 Building was analysis of metallurgical samples of post-irradiated materials. During the 1970s and 1980s, several laboratories were converted to chemical work involving unirradiated or low-level radioactive materials, although the central mission continued to support research or reactor components and fuel elements. A high-energy electron microscope was installed in the basement in 1971 to perform materials studies.

327 Post-Irradiation Test Laboratory. The 327 Building is a 2,973 m^2 (32,000-ft^2) building constructed between 1951 and 1953. The building houses the Post-Irradiation Testing Laboratory, which consists of specially equipped shielded and ventilated hot cells and laboratories designed for physical and metallurgical examination and testing of irradiated fuels, concentrated fission products, and irradiated structural materials. The primary operating area is a canyon area and connecting bays where auxiliary operations are performed. The canyon area contains shielded hot cells and cell operating stations and consoles. A transfer and storage area, including two water-filled basins, is located at the west end of the building. Bridge cranes are used to transfer drums and casks containing radioactive material/waste between cells or from the cells to the transfer/storage area. Ventilation systems are generally designed to draw air from areas of lesser contamination potential through areas having greater contamination potential before being filtered through HEPA filters and exhausted from the stack. Operations at the laboratory ceased in 1996.

327 Exhaust Stack. The EP-327-S-01 stack traps airborne wastes that are generated at the 327 Building. Prior to the issuance of the CERCLA action memorandum, the stack was permitted under the Hanford Air Operating Permit.

328 Engineering Services and Safety Building, 328A Sheet Metal Shop. The 328 Building was constructed in 1952 to house the craft, equipment, and fabrication services for the 300 Area.

The 328A Building, attached to the 328 Building, was constructed to replace the 3717 Instrument Shop and the two 3722 Area shops. The building was built as a central shop and housed craft personnel, equipment, and fabrication services.

329 Chemical Sciences Laboratory. The 329 Building, also known as the Biophysics Laboratory, was built in 1952 and 1953 to support the environmental and bioassay programs. In 1974 Section D of the building, a pit known as the Neutron Multiplier Facility, was added but it did not receive nuclear material until 1977. In 1975, Room 14-C was designated as an isolated facility for work with plutonium and enriched uranium.

The structure is bolted steel framework with exterior walls of fluted steel and insulated panels. The two-story facility portion of the building has a partial basement. The neutron multiplier facility was added in 1974. The interior consists of standard laboratories, a maintenance shop, offices, and counting rooms with thick concrete walls and ceilings. Numerous "caves" constructed of lead bricks have been built to work with radioactive materials.

332 Packaging Test Facility. The 332 Building is used as a holding area for nonradioactive hazardous waste. It is a pre-engineered, insulated metal building on a concrete floor slab. The floor slab is sloped so that it drains to an exterior sump.

333 N Fuels Building. The original purpose of the 333 N Building was the manufacture of fuel elements for N Reactor. During the period of 1965 to 1967 the building supported the production of special lithium aluminate fuel targets. The fuel target processes included autoclave testing, etching with nitric-hydrofluoric acid, and inspection. It was part of the 300 Area WATS RCRA TSD unit. The 333 N Building portion of the 300 Area WATS RCRA TSD unit was clean closed in 1999. The 333 N Building is of steel frame construction and sits on a concrete slab with steel wall and roof panels. The facility is radiologically contaminated.

334 Process Sewer Monitor Facility. The 334 Building housed the control instruments for the acid system in the 333 N Fuels Building and stored small amounts of chemicals. It is a steel frame structure on a concrete slab with steel wall and roof panels. The facility is radiologically contaminated.

334A Waste Acid Storage Building. The 334A Building served as the waste treatment and waste storage facility for the 333 N Fuels Building. The facility has undergone deactivation. It was part of the 300 Area WATS RCRA TSD unit. The 334A Building portion of the 300 Area WATS RCRA TSD unit was clean closed in 1999. The structure consists of a small steel frame structure, an above-grade steel frame structure supporting three acid tanks, and an at-grade

reinforced concrete pit. The pit is lined with an acid-resistant glass-filled polyester coating. The facility is radiologically contaminated.

335 Sodium Test Facility. The 335 Building, constructed in 1968, provided space for experimental equipment to support sodium and potassium tests. The sodium test loops were deactivated in 1977 and removed during 1983-1984. The building is a rectangular one-story structure with a reinforced concrete floor and corrugated steel sides. The roof is insulated corrugated steel. The addition has a concrete tile-covered floor with concrete block sides and a tar and gravel roof.

336 High-bay Testing Facility. The 336 Building is a two-level structure with a 15 m (50-ft)-deep pit. The roof is corrugated steel with insulation and built-up roofing topped with gravel. The building consists primarily of a high-bay and dry laboratory space with associated wet laboratory and office space. The high-bay portion of the building includes a pit that was originally intended for piping structures. The building was completed in 1969 with the original purpose of housing experimental equipment for the study of the properties of sodium. It was know as the Core Segment Development Facility and supported the Fast Flux Test Facility (FFTF) studies. The sodium test loop equipment was dismantled and removed. The building most recently has been used as a high-bay mechanical test building for research related to multiphase flow phenomena and to experimentally address issues related to the Hanford Site such as waste retrieval, transport, and disposal using nonradioactive simulates. There was a small laboratory built in the early 1990s to support the high-bay testing. Additionally, in 1995 two wet laboratories were added to the building for research support. The construction also included a common area with a set of restrooms.

337 Technical Management Center, 337B High-Bay and Service Wing. The 337 Technical Management Center was constructed to support the 337 High-Bay High-Temperature Sodium Facility as an administrative support building. The facility has two reinforced concrete office wings, each three stories high, extending to the east of the 337 High-Bay. They are connected by a corridor. The facility is largely used as a support office building. It has a very flexible design and contains large open bay areas with partial wall partitions, which can be configured to accommodate traffic flow and organizational arrangements of the occupants. The eastern first level of the facility contains a kitchen and cafeteria.

The 337 High-Bay was constructed during 1970 through 1972 in five segments. The original mission was to support FFTF development in "cold" (nonradioactive) mockup work. The high-bay area is 28.3 m (93 ft) high and housed facilities to test large-scale components prior to installation in the FFTF.

338 Maintenance Building. The 338 Building was moved from the 100 Area in 1971 to provide space to receive, mock up, test, and store components and certified materials for use in the 337 High-Bay High-Temperature Sodium Facility. By 1981 the building was converted to house the Secured Automated Fabrication Cold Test Facility. In 1988, the facility was converted to a chemical and hazardous materials storage area.

340 Waste Neutralization Facility Structure. The 340 Building provides for temporary storage, neutralization, and shipment of radioactive waste. The building is constructed of corrugated steel including an operating gallery, control panels, caustic tank, restroom facilities, and truck loadout area. Adjacent to the 340 Building is a concrete pit for two 56,781 L (15,000-gal) neutralization tanks. The pit is covered by removable concrete blocks. The walls and roof are of corrugated steel.

340A Waste Retention Building. The 340A Building provides for temporary storage, neutralization, and shipment of radioactive waste. The building is a steel frame structure with a concrete floor 1 m (3 ft) below grade and concrete walls to grade. The above-grade walls and roof are steel. The building contains six 30,283 L (8,000-gal) stainless steel waste storage tanks.

340B Waste Loadout Building. The 340B Building provides a railroad tank car loadout facility for temporary storage, neutralization, and shipment of radioactive waste. The area can accommodate two 75,708 L (20,000-gal) tank cars. The walls and roof are corrugated steel.

342 Collection Sump 1 - 300 Area TEDF Sewer Line, 342A Instrument/Electrical Building Shop - TEDF, 342B Transformer Pad/Vault - TEDF, and 342C Generator Pad - TEDF Sump. These facilities support operation of the 300 Area Treated Effluent Disposal Facility (TEDF). As of mid-2004, these facilities are in use and will need to be shut down prior to the start of D4.

351A Meter and Testing Building. This sheet-metal building houses equipment supporting operation of the 300 Area electrical substation. As of mid-2004, this facility is in use and will need to be shut down prior to the start of D4.

351B Meter Testing and Switchgear Facility. This sheet-metal building houses equipment supporting operation of the 300 Area electrical substation. As of mid-2004, this facility is in use and will need to be shut down prior to the start of D4.

352E Switch Station East Side. The 352E Building is a substation and electrical switchgear facility. The building houses electrical switchgear that provides a portion of the electrical distribution to the southeast sections of the 300 Area. The building also contains batteries and charging equipment for operation of the control equipment. A below-grade cable spreading area contains jacketed cables on cable trays. The building is unprotected noncombustible with roof and exterior walls of corrugated sheet metal on steel columns, beams, and girts. The interior walls consist of a 1.2 m (4-ft)-high painted plywood wainscot with exposed foil faced fiberglass insulation on the upper portion of the walls and the ceiling. An interior wall separating the battery room from the remainder of the facility is gypsum board on steel studs. The battery room is sheathed with gypsum board. The floor is reinforced concrete.

352F Electrical Switch House, 2.4 kV. The 352F Electrical Switch House is an electrical switchgear facility. The building houses electrical switchgear that provides a portion of the electrical distribution of the 300 Area. The building has exterior walls of corrugated sheet metal on steel columns, beams, and girts. The floor is reinforced concrete.

377 Laboratory. This facility was constructed to house nondestructive testing, inspection, and examination of a retired nuclear steam generator. The generator has been removed and the facility was vacated in 1996. The building is radiologically contaminated.

382 Pump House Building. The 382 Pump House Building is a one-story concrete block structure with a concrete floor and roof slabs. It houses five electrical-driven water pumps. Two pumps are 2400 V and the other three pumps are 480 V. These pumps receive their supply from the two aboveground water storage tanks. These pumps supply potable and fire water to the entire 300 Area.

382B Fire Pump Station. The 382B Building is a one-story structure with exterior walls and a roof of corrugated sheet metal on steel columns, beams, and girts. The floor is reinforced concrete. The facility houses two diesel-driven fire pumps that are emergency backups to the electrical pumps. It also has two 2,082 L (550-gal) diesel fuel tanks that are above ground in the facility.

382C and 382D Sanitary Water Storage Tanks. The 382C Tank is a steel aboveground water storage tank. It measures 18.3 m (60 ft) in diameter and is 14 m (46 ft) high. It stores potable and fire water for the 300 Area grid. The tank is fed from the City of Richland and holds 3,406,871 L (900,000 gal) of water.

The 382D Tank is a steel aboveground water storage tank. It measures 17 m (56 ft) in diameter and is 13 m (45 ft) high. It stores potable and fire water for the 300 Area grid. The tank is fed from the City of Richland and holds 3,028,330 L (800,000 gal) of water.

384 Power House Building. This facility was constructed as a coal-fired power plant to provide electrical power to the 300 Area. It is a steel frame structure with reinforced concrete floor and foundation, concrete block and corrugated transite exterior walls, and tar-and-gravel roof. Between 1964 and 1974, the 384 Facility was converted to burn fuel oil. It was shut down in 1998. The facility sits over a waste site.

3128 Gas Bottle Dock. The 3128 provides gas bottle storage.

3225 Bottle Dock. The 3225 Building is a small, open, steel-framed and roof loading dock with cinder block walls used to store cylinders of compressed gas.

3503A Electrical Cable Pit No. 2. This is a storage facility in support of the 384 Building. It is a small rectangular building with fluted metal walls and gabled, fluted metal roof.

3503B Electrical Cable Pit. 3503B is an in-ground electrical vault that houses the emergency feeders. It has a concrete floor, walls, and roof. It has a 1 by 1 m (3- by 3-ft) metal lid in the center. It houses cable connections for 2400-V power.

3506C Telecommunications HUB. The 3506C Building is a modular trailer "hut" used for fiber optic network connections to the 300 Area facilities.

3508T2 Siren Northeast of California and Apple Streets. This is a pole-mounted alarm siren used for emergency alerts in the 300 Area.

3605 Fences, Power Poles, Guard Shacks, and other unnumbered aboveground structures/items. It is intended that EE/CA #3 cover all aboveground structures/items not covered in EE/CA #1 or EE/CA #2. Fences, power poles, and guard shacks, as well as other miscellaneous unnumbered structures that may be identified or temporarily installed during conduct of this CERCLA action will be removed.

3614A River Monitoring Station. The 3614A River Monitoring Station houses equipment for monitoring Columbia River water and for air sampling studies. 3614A is a concrete block structure, erected on a concrete slab.

3621-66 Petroleum Tank (Diesel). The 3621-66 Tank provides diesel storage for the 3621BC Emergency Generator Building. This tank replaced tanks in 3621-D.

3621BC Emergency Generator Building. The 3621BC Building provides emergency electrical power for the 300 Area. The building is constructed of prefabricated steel.

3621D Emergency Generator Building and Shop. The 3621D Building provided emergency generator services and shop space for associated maintenance.

3705 Photography Building. This facility served as the site photography laboratory with office space. The facility is a rectangular single-story building with concrete block walls and slab-on-grade construction. The roof is tar and gravel. A metal-sided mechanical room is located on the roof. The photography operations relocated and the facility has been shut down.

3706 Communications and Documentation Services/3706A Ventilation Equipment Room for 3706 Building. The 3706 Building is a single-story wood frame and concrete block structure with concrete floor and foundation, wood section exterior walls covered with asbestos shakes, and roofing of mineral surface asphalt shingles over tar paper. The 3706 Building includes a laboratory section with 0.6 m (2-ft)-thick concrete wall.

The 3706A Building is of masonry block construction. The roof structure consists of 5 cm (2-in.) tongue and groove wood decking supported by 10 cm by 33 cm (4-in. by 13-in.) roof joists. The 3706A Building houses the heating, ventilation, and air conditioning (HVAC) equipment for 3706 Building.

3707D Information Services Building. This facility was an office building. It is a single-story wood-framed structure with an on-grade concrete floor and concrete foundation. The floors are covered with tile and the exterior walls are covered with asbestos shakes. The roof is built-up felt with tar and gravel.

3707F Radiation Monitoring Building. The 3703F Building provides a radiation monitoring office and shielded personnel space for those involved in the waste handling activities at the 340 Building. The building is a prefabricated self-framing galvanized steel panel structure erected on a concrete slab.

3707H Change House. This facility provided space for change rooms, lockers, restrooms, and showers. It is an insulated modular-type relocatable structure placed on a reinforced concrete wall footing. The exterior walls are polyurethane insulating core between reinforced precast concrete.

3708 Radioanalytical Laboratory. The original use of this facility was as a vehicle maintenance shop. Later it was used for research and analysis of activation and/or mixed fission products and for some storage. It is a one-story concrete block structure on grade with a concrete foundation and concrete slab floor. The roof is a concrete slab with tar-and-gravel surface. The facility is radiologically contaminated.

3709 Paint Shop. The 3709 Paint Shop provides space for a paint and sign shop. The building is constructed as a single-story wood frame structure on-grade with concrete foundation and concrete slab floor. The roof is wooden with built-up felt, tar, and gravel surface. Exterior walls are covered with asbestos shakes. A 3 m (10-ft) addition was built on the east side.

3711 Maintenance Storage Building. This facility provides storage space for landlord materials. This facility is of prefabricated steel with corrugated metal siding and roof on a concrete floor.

3712 Storage Building. The 3712 Building is a one-story steel frame structure on a concrete floor slab with metal panel walls and roof. It was used to store "green" (i.e., nonirradiated) fuel for N Reactor. The facility is radiologically contaminated.

3713 Carpenter Shop. The original use for this facility was as a receiving storeroom. Later, it was converted into a carpenter shop. It is a one-story wooden frame building with concrete foundation walls with concrete spread footings, wooden beams, and interior wood posts. As of mid-2004, this facility was still in use.

3714 Soils Laboratory. The 3714 Soils Laboratory provides storage of laboratory solvents, lubricants and flammable chemicals. It also serves as a laboratory. The building is a one-story building having reinforced concrete walls, roof, and floor, and blowout windows with pressure-release latches on all but the solid west wall.

3715 Spare Parts Warehouse. This facility is a storage building. It is a single-story corrugated sheet-metal building on a concrete slab. A concrete dock with ramp is located on the west side of the building adjacent to the railroad track.

3716 Storage Building. The original purpose of the 3716 Building was to support development of alternative reactor fuel fabrication processes. The last use of this facility was to store "green"

(i.e., nonirradiated) N Reactor fuel. This one-story building consists of 1.2 m (4-ft)-high concrete walls mounting a metal frame structure with insulated aluminum wall and roof panels. The facility is radiologically contaminated.

3717 Spare Parts Warehouse. This building may originally have been used as a storage building. By 2001 it was used as an instrument shop. It is a wooden frame structure with a reinforced concrete slab floor and concrete curbing, supported by concrete foundation walls. The exterior walls are of wood, and the building has a built-up roof with felt surface.

3717B South Maintenance Facility. This facility provided space for shops and associated offices. It is a single-story rectangular concrete block and metal structure with a typical Quonset arch roof of built-up finish.

3717C Materials Archive Building. The 3717C Materials Archive Building provides controlled storage. The 3717C Building is a single-story corrugated sheet metal building with concrete floor. The building is insulated with batt fiberglass.

3718 Office and Storage Building, 3718A Laboratory Equipment Central Pool Building, 3718B Laboratory Equipment Central Pool Building, 3718C Storage Building, 3718E Storage Building, 3718G Storage Building, 3718M Sodium Storage Facility, 3718N Insulation Shop, 3718P General Storage, and 3718S General Storage. The 3718 facilities listed provide storage space and office space. 3718E is a 279 m^2 (3,000-ft^2) metal and concrete structure used to store equipment and materials from the 324 Building. 3718G is a 372 m^2 (4,000-ft^2) metal shed used to store equipment and materials from the 324 Building. The 3718P Building is a single-level high-ceiling facility and serves as a storage/warehouse primarily used for storage of high-efficiency particulate air (HEPA) and dust-type filters used for the operations of most facilities within the 300 Area. A portion of the building is also used as a storage area for research-supported project items. The 3718S Building is a single-level warehouse used principally as a research storage building. The building is currently vacant and has been placed in standby.

3719 Computer Facility. This facility provides space for official records and documents. It is of modular construction with a poured concrete slab foundation. Exterior walls are a polyurethane insulating core placed between reinforced precast concrete.

3720 Chemistry and Metal Sciences Laboratory. The 3720 Laboratory was built in 1959 on the site of the old 3722-A Building and was used for analytical chemistry work in support of the production reactors in the 1960s and early 1970s. In 1971, the facility was transferred to Pacific Northwest Laboratory and used by many departments including craft services, fuels and metallurgy, and atmospheric sciences. In 1980, a one-story concrete block addition was constructed on the north end. The addition contained general laboratory and office facilities. The original structure is a metal frame structure erected on concrete foundations, footings, and floor slab. The roof is a medium-sloped gable roof with insulated, built-up roofing, and tar and gravel placed on a corrugated sheet-metal base.

3721 Classified Shredder Facility. The 3721 Facility houses a shredder for disposition of classified materials. The 3721 Facility is a single-story building with concrete block walls, cast-in-place concrete floor, and built-up asphalt/gravel roofing over corrugated steel panels and structural members.

3722 Fabrication Shop. This facility was originally built as a receiving warehouse. It was later converted into a fabrication shop. It is a one-story wooden frame structure with a reinforced concrete slab floor.

3723 Solvent and Acid Storage Building. The 3723 Building is a 13 m^2 (144-ft^2) building located north of the 327 Building. It was used to store acids and solvents used at the 327 Building.

3727 Classified Vault. The 3727 Building provided storage of fissile specimens of nuclear fuel elements. The 3727 Building is a reinforced concrete structure. Storage vault walls are 41 cm (16 in.) thick.

3728 Geotechnical High-bay (or FFTF Test Article Storage Facility). The 3728 Building provided shielded space for storing FFTF test article assemblies. The 3728 Building is a corrugated metal structure with a concrete foundation and floor. The roof is corrugated metal, pitched, and insulated with fiberglass blankets. The walls are also insulated with fiberglass blankets. Big roll-up doors on the south side and east side north end are double-insulated.

Gamma Irradiation Facility. The 3730 Building is a single-story facility constructed of concrete masonry units overlaid with sheet foam insulation. The insulation is covered with a textured and colored elastimer material. The 3730 Building was originally constructed in 1949 as a shop. In 1956 the work performed in the 3741 Building was transferred to this building including gamma irradiation testing of materials, analyzing waste tank solutions, and performing studies of corrosion and stress corrosion cracking, and evaluation of probes under irradiated conditions. The facility also houses hot cells, which were used to support sampling operations in the adjacent 326 Building. Radioactive source material is located in a water-filled pool in the basement of the facility. The 3730 Building was constructed to house fabrication operations for specialized graphite shapes. In 1956 a concrete vault was added to the facility. Safety upgrades including improved ventilation, filtration, a central heating system and sewer connections were made during 1974-1976. Additions in 1980 included gloveboxes, HEPA filters, and a blower addition.

3731 Laboratory Equipment Central Pool. This facility provided storage space for laboratory-type equipment. It is a prefabricated metal storage-type building constructed on a concrete stub wall and concrete pad. The building has a metal exterior wall and gable roof.

3731A Graphite Machine Shop. This facility was used to machine graphite and provided storage of graphite materials. It is a cement block masonry structure constructed on a concrete pad. The wood low-gable-type roof is covered with asbestos shingles.

3745 Radiological Calibration and Standards. The 3745 Building was opened in 1944 to provide a radiological calibrations and standards laboratory. The two-story wood-framed building contains a low scatter room in which dosimeters were calibrated. The building contained a reinforced concrete vault, a large calibration room, and two laboratories.

3745A Van deGraaff Electron Accelerator. The 3745A Building provides a shielded laboratory space for research. The 3745A Building is rectangular with concrete walls and an on-grade concrete slab floor. The concrete roof has a tar and gravel finish. The electron accelerator room has 1 m (3-ft)-thick concrete end walls and 20 cm (8-in.) concrete block side walls. The central section of the building near the control room wall is a high-bay section. The facility is presently unoccupied.

3745B Van deGraaff Positive Ion Accelerator Facility. The 3745B Van deGraaff Building provides shielded laboratory space for research with positive ion bombardment using a 20MeV accelerator. The 3745B Building is rectangular and has evolved into its present configuration through a series of additions. Initially the building had a concrete floor, walls, and roof at the target area while the remainder was constructed of wood frame covered with asbestos shake siding. Subsequent additions to the north and south sides of the building were constructed of concrete block with some walls of shielding concrete. All the roof areas are essentially flat with slight slopes to carry water runoff and consist of tar and gravel coverings. A concrete block addition for storage was added in 1981. The building is presently unoccupied.

3746 Irradiation Physics Building. The 3746 Building provides support space such as offices, lunchroom, and restrooms. The building is a one-story frame structure with asbestos shake siding and an asphalt shingle roof. The floor is a concrete pad on-grade, covered with asphalt tile. Recent building modifications provided a connecting hallway and vestibule to the 3746A Building constructed of concrete masonry units and gypsum wallboard over rigid insulation.

3746A Radiological Physics Building. The 3746A Building provides laboratory and office space. The building is constructed on a concrete foundation with an on-grade concrete floor slab. Outside walls and internal bearing walls are constructed of concrete block. All other internal partitions are constructed of gypsum board on steel studs. The roof is constructed of wood planking with built-up roofing and insulation supported on glue-laminated wood beams. The laboratory floor consists of sheet vinyl; office/corridor floor covering is vinyl asbestos tile. The addition was constructed of concrete masonry units and gypsum wallboard over rigid insulation.

3746D Technical Service Annex. The 3746D Building is a Quonset hut-type building with curved sheet-metal sides and plywood ends on a concrete slab. It was used for storage.

3760 Hanford Technical Library. The 3760 Building housed the Hanford Technical Library. The second floor has office space. The building is a partial two-story structure with no basement. The framework is bolted steel. The parapet roof is slightly sloped steel deck topped

with Class II 20-year tar and gravel finish. Exterior walls are fluted steel with insulated panels. The building contains a classified vault enclosed in concrete.

3766 Office Building. This building provides office and conference space.

3790 Security Office Building. The 3790 Building provides office space and conference rooms for safeguards and security personnel. The building is a single-story, modified rectangular structure. It has a raised foundation and a basement. The flat, metal deck roof has rigid insulation and built-up asphalt and gravel finish.

3802A Steam Pressure Reducing Valve (PRV) Station. The 3802A Steam PRV Station provides manhole connection for steam service to the 377 Building area. The subgrade structure is 20 cm (8-in.) reinforced concrete walls, floor, and roof. The building is concrete block walls and concrete slab roof.

3906 Sanitary and Process Lift Station. The 3906 Lift Station provides a gravity drain collection point for the sanitary and process sewer systems.

3906A Sanitary Sewer Lift Station #1. The 3906A facility serves as a gravity collection point and lift station for the sanitary and process sewer systems. The lift station consists of an at-grade concrete pad and a 5.6 m (18.5-ft)-deep concrete pit with walls up to 0.3 m (1 ft) thick. As of mid-2004, this facility is in use and will need to be shut down prior to the start of D4.

3906B Sanitary and Process Lift Station #3. The 3906B Lift Station provides a gravity drain collection point for the sanitary and process sewer systems.

3906C Sanitary Sewer Sample Station. The 3906C Sanitary Sewer is a concrete in-ground vault measuring 2.6 by 1.4 by 2.1 m (8.5 by 4.5 by 7 ft) with a 1 by 1 m (3- by 3-ft) metal lid. It has a sanitary sewer line that runs through the bottom of the vault to the City of Richland.

Boiler Annexes: 305-BA, 306-EBA, 323-BA, 324-BA, 326-BA, 327-BA, 328-BA, 331-BA, 337-BA, 382-BA, 3705-BA, 3706-BA, 3720-BA. These buildings are recently constructed (mid-1990s) steel frame structures that currently house package boilers to provide steam heat to their associated buildings. The *Engineering Evaluation/Cost Analysis #3 for the 300 Area* (EE/CA #3) (DOE-RL 2006b) is intended to include all boiler annex buildings in the 300 Area not previously included in *Engineering Evaluation/Cost Analysis #1 for the 300 Area* (EE/CA #1) (DOE-RL 2004) or *Engineering Evaluation/Cost Analysis #2 for the 300 Area* (EE/CA #2) (DOE-RL 2006a).

Remaining Slab and Below-Grade Structures Removal: 3506A Powerhouse Maintenance Shop, 3506B Maintenance Shop, 3701D Office Building, 3701U Security Office Building, 3762 Technical Security, 3763 Office Building, 3764 Office Building, 3768 Office Building, 3769 Office Building, 3770 Office Building. The listed buildings above-grade structure has been removed and only a slab or slab and below-grade structure remains. Low levels of

radiological and/or chemical contamination may be present as fixed contamination on the slab surface or within the below-grade structure.

Mobile Offices: MO-036, MO-059, MO-258, MO-262, MO-263, MO-265, MO-270, MO-271, MO-274, MO-275, MO-391, MO-423, MO-443, MO-741, MO-744, MO-745, MO-905. Most of these buildings provide mobile or temporary office or storage space. They are transportable metal clad buildings on steel frames. MO-265 and MO-423, which together comprise the Radiological Counting Facility, are being used to count radiological samples in support of CERCLA response actions.

Miscellaneous Conex box storage, modular buildings such as "hazardous storage" (also used as alternate storage) ("HS") designated structures, unnumbered aboveground structures/items, lay-down areas and yard storage areas, slabs and/or foundations for previously demolished structures. It is intended that EE/CA #3 cover all aboveground structures/items not covered in EE/CA #1 or EE/CA #2. Although a diligent search of records has been conducted, as well as walkdowns of the area, it is likely that a structure or item may have inadvertently been omitted from the building list. This item is intended to capture all remaining miscellaneous items intended for D4 under this removal action.

REFERENCES

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. 103, et seq.

DOE-RL, 2004, *Engineering Evaluation/Cost Analysis #1 for the 300 Area*, DOE/RL-2001-30, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL, 2005, *324 Building Radiochemical Engineering Cells, High-Level Vault, Low-Level Vault, and Associated Areas Closure Plan*, DOE/RL-96-73, Rev. 3, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL, 2006a, *Engineering Evaluation/Cost Analysis #2 for the 300 Area,* DOE/RL-2005-84, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL, 2006b, *Engineering Evaluation/Cost Analysis #3 for the 300 Area,* DOE/RL-2005-87, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Ecology, EPA, and DOE, 1989, *Hanford Federal Facility Agreement and Consent Order*, 2 vols., as amended, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington.

National Historic Preservation Act of 1966, 16 U.S.C. 470, et seq.

Resource Conservation and Recovery Act of 1976, 42 U.S.C. 6901, et seq.

APPENDIX B

AIR MONITORING SECTION

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AIR MONITORING SECTION

B.1 INTRODUCTION

Deactivation, decontamination, decommissioning, and demolition (D4) of certain facilities located in the main industrial complex of the 300 Area (Table 1-1 of this removal action work plan [RAWP]) have the potential to emit (PTE) radionuclides. This activity is being conducted as part of a non-time-critical *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) removal action under an action memoranda (DOE-RL 2005, 2006a, 2006b). Air monitoring requirements for the 324 and 327 Facilities are addressed under a separate air monitoring plan (Appendix C) due to the complexity of the systems.

Implementing best available radionuclide control technology (BARCT) for new construction or significant modifications, or as low as reasonably available control technology (ALARACT) for existing emission units or nonsignificant modifications, pursuant to *Washington Administrative Code* (WAC) 246-247-040(3) and (4), and 40 CFR 61.12(c) have been identified as applicable requirements. Air monitoring (40 *Code of Federal* Regulations [CFR] 61.93 (appropriate sections) and WAC 246-247-075[8]) has also been identified as a requirement that is applicable for the removal action. This plan describes how the substantive portions of these requirements will be implemented for this removal action.

Updates to this air monitoring plan may be accomplished through the unit manager's meeting (UMM) minutes. When the RAWP is updated, changes to this air monitoring plan will be incorporated into the revised RAWP.

Additional standards controlling air emissions to the environment are addressed in Section 4.3.1 of this RAWP.

B.1.1 Planned Activities

The removal action work scope includes conducting routine surveillances; sampling to characterize the nature and extent of contamination; deactivating, decontaminating, and demolishing facilities; excavating contaminated soil; treating waste (e.g., solidification) as necessary to meet waste acceptance criteria; and storing, handling, loading, and transporting waste for disposal. The facilities within the scope of this plan are identified in Table 1-1 of the RAWP.

Routine surveillances are necessary on buildings awaiting deactivation, decontamination, and demolition to ensure conditions within the facility have not changed to the point where the threat of a release has increased. The purpose of deactivation is to identify and remove barriers (e.g., physical, chemical, and radiological) to demolition of each facility. Hazardous substances and contaminated equipment and materials are removed and disposed. Process systems and

utility systems are removed and drains plugged. Piping is drained and residual materials are removed from tanks, lubricant reservoirs, refrigerant systems, etc.

Decontamination activities are conducted to remove loose accessible contamination from components, equipment, structures, etc. Decontamination activities also include stabilizing or "fixing" contaminants in place so that contaminants are attached to the materials and would be less likely to be disturbed during subsequent demolition activities. Decontamination methods may include, but are not limited to, wiping; applying decontamination solutions; paint, asphalt, or other fixatives; scabbling; abrasive blasting; and vacuuming.

Demolition generally means large-scale facility destruction using heavy equipment. Demolition methods will be selected based on the structural elements to be demolished, remaining contamination, location, and integrity of the structure. Standard equipment such as the following will be used:

- Excavator with a hoe-ram
- Hydraulic shears with steel shear jaws
- Concrete pulverizer jaws or breaker jaws
- Crane with wrecking ball
- Pneumatic hammers
- Crane to remove and size reduce materials
- Mechanical/power saws
- Cutting torch.

It is assumed that a portion of concrete demolition work will make use of a high-efficiency particulate air (HEPA)-filtered vacuum cleaner. Portable ventilation filter units and gloveboxes may also be used. Standard construction equipment will be used for excavation, loading, and hauling. If extensive soil contamination is found in adjacent and underlying soils, work will be deferred to the Field Remediation Closure Project, with approval from the U.S. Department of Energy, Richland Operations Office and the U.S. Environmental Protection Agency (EPA).

Equipment (e.g., haul trucks, containers) used in D4 activities will also be decontaminated, as necessary. Conventional methods (e.g., brushing or wiping, water wash, or HEPA-filtered vacuum cleaners) will be used. More aggressive equipment decontamination methods (e.g., grinding or wet grit blasting) may be used for equipment decontamination if other methods fail.

B.2 AIRBORNE SOURCE INFORMATION

The potential exists for radioactive airborne emissions resulting from the D4 activities. The characterization, surveillance and D4 activities will be conducted over several years. There is a small potential for radioactive airborne emissions resulting from surveillance and characterization activities. The PTE for these types of activities is expected to be insignificant compared to that of the actual D4 activities. Because potential emissions are anticipated to be inconsequential, no estimate will be made for potential emissions from surveillance and

characterization activities. Prior to the D4 of a facility, emissions estimates will be provided to the EPA for review and approval. Approval will be received from the EPA prior to the facilities being deactivated/demolished.

In addition, many of the facilities identified within this RAWP are believed to have little or no radiological contamination based on historical data reviews. The PTE from facilities with no appreciable radiological contamination is negligible. In lieu of an emission estimate, a summary of the facility environmental hazards will be provided to EPA for their review and approval that an emission estimate is not required. If, however, contamination is discovered during the D4 activities, an emission estimate will be prepared and provide to EPA for review and approval.

Emission estimates will be developed based on inventory assumptions for the facilities. The PTE will be determined by applying a release fraction of 1E-03 for particulate and liquids for most of the pre-demolition and demolition activities. A release fraction of 1 will be assumed for gases (if any are present), activities involving torch cutting, the use of HEPA-filtered vacuums and HEPA-filtered decontamination tools (e.g., scabblers, scarifiers). It is anticipated that no more than 1% of the total inventory will be subject to techniques that assume a release fraction of 1. The CAP-88-PC, Version 2.0 model will be used to determine the total effective dose equivalent (or annual unabated offsite dose) to the maximally exposed individual.

When D4 activities will include the use of the large portable ventilation units (e.g., ~20,000 ft^3/min), the emission estimate documentation will include a 40 CFR 61 Appendix D calculation, to supplement the monitoring information discussed in Section B.4. For those facilities that are estimated to be potential major sources (>0.1 mrem/yr) of radionuclide air emissions, further evaluation of appropriate monitoring requirements, for the ventilation units, will be conducted. Any additions or changes to this work plan will be documented in UMM minutes.

The emission estimates will be based on the primary isotopes (e.g., uranium isotopes) that are anticipated to be encountered and that make up most of the potential offsite dose. It is recognized that other isotopes may be present in very limited quantities that would not impact the emission estimates. Characterization data will be used to verify the inventory assumptions for the facilities and the emission estimates will be revised if the inventory is not within the assumptions used for the PTE calculations. Table B-1 contains a list, by year, of emission estimates prepared for 300 Area D4 activities. Additions to Table B-1 will be documented in UMM minutes. Facility descriptions are provided in Appendix A of this RAWP.

Any residual contamination in soils removed during D4 of structures will be assumed to be accounted for in the inventory for that structure. If extensive soil contamination is found, remediation will be accomplished in accordance with 300-FF-2 remedial action documents.

Table B-1. Potential-to-Emit Calculations for 300 Area Facilities. (3 Pages)

Facility	Name	AMP TEDE
Calendar Year 2005		
313	Former fuels manufacturing building	Approved Rev. 0 AMP
314	Research and craft facility, former engineering development laboratory	Approved Rev. 0 AMP
314B	Stress rupture test facility for 314 fuel fabrication operations	7.65E-04 mrem/yr
3225	Bottle dock	Non-rad Rev. 2 of AMP
334	Process sewer monitor facility 300	7.65E-04 mrem/yr
334A	Waste acid storage building (Includes 334 Tank Farm)	Non-rad Rev. 2 of AMP
MO-052	Mobile office	Non-rad Rev. 2 of AMP
Calendar Year 2006		
303A	Storage building	7.65E-04 mrem/yr
303B	Storage building	7.65E-04 mrem/yr
303C	Material evaluation laboratory	1.96E-02 mrem/yr
303E	Storage building	7.65E-04 mrem/yr
303F	Pumphouse	7.65E-04 mrem/yr
303G	Storage building	7.65E-04 mrem/yr
303J	Material storage building	7.65E-04 mrem/yr
303M	Uranium oxide facility	6.45E-02mrem/yr
304	Uranium concretion facility	7.65E-04 mrem/yr
304A	Uranium concretion change room	7.65E-04 mrem/yr
305	Engineering testing facility, former test pile	7.65E-04 mrem/yr
305B	Hazardous waste storage facility/engineering development laboratory annex	Non rad
305BA	Boiler annex	Non-rad Rev. 2 of AMP
306E	Development, fabrication, and test laboratory (includes 306E Neutralization Tank)	2.98E-04 mrem/yr
311TF	Tank farm building	7.65E-04 mrem/yr
333	N Fuels building (includes 333 West Side Tank Farm)	7.60E-03 mrem/yr
377	Former geotechnical engineering laboratory	4.26E-04 mrem/yr
3705	Photography building	7.65E-04 mrem/yr
3707D	Information services building	Non-rad Rev. 2 of AMP

Appendix B – Air Monitoring Section

Table B-1. Potential-to-Emit Calculations for 300 Area Facilities. (3 Pages)

Facility	Name	AMP TEDE
3708	Radioanalytical laboratory	1.04E-05 mrem/yr
3711	Maintenance storage building	Non-rad Rev. 2 of AMP
3712	Storage building	1.68E-04 mrem/yr
3713	Carpenter shop	Non-rad Rev. 2 of AMP
3715	Spare parts warehouse	2.75E-04 mrem/yr
3716	Storage building	2.51E-04 mrem/yr
3717	Spare parts warehouse	9.32E-05 mrem/yr
3717B	South maintenance facility	Non-rad Rev. 2 of AMP
3722	Fabrication shop	Non-rad Rev. 2 of AMP
3746D	Technical service annex	Non-rad Rev. 2 of AMP
MO-026	Mobile office	Non-rad
Calendar Year 2007		
306EBA	Boiler annex	Non-rad Rev. 2 of AMP
306W	Material development laboratory	2.10E-02 mrem/yr
308/308A	Fuels Development Laboratory	1.44E-02 mrem/yr
321	Hydromechanical/Seismic Facility	3.9E-02 mrem/yr
321B	Model heat loop	3.9E-02 mrem/yr
321C	Core pump shelter	3.9E-02 mrem/yr
321D	Seismic testing facility	3.9E-02 mrem/yr
328	Engineering services and safety building	Non-rad
328A	Sheet metal shop	Non-rad
328 BA	Boiler annex	Non-rad
337	Technical management center	Non-rad
337-B	High-bay and service wing	Non-rad
337-BA	Boiler annex	Non-rad
3503A	Electrical cable pit no. 2	Non-rad Rev. 2 of AMP
3705BA	Boiler annex	Non-rad Rev. 2 of AMP
3706/ 3706A	Communications and documentation services/ ventilation equipment room	9.43E-02 mrem/yr

Table B-1. Potential-to-Emit Calculations for 300 Area Facilities. (3 Pages)

Facility	Name	AMP TEDE
3706-BA	Boiler annex	Non-rad Rev. 2 of AMP
3707H	Change house	Non-rad Rev. 2 of AMP
3709	Paint shop	Non-rad
3718S	General storage	Bounded by 321 emissions
3719	Computer facility	Non-rad Rev. 2 of AMP
3720	Chemistry and metal sciences laboratory	4.33E-02 mrem/yr
3720BA	Boiler annex	Non-rad Rev. 2 of AMP
3731	Laboratory equipment central pool	Non-rad Rev. 2 of AMP
3731A	Graphite machine shop	Non-rad Rev. 2 of AMP
3745	Radiological calibration and standards	3.9E-02 mrem/yr
3745A	Van de Graaff electron accelerator	3.9E-02 mrem/yr
3745B	Van de Graaff positive ion accelerator	3.9E-02 mrem/yr
3746	Irradiation physics building	Non-rad
3746A	Radiological physics building	Non-rad
384	Powerhouse building	Non-rad
MO-905	Mobile office	Non-rad
Calendar Year 2007		
323	Mechanical properties laboratory	3.9E-02 mrem/yr
3718	Office and storage building	Non-rad
3718A	Lab equipment central pool building	Non-rad
3718B	Lab equipment central pool building	Non-rad
3718C	Storage building	Non-rad
3718-M	Sodium storage facility	Non-rad
3718N	Insulation shop	Non-rad

AMP = air monitoring plan
TEDE = total effective dose equivalent

To date, radiological contamination from 300 Area D4 activities has not been found from either the near-facility or the perimeter air monitors.

B.3 BEST AVAILABLE RADIONUCLIDE CONTROL TECHNOLOGY/AS LOW AS REASONABLY ACHIEVABLE CONTROL TECHNOLOGY

The surveillance and D4 activities have the potential to release radioactive emissions to the atmosphere. Implementing BARCT/ALARACT for these radioactive emissions has been identified as an applicable or relevant and appropriate requirement.

The use of wiping or applying fixatives is an ALARA control that has been accepted as BARCT/ALARACT for fugitive particulate radionuclide air emissions, particularly when the potential offsite dose is low. Glovebags may also be used to reduce potential emissions. For vacuuming and the use of portable ventilation units, HEPA filters are used to collect generated dust. The use of HEPA filters has been generally accepted as BARCT/ALARACT and their use is encouraged whenever practical during removal activities. HEPA filters shall have efficiency testing performed upon installation and on an annual basis thereafter and must be demonstrated to be 99.95% removal efficiency. Exhaust points from HEPA filters will be monitored on a routine basis for potential radionuclide releases and results recorded (e.g., post-survey results negative). Any positive survey results will require appropriate maintenance on the facility, exhauster, or vacuum to ensure that continued releases do not occur. Records of routine monitoring and necessary maintenance will be provided to EPA staff upon request. Because structure demolition may be a source of radioactive fugitive emissions, dust suppressants (e.g., water and fixatives) will be used and are considered BARCT/ALARACT for demolition. When using water, quantities used will be minimized to prevent water accumulation, puddles, and runoff within the area where the water is being used.

The following provides additional details concerning the implementation of the controls described above.

- Water will be applied during demolition, excavation, container loading, and backfilling processes to minimize airborne releases.

- Fixatives will be applied to any contaminated debris or soils that are being stockpiled and that will be inactive for more than 24 hours, excluding items that have been wrapped. However, if a soil fixative has already been applied and the soil and/or debris will remain undisturbed, further uses of fixatives will not be reapplied, unless needed. The fixatives or other controls will not be applied when the contaminated soils and/or debris are frozen or it is raining, snowing, or other freezing precipitation is falling at the end of work operations.

- Dust control is to be applied at the end of the work shift and verified in the field superintendent's status log.

- Haul trucks transporting bulk materials, with removable contaminants, will be covered to contain the materials while in transit to the Environmental Restoration Disposal Facility.

B.4 MONITORING

Air monitoring stations 300 South West #1 (N557), 300 Trench, 300 NE, South Gate, and 300 Water Intake will be used to monitor radionuclide air emissions from the surveillance and D4 activities discussed in this plan in accordance with 40 CFR 61, Appendix B, Method 114(3) and WAC-246-247-075(3). The locations of the air monitoring stations are shown in Figure B-1.

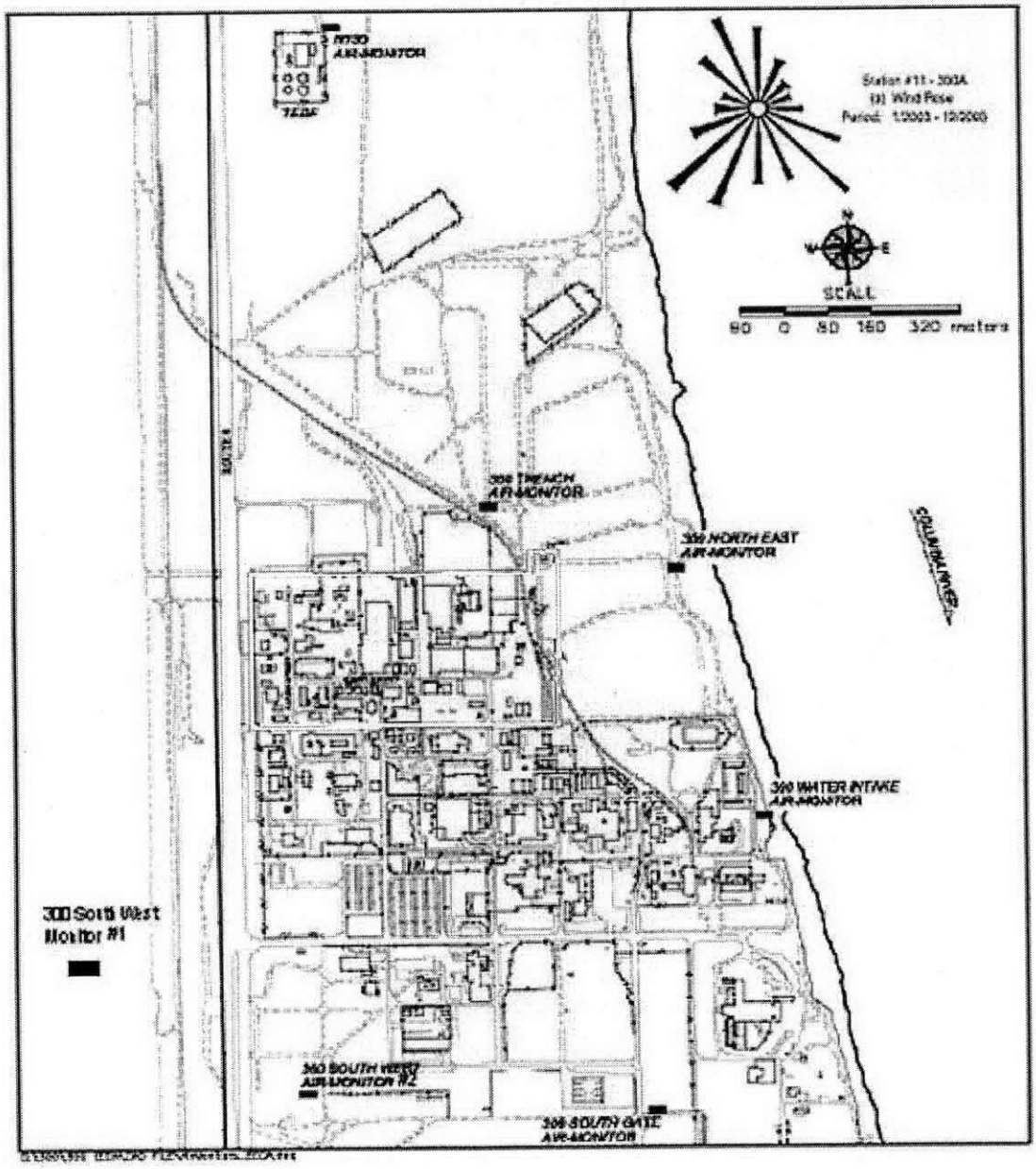
The operation of these air monitors will follow the protocol for the Environmental Surveillance Program or the Near-Facility Monitoring Program, as appropriate. The air samples will be changed every 2 weeks and analyzed for total alpha and total beta. The samples are composited quarterly and analyzed for gamma energy-emitting radionuclides, strontium-90, plutonium isotopes, and uranium isotopes. EPA may choose to take split samples of composite air samples.

Air monitoring station N130 will also be utilized during the D4 activities at the Treated Effluent Disposal Facilities (including 310, 310S, 310T1, 310T1A, 310T2, 310T3, 310T1A, 310T7B, and 310V).

The data results for these air monitors are entered into the Hanford Environmental Information System and/or the Automated Bar Coding of Air Samplers at Hanford database. The data collected from air monitoring will be summarized in the annual report that is prepared for the Hanford Site in compliance with 40 CFR 61 Subpart H and WAC 246-247 and that is used to demonstrate compliance with 40 CFR 61.92. EPA may request additional or alternate air monitors as new buildings are deactivated and/or demolished. Existing stack monitoring systems of operating facilities may also be utilized if appropriate. See discussion of operating emission point in Section B.5.

Appendix B – Air Monitoring Section

Figure B-1. Scope Boundary and 300 Area Air Monitor Locations.



B.5 OPERATION OF ACTIVE EMISSION POINTS

Some facilities (see Table B-2) within the scope of the removal action are currently operating under terms and conditions documented in Washington State Department of Health Approval Orders and the Hanford Site Operating Permit (AOP). The substantive regulatory requirements associated with these facilities may, over time, be incorporated into this appendix. These terms and conditions or any subsequent approvals will be considered obsolete upon EPA approval of a revision to this appendix. Changes may also be documented in the UMM minutes. If the emission unit is not shut down prior to transition to CERCLA, D4 activities will be subject to the existing State of Washington permits and licenses, and the emission point will be closed in accordance with the AOP.

In the event that the emission point operations continue after initiation of CERCLA activities at a specific facility, the existing emission controls and air monitoring systems on the stacks may be utilized as appropriate. Each stationary source shall be maintained and operated, including associated equipment for air pollution control, in a manner consistent with good air pollution control practice for minimizing emissions pursuant to WAC 246-247-040(3) and 40 CFR 61.12(c). For stacks that are operated during the CERCLA action, the associated records will be maintained for a period of 1 year at the 300 Area or other nearby location and/or in an electronic format such that the records are readily retrievable. When it is determined that the emission control system is no longer needed, the emission control and monitoring system and air monitoring and the associated stack will be shut down. This RAWP will become the air emissions approval for the facility upon implementation of the CERCLA action at the specific facility.

The Radiological Counting Facility (RCF) is expected to operate for purposes of analyzing CERCLA samples throughout the course of the 300 Area D4 activities. Air operating requirements for this facility are presented in Section B.5.1.

Table B-2. Summary of Active Emission Points in the Scope of the 300 Area Removal Action Work Plan.

Facility	Name	Emission Point Designator	Major or Minor Source	Active Notices of Construction
309	Plutonium Recycle Test Reactor	P-309PRTR-001	Minor	2
320	Physical Sciences Laboratory	EP-320-01-S EP-320-02-S EP-320-03-S EP-320-04-S	Minor	0
326	Material Science Laboratory	EP-326-01-S	Minor	2
329	Chemical Sciences Laboratory	EP-329-01-S	Minor	1
340	Waste Neutralization Facility Structure	340-NT-EX	Major	1
		P-340DECON-001	Minor	0
3730	Gamma Irradiation Facility	EP-3730-01-S	Minor	0

B.5.1 Air Operating Requirements for the Radiological Counting Facility

The RCF, composed of MO-265 and MO-423, is a minor source for potential diffuse and fugitive radionuclide emissions resulting from the preparation and counting of radiological samples (e.g., soil, smears) from CERCLA projects, within the 300 Area, the 100 Areas, and the Environmental Restoration Disposal Facility. Since this facility receives only samples associated with CERCLA response actions, it will continue to operate under CERCLA authority in accordance with *Action Memorandum #3 for the 300 Area Facilities* (DOE-RL 2006b). The *Radiological Counting Facility Air Monitoring Plan, December 2006* (WCH 2006) replaced terms and conditions in the Hanford Site Air Operating Permit and the Washington State Department of Health License.

Radiological material in the RCF is controlled through the use of standard radiological control procedures. Sample activities at the RCF are conducted under a radiological work permit. Samples may be opened within a contamination area, if warranted by the radiation levels, that is typically established just prior to opening the sample. After sample handling activities (e.g., sample preparation or counting) are completed, the area is surveyed and the contamination area is removed. Sample preparation activities may infrequently be conducted in an enclosure, depending on the sample activity level or contaminants determined by screening. These practices and controls are considered ALARACT.

Potential diffuse and fugitive emissions from the RCF are monitored using the existing air monitoring network described in Section B.4.

B.6 REFERENCES

40 CFR 61, "National Emission Standards for Hazardous Air Pollutants," *Code of Federal Regulations*, as amended.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. 9601, et seq.

DOE-RL, 2005, *Action Memorandum #1 for the 300 Area Facilities*, U.S. Department of Energy, Richland Operations Office, Richland Washington.

DOE-RL, 2006a, *Action Memorandum #2 for the 300 Area Facilities*, U.S. Department of Energy, Richland Operations Office, Richland Washington.

DOE-RL, 2006b, *Action Memorandum #3 for the 300 Area Facilities,* U.S. Department of Energy, Richland Operations Office, Richland Washington.

WAC 246-247, "Radiation Protection – Air Emissions," *Washington Administrative Code*, as amended.

WCH, 2006, *Radiological Counting Facility Air Monitoring Plan, December 2006*, Washington Closure Hanford, Richland, Washington.

APPENDIX C

AIR MONITORING PLAN FOR THE 324 AND 327 FACILITIES

APPENDIX C

AIR MONITORING PLAN FOR THE 324 AND 327 FACILITIES

C.1 INTRODUCTION

Deactivation/decontamination and decommissioning (D4) of the 324/327 Buildings and ancillary facilities located in the 300 Area (Figure 1-2 of the removal action work plan [RAWP]) have the potential to emit (PTE) radionuclides. This activity is being conducted as part of a non-time-critical *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) removal action under an action memorandum (DOE-RL 2006a). Portions of this action have been undertaken prior to CERCLA decision document approval under Washington Department of Health (WDOH) approval orders AIR 03-106 and AIR 03-107. These two approval orders and the conditions that have been incorporated into the Hanford Site Air Operating Permit are obsolete and are no longer applicable to the 324 and 327 Buildings.

Implementing best available radionuclide control technology (BARCT) for new construction or significant modifications, pursuant to *Washington Administrative Code* (WAC) 246-247-040(3), has been identified as applicable requirements. Air monitoring (40 *Code of Federal Regulations* [CFR] 61.93b and WAC 246-247-075[8]) has also been identified as a requirement that is applicable for the removal action. This air monitoring plan (AMP) describes how the substantive portions of these requirements will be implemented for this removal action.

Updates to this AMP may be accomplished through the unit manager's meeting minutes. When the RAWP is updated, changes to this AMP will be incorporated into the revised RAWP.

Additional standards controlling air emissions to the environment are addressed in Section 4.3.1 of this RAWP.

C.2 PLANNED ACTIVITIES

The removal action work scope includes conducting routine surveillances, sampling to characterize the nature and extent of contamination; deactivating, decontaminating, and demolishing facilities; excavating contaminated soil; treating waste (e.g., solidification) as necessary to meet waste acceptance criteria; and storing, handling, loading, and transporting waste for disposal.

The 324/327 Buildings and ancillary facilities were constructed in 1966 as a research and development mission for nuclear fuels characterization and waste technology research. In the late 1990s a significant amount of nuclear fuel and radioactive materials were removed from the facilities in support of preparation for demolition of the facilities. The 324 Building has office space, both radioactive and nonradioactive development laboratories, hot cells, vaults, tanks, galleries, pipeways, a truck lock, and a loadout station.

The 327 Building and its supporting ancillary facilities were constructed in 1953 as a spent reactor fuel research facility. In the 1990s materials were removed from the facilities in support of preparation for demolition of the facilities. The 327 Building has office and laboratory space for conducting research on post-irradiated fuels and structural materials. The 327 Building is a single-story structure with a partial basement containing common ventilation and auxiliary equipment.

Routine surveillances are necessary on buildings awaiting D4 to ensure conditions within the facility have not changed to the point where the threat of a release has increased. The purpose of deactivation is to identify and remove barriers (e.g., physical, chemical, and radiological) to demolition of each facility. Hazardous substances and contaminated equipment and materials are removed and disposed. Process systems and utility systems are removed and drains plugged. Piping is drained and residual materials are removed from tanks, lubricant reservoirs, refrigerant systems, etc.

Decontamination activities are conducted to remove loose accessible contamination from components, equipment, structures, etc. Decontamination activities also include stabilizing or "fixing" contaminants in place so that contaminants are attached to the materials and would be less likely to be disturbed during subsequent demolition activities. Decontamination methods may include, but are not limited to, wiping; applying paint, asphalt, or other fixatives; scabbling; abrasive blasting; and vacuuming. Facility hot cells may be "flood grouted" and then cut up to minimize radiological dose to works, the public, and protect the environment.

In addition to the 324 and 327 complexes, the following ancillary facilities will also demolished under this AMP:

- 3718E Storage Building
- 3718G Storage Building
- 3723 Solvent and Acid Storage Building.

The radiological inventories of the ancillary facilities are assumed to contain little or de minimis levels of radiological contamination and are "bound" by the inventories for the 324 and 327 Buildings; if during facility characterization this assumption is determined to be incorrect, the inventory in Table C-1 or Table C-2 will be revised as appropriate.

Large items (equipment and waste materials) will be size reduced and packaged for transport to compliant storage/disposal facilities as appropriate. Any loose materials and radiologically contaminated materials will be collected and packaged for disposal. Various decontamination methods will be employed to reduce/remove radiological contamination. As the decontamination work is completed, before demolition the associated ventilation ductwork will be isolated and removed. Conventional methods (e.g., brushing or wiping, water wash, or high-efficiency particulate air [HEPA]-filtered vacuum cleaners) will be used. More aggressive equipment decontamination methods (e.g., grinding or wet grit blasting) may be used for equipment decontamination if other methods fail.

If decontamination has been achieved to acceptable levels for the areas served by the EP-324-S-01 and/or EP-327-S-01 stacks, portable exhausters, portable temporary radiological air emission units, HEPA vacuums, or other similar particular emission control devices, those control devices will be removed and/or isolated. Ventilation equipment may be operated both for radiological control to workers, the public, and the environment along with controls needed for worker protection from industrial hazard materials such as beryllium and cadmium, etc. During deactivation the EP-324-S-01 and/or EP-327-S-01 stacks will operate at a reduced flow, shutting down in stages over an extended period, culminating in eventual closure of the exhaust stacks. The 327-02-V stack has been shut down and will no longer be utilized.

Both stacks will be demolished near the end of the facility demolition. During demolition both fixatives and water will be used to effectively control air emissions both in the workspaces and outside the facility in a manner that is protective of both the air and groundwater pathways. The building hot cells may be "flood grouted" or have some other definite solidification measure completed and cells cut or size reduced to meet transportation requirements to the Environmental Restoration Disposal Facility (ERDF).

Demolition generally means large-scale facility destruction using heavy equipment. Demolition methods will be selected based on the structural elements to be demolished, remaining contamination, location, and integrity of the structure. Conventional equipment such as the following will be used:

- Excavator with a hoe-ram
- Hydraulic shears with steel shear jaws
- Concrete pulverizer jaws or breaker jaws
- Crane with wrecking ball
- Pneumatic hammers
- Controlled explosives
- Crane to remove and size reduce materials
- Mechanical/power saws
- Cutting torch.

It is assumed that a portion of concrete demolition work will make use of a HEPA-filtered vacuum cleaner. Portable ventilation filter units and gloveboxes may also be used. Standard construction equipment will be used for excavating, loading, and hauling. If extensive soil contamination is found in adjacent and underlying soils, work will be deferred to the Field Remediation Closure Project, with approval from the U.S. Department of Energy, Richland Operations Office and the U.S. Environmental Protection Agency (EPA).

Equipment (e.g., haul trucks, containers) used in D4 activities will also be decontaminated, as necessary. Excavation work may also take place in support of removing/blanking/isolation of utilities.

C.3 AIRBORNE SOURCE INFORMATION

The potential exists for radioactive airborne emissions resulting from the D4 activities. This section of the AMP discusses the radiological inventory of the 324/327 Buildings and ancillary facilities and associated waste sites along with the subsequent potential to emit (PTE) radionuclides and the resulting total effective dose equivalent (TEDE) to the maximally exposed individual (MEI). The activities will be conducted over several years. However, the estimates conservatively assume that the activities are accomplished in a single year, when in fact the PTE will be reduced each year as the inventory is reduced. The actual and potential diffuse and fugitive emissions from the proposed activities are not expected to be significant and are bounded within the overall inventory; therefore, a separate estimate has not been provided. Excavation of any significant residual contamination in soils will be deferred to the Field Remediation Closure Project with regulatory approval. The ancillary facilities are assumed to be bound by the inventory and emission estimates for the 324 and 327 facilities.

The radionuclide inventory, PTE, and estimated dose are summarized in Table C-1 and Table C-2, respectively, for the 324 Building and the 327 Building. The inventory for the 324 building was obtained from the following three calculations with the addition of 100 Ci to account for miscellaneous areas (ductwork, piping, filters, rooms, and hoods):

- *Radiological Inventory for the 324 Building Shielded Materials Facility*, Calculation No. 0300X-CA-N0078 (WCH 2006e)

- *Bounding Radiological Characterization for the 324 Building Radiochemical Engineering Cells and Airlock*, Calculation No. 0300X-CA-N0079 (WCH 2006b)

- *Radiological Inventory for the 324 Building Low Level Vaults and High Level Vaults,* Calculation No. 0300X-CA-N0080 (WCH 2006d).

The inventory for the 327 Building is from the *327 Building Basis of Interim Operation* (WCH 2006a) minus the inventory that had been removed from the facility as of February 2006.

The appropriate release fractions (i.e., for solid or particulate) were applied to the inventory to determine the PTE. The unit dose conversion factors from *Calculating Potential-to-Emit Radiological Releases and Doses* (DOE-RL 2006b) were applied to the PTE to generate the dose estimate at the offsite maximum public receptor (1,400 m to the northeast).

The total curie content for the 324 Building and ancillary facilities is estimated at 8.15E+04, and the maximum unabated TEDE from the D4 activities of the 324 Building and ancillary facilities is estimated at 9.78E+01 mrem/yr. The abated TEDE, if all emissions are through the stack, would be 4.89E-02 mrem/yr.

The total curie content for the 327 Building is 1.40E+03 mrem/yr. The maximum unabated TEDE from the D4 activities of the 327 Building is 2.1E+00 mrem/yr. The abated TEDE, if all emissions are through the stack, would be 1.05E-03 mrem/yr.

The air emission estimates described above are documented in Calculation No. 0300X-CA-V0078 (WCH 2006c).

C.4 BEST AVAILABLE RADIONUCLIDE CONTROL TECHNOLOGY

Implementing BARCT for the control of 324 Building and 327 Building radionuclide air emissions has been identified as an applicable relevant and appropriate requirement. Tables C-3 and C-4 list the current abatement control technology for each building. Each stationary source shall be maintained and operated, including associated equipment for air pollution control, in a manner consistent with good air pollution control practice for minimizing emissions pursuant to WAC 246-247-040(3) and 40 CFR 61.12(c). After deactivation and decontamination efforts have been completed for a particular area of the building, the ventilation ductwork and any associated controls (e.g., HEPA filter) will be isolated and/or removed.

Portable exhausters and vacuum cleaners will also be utilized to control emissions. For vacuuming and the use of portable ventilation units, HEPA filters are used to collect generated dust. The use of HEPA filters has been generally accepted as BARCT, and their use is encouraged whenever practical during removal activities. HEPA filters shall have efficiency testing performed upon installation and on an annual basis thereafter and must demonstrate 99.95% removal efficiency. Exhaust points from HEPA filters will be monitored on a routine basis for potential radionuclide releases and results recorded (e.g., post-survey results negative). Any positive survey results will require appropriate maintenance on the facility, exhauster, or vacuum to ensure that continued releases do not occur. Records of routine monitoring and necessary maintenance will be provided to EPA staff upon request. Glovebags may also be used to reduce potential emissions. Because structure demolition may be a source of radioactive fugitive emissions, dust suppressants (e.g., water and fixatives) will be used and are considered BARCT for demolition. When using water, quantities used will be minimized to prevent water accumulation, puddles, and runoff within the area where the water is being used.

The following provides additional details concerning the control of fugitive emissions:

- Water will be applied during demolition, excavation, container loading, and backfilling processes to minimize airborne releases.

- Fixatives will be applied to any contaminated debris or soils that are being stockpiled and that will be inactive for more than 24 hours, excluding items that have been wrapped. However, if a soil fixative has already been applied and the soil and/or debris will remain undisturbed, further uses of fixatives will not be reapplied, unless needed. The fixatives or other controls will not be applied when the contaminated soils and/or debris are frozen or it is raining, snowing, or other freezing precipitation is falling at the end of work operations.

- Dust control is to be applied at the end of the work shift and verified in the field superintendent's status log.

- Haul trucks transporting bulk materials with removable contamination will be covered to contain the materials while in transit to ERDF.

C.5 MONITORING

The 324-S-01 and 327-S-01 stack will be continuously sampled in accordance with 40 CFR 61.93(b)(2)(ii) and (iii). All radionuclides that could contribute greater then 10% of the potential effective dose equivalent shall be measured as required by 40 CFR 61.93(b)(4)(i). Flow rate measurements will be made in accordance with 40 CFR 61.93(b)1. The maintenance, calibration, and field check requirements of 40 CFR 61, Appendix B, Method 114, Table 2 will be implemented during stack operation. Stack operating records will be maintained for a period of 1 year at the 300 Area or other nearby location and/or in an electronic format such that the records are readily retrievable.

Requirements for the stacks may change in the future when the available potential to emit drops below 0.1 mrem/yr to the MEI. The evaluation of the potential to emit will be conducted in accordance with 40 CFR 61.93(b)(4). This plan will be updated and approved by EPA prior to changing stack sampling requirements or shutting down the stacks.

Diffuse/fugitive radionuclide emissions from the activities described in the AMP will be monitored by air monitoring stations 300 South West #1 (N557), 300 Trench, 300 NE, and 300 Water Intake, in accordance with 40 CFR 61, Appendix B, Method 114(3) and WAC 246-247-075(3). The locations of the air monitoring stations are shown in Figure C-1. The operation of the air monitors will follow the protocol for the Environmental Surveillance Program or the Near-Facility Environmental Monitoring Program on the Hanford Site. The air samples will be changed every 2 weeks and analyzed for total alpha and total beta. The current protocol for these air samplers is as follows:

- 300 South West #1 (N557), 300 Trench, 300 NE, and 300 Water Intake air monitors will be composited quarterly and analyzed for gamma energy-emitting radionuclides, strontium, plutonium, and uranium. The EPA may choose to take split samples of composite air samples.

The data results for these air monitors are entered into the Hanford Environmental Information System and/or the Automated Bar Coding of Air Samplers at Hanford database. The data collected from air monitoring described above will be summarized in the annual report that is prepared for the Hanford Site in compliance with 40 CFR 61 Subpart H and WAC 246-247 and that is used to demonstrate compliance with 40 CFR 61.92.

Table C-1. 324 Building Inventory and Potential-to-Emit Assessment.

Isotope	Total Inventory (Ci)	RF	Potential to Emit (PTE) Unabated (Ci/yr)	Potential to Emit (PTE) Abated (Ci/yr)	Dose per Unit Release Factor[c] (mrem/Ci)	Offsite Unabated Dose (mrem/yr)	Offsite Abated Dose (mrem/yr)
Fe-55	6.13E+03	1.00E-03	6.13+00	3.07E-03	1.4E-03	8.58E-03	4.39E-06
Mn-54	1.57E+01	1.00E-03	1.57E-02	7.85E-06	1.0E-01	1.57E-03	7.85E-07
Mo-93	4.91E+02	1.00E-03	4.91E-01	2.46E-04	1.8E-02	8.84E-03	4.42E-06
Co-60	4.51E+02	1.00E-03	4.51E-01	2.26E-04	1.6E+00	7.22E-01	3.61E-04
Se-79	1.55E+02	1.00E-03	1.55E-05	7.77E-09	7.9E-01	1.23E-05	6.14E-09
Sr-90	2.60E+04	1.00E-03	2.60E+01	1.30E-02	7.1E-01	1.84E+01	9.22E-03
Tc-99	5.21E+01	1.00E-03	5.21E-02	2.61E-05	1.4E-01	7.30E-03	3.65E-06
Sb-125	1.53E+00	1.00E-03	1.53E-03	7.65E-07	1.6E-01	2.45E-04	1.22E-07
Cs-137	4.79E+04	1.00E-03	4.79E+01	2.4E-02	1.5E+00	7.19E+01	3.59E-02
Eu-154	9.69E+01	1.00E-03	9.69E-02	4.85E-05	1.2E+00	1.16E-01	5.82E-05
Eu-155	7.58E+01	1.00E-03	7.58E-02	3.79E-05	5.0E-02	3.79E-03	1.90E-06
Pu-238	1.23E+01	1.00E-03	1.23E-02	6.14E-06	4.6E+01	5.56E-01	2.82E-04
Pu-239	3.74E+00	1.00E-03	3.74E-03	1.87E-06	5.0E+01	1.87E-01	9.34E-05
Pu-240	3.67E+0	1.00E-03	3.67E-03	1.83E-06	5.0E+01	1.83E-01	9.16E-05
Pu-241	2.18E+02	1.00E-03	2.18E-01	1.09E-04	7.9E-01	1.72E-01	8.62E-05
Pu-242	6.12E-03	1.00E-03	6.12E-06	3.06E-09	4.8E+01	2.94E-04	1.47E-07
Am-241	5.79E+01	1.00E-03	5.79E-02	2.89E-05	7.7E+01	4.46E+00	2.23E-03
Cm-243	3.53E-01	1.00E-03	3.53E-04	1.76E-07	5.2E+01	1.83E-02	9.17E-06
Cm-244	2.43E+01	1.00E-03	2.43E-02	1.22E-05	4.1E+01	9.98E-01	4.99E-04
Total	**8.15E+04**		**8.15E-01**	**4.08E-02**		**9.78E+01**	**4.89E-02**

Source: Table taken from calculation 0300X-CA-V0078 (WCH 2006e).
RF = release fraction

Table C-2. 327 Building Inventory and Potential-to-Emit Assessment.

Isotope	Inventory (Ci)	WAC 246-247 Physical Form	WAC 246-247 RF	Potential to Emit (PTE) (Ci/yr)	Dose Factor[c] (mrem/Ci)	Offsite Unabated Dose (mrem/yr)	Offsite Abated Dose (mrem/yr)
Pu-238	7.79E-01	Particulate	1.00E-03	7.79E-04	1.3E+02	1.01E-01	5.07E-05
Pu-239	2.00E+00	Particulate	1.00E-03	2.00E-03	1.4E+02	2.79E-01	1.40E-04
Pu-240	1.05E+00	Particulate	1.00E-03	1.05E-03	1.4E+02	1.47E-01	7.34E-05
Pu-241	4.93E+01	Particulate	1.00E-03	4.93E-02	2.2E+00	1.08E-01	5.42E-05
Am-241	2.66E+00	Particulate	1.00E-03	2.66E-03	2.2E+02	5.85E-01	2.92E-04
Cm-244	6.15E-02	Particulate	1.00E-03	6.15E-05	1.2E+02	7.37E-03	3.69E-06
Sr-90	2.50E+02	Particulate	1.00E-03	2.50E-01	1.9E+00	4.75E-01	2.38E-04
Cs-137	1.00E+02	Particulate	1.00E-03	1.00E-01	4.0E+00	4.0E-01	2.00E-04
Co-60	9.52E+02	Solid	1.00E-06	9.52E-04	4.1E+00	3.90E-03	1.95E-06
Mn-54	4.00E+01	Solid	1.00E-06	4.00E-05	2.7E-01	1.08E-05	5.40E-09
Total	**1.40E+03**			**4.1E-01**		**2.1E+00**	**1.05E-03**

Source: Table taken from calculation 0300X-CA-V0078 (WCH 2006c).
RF = release fraction
WAC = *Washington Administrative Code*

Table C-3. BARCT Requirements Applicable for Operating the 324 Building Stack.

Zone or Area	Abatement Technology	Number of Units	Additional Description
Zone 2	HEPA	1	Stage is for control of Zone 3
Zone 2	Prefilter	1	
Zone 2	Fan	1	2 in parallel
Cell	Electrostatic precipitator	1	
Cell	Prefilter	2	
Zone 1 cells	Fan	1	3 in parallel, serves B Cell, Zone 1 cells
Zone 1 cells	HEPA	1	Last stage shared with B cell
Zone 1 cells	Prefilter	2	1 for Zone 1 cell, 1 for POG V/V

BARCT = best available radionuclide control technology
HEPA = high-efficiency particulate air

Table C-4. BARCT Requirements Applicable for Operating the 327 Building Stack.

Zone or Area	Abatement Technology	Number of Units	Additional Description
Room 15, hood and cells	HEPA	1	
Room 15, hood and cells	Prefilter	1	Cells only
Room 15, hood and cells	Fan	1	2 in parallel
Remaining areas	HEPA	1	Single stage
Remaining areas	Fan	1	2 in parallel

BARCT = best available radionuclide control technology
HEPA = high-efficiency particulate air

C.6 REFERENCES

40 CFR 61, "National Emission Standards for Hazardous Air Pollutants," *Code of Federal Regulations*, as amended.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. 9601, et seq.

DOE-RL, 2006a, *Action Memorandum #2 for 324/327 Buildings and Ancillary Facilities*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL, 2006b, *Calculating Potential-to-Emit Radiological Releases and Doses*, DOE/RL-2006-29, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

WAC 246-247, "Radiation Protection – Air Emissions," *Washington Administrative Code*, as amended.

WCH, 2006a, *327 Building Basis of Interim Operation*, WCH-HNF-4667, Rev. 2, Washington Closure Hanford, Richland, Washington.

WCH, 2006b, *Bounding Radiological Characterization for the 324 Building Radiochemical Engineering Cells and Airlock*, 0300X-CA-N0079, Rev. 0, Washington Closure Hanford, Richland, Washington.

WCH, 2006c, *PTE/Dose to the Maximum Public Receptor (MPR) for 324/327*, 0300X-CA-V0078, Rev. 0, Washington Closure Hanford, Richland, Washington.

WCH, 2006d, *Radiological Inventory for the 324 Building Low Level Vault and High Level Vault Tanks*, 0300X-CA-N0080, Rev. 0, Washington Closure Hanford, Richland, Washington.

WCH, 2006e, *Radiological Inventory for the 324 Building Shielded Materials Facility,* 0300X-CA-N0078, Rev. 0, Washington Closure Hanford, Richland, Washington.

APPENDIX D

FACILITY COMPLETION FORM

APPENDIX D

FACILITY STATUS CHANGE FORM

D.1 INTRODUCTION

The purpose of the form is to document agreement among the parties on the status of facility deactivation, decontamination, decommissioning, and demolition (D4) operations and the disposition of underlying soil in accordance with the applicable regulatory decision documents. The form provides the following information to document either completion or deferral of a removal action:

- Quantitative information about the facility demolition
- A justification for completion that includes a list of contaminants of concern for the facility, a synopsis of the data collected, and a listing of the samples collected (and associated sample numbers)
- Photographs of the demolition activity
- Document that the wastes have all been shipped to the appropriate disposal facility
- Provide for U.S. Department of Energy (DOE) and regulator concurrence to the completion, and
- Provide for a standard distribution of the form, including the Administrative Record.

A copy of the form is provided in Table D-1.

D.2 FORM COMPLETION INSTRUCTIONS

D.2.1 Top Portion

The top portion of the form should be filled out to identify the facility and under which removal action the completion applies.

D.2.2 Section 1: Facility Status

Facility Status

The appropriate block will be marked to identify whether the facility removal action is complete or whether remaining actions are being deferred.

Description of Completed Activities and Current Conditions:

This portion will identify the following:

1. Whether the facility removal actions were performed in accordance with the applicable action memorandum

2. Whether all hazardous material was removed from the facility prior to demolition

3. When the demolition was completed and whether the foundation and any other sub-surface structures were removed, and

4. Document final disposition of the demolition debris.

Description of Deferral (as applicable):

This portion will be completed when deferring the below-grade portions of the facility to be performed with the remedial action. A justification for the deferral will be provided (e.g., underlying waste sites, active utilities).

D.2.3 Section 2: Underlying Soil Status

Underlying Soil Status

The appropriate block will be marked to identify the relationship between the facility and waste sites.

Description of Current/As-Left Condition:

This portion of the form will identify the following:

1. Whether the underlying soils were a documented waste site;
2. If soil contamination was found as a result of the removal action;
3. Whether adjacent documented waste sites were affected; and
4. A description of the method that will be used to backfill the excavated area.

Identification of Documented Waste Site(s) or Nature of Potential Waste Site Discovery (as applicable):

This portion will describe any waste sites or potential waste sites that were encountered as a result of the removal action.

D.2.4 Section 3: List of Attachments

Supplemental information includes the following:

1. Facility information: Building history, characterization information including a summary of the collected sample data, and a description of the D4 activities that were performed

2. Underlying Soil: An assessment of the contaminants of concern that could be potentially released during facility demolition, and the final radiological survey

3. Evaluation of Related/Adjacent Waste Sites: This will include an assessment of the related/adjacent waste and how they were affected by the removal action, and

4. Project photographs.

Appendix D – Facility Status Change Form

Table D-1. Facility Status Change Form.

Date Submitted:	**Area:**	
Originator:	**Facility ID:**	**Control #:**
Phone:	**Action Memorandum:**	

This form documents agreement among the parties listed below on the status of facility D&D operations and the disposition of underlying soil in accordance with the applicable regulatory decision documents.

Section 1: Facility Status

☐ All D4 operations required by action memo complete.
☐ D4 operations required by action memo partially complete, remaining operations deferred.

Description of Completed Activities and Current Conditions:

Description of Deferral (as applicable):

Section 2: Underlying Soil Status

☐ No waste site(s) present. No additional actions anticipated.
☐ Documented waste site(s) present. Cleanup and closeout to be addressed under Record of Decision.
☐ Potential waste site discovered during D4 operations. Waste site identification number <to be> assigned. Cleanup and closeout to be addressed under Record of Decision.

Description of Current/As-Left Conditions:

Identification of Documented Waste Site(s) or Nature of Potential Waste Site Discovery (as applicable):

Section 3: List of Attachments

_____ _____
DOE-RL **Date**

_____ _____
Lead Regulator ☐ **EPA** ☐ **Ecology** **Date**

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